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A MESSAGE OF BEST WISHES FROM CHAIRMAN

It is with immense pride and great pleasure that I extend my wholehearted testimonial and warmest best wishes for the One Day Online International Multidisciplinary Conference being organized by the Research Committee & IQAC of People Education Society's Dr. Ambedkar College of Commerce and Economics, Wadala, Mumbai.

The National Education Policy (NEP) 2020 is a transformative blueprint for India's future, placing multidisciplinary and holistic education at its very core. This conference, addressing a global perspective on Pure Sciences, Applied Sciences, Commerce, Accounts, Economics, Law, Technology, and Sustainable Development, is not only timely but essential. It perfectly aligns with the visionary path laid down by the architect of our Constitution, Dr. Babasaheb Ambedkar, who championed education as the most powerful tool for social and economic emancipation. By fostering dialogue that bridges traditional disciplinary boundaries, this conference embodies the spirit of intellectual inquiry and inclusive progress that our Society stands for.

I commend the Organizing Committee, the faculty, and all the stakeholders of Dr. Ambedkar College of Commerce and Economics for conceptualizing and executing an event of such high academic caliber and international reach. Your initiative to create a platform for scholars, researchers, and practitioners to dissect the NEP's implications through a multidisciplinary lens is a significant contribution to the national educational discourse.

The choice of themes—spanning from core sciences to commerce, law, and sustainable development—reflects a comprehensive understanding of the interconnected challenges and opportunities of the 21st century. I am confident that the deliberations on November 30, 2025, will generate profound insights, foster valuable collaborations, and provide actionable recommendations to effectively implement the NEP's multidisciplinary mandate.

As the Chairman of the People Education Society, I applaud this exemplary endeavor. My best wishes are with the convenors, the distinguished speakers, the presenters, and every participant attending this online conference. May your discussions be insightful, your debates enriching, and your outcomes impactful.

I have every confidence that this conference will be a resounding success and will mark a milestone in the academic journey of our institution.

Warm regards,

Hon. Respected Anandraj Y. Ambedkar

Chairman

People Education Society

Mumbai, Maharashtra, India

A BEST WISHES MESSAGE FROM SECRETARY

It is with great enthusiasm that I extend my warmest greetings and best wishes to the Research Committee, the IQAC, the faculty, and the entire team of People Education Society's Dr. Ambedkar College of Commerce and Economics, Wadala, for organizing this pioneering One Day Online International Multidisciplinary Conference.

The National Education Policy (NEP) 2020 represents a historic shift towards creating an integrated, flexible, and multidisciplinary learning ecosystem in India. This conference, with its ambitious scope encompassing Pure Sciences, Applied Sciences, Commerce, Accounts, Economics, Law, Technology, and Sustainable Development, is a commendable initiative to translate this policy vision into actionable academic discourse. By adopting a global perspective, the conference ensures that our intellectual pursuits are aligned with worldwide standards and innovations, preparing our students and scholars to be globally competent citizens.

As the Secretary of the People Education Society, I am particularly pleased to see our institution spearheading such a relevant and forward-thinking event. The choice to host it on a digital platform demonstrates adaptability and a commitment to inclusive participation, allowing minds from across the globe to connect, share, and collaborate seamlessly.

I applaud the meticulous planning and hard work invested by the organizing committees to bring together diverse fields of study under one thematic umbrella. This interdisciplinary approach is crucial for solving complex real-world problems and fostering holistic development, which is the cornerstone of the NEP and the founding principles of our Society.

My sincere best wishes are with all the keynote speakers, session chairs, paper presenters, and attendees. May your deliberations be fruitful, your exchanges inspiring, and the knowledge generated contribute significantly to the advancement of multidisciplinary research and education.

I am confident that this conference will be an outstanding success, reinforcing the academic leadership of Dr. Ambedkar College of Commerce and Economics and leaving a lasting intellectual impact on all participants.

Wishing you a highly productive and enlightening conference.

With best regards,
Hon. Respected Mr. Sanjeev N. Boudhankar
Secretary
People Education Society
Mumbai, Maharashtra, India

A MESSAGE OF BEST WISHES FROM PRINCIPAL

It is with immense pride and pleasure that I extend my wholehearted best wishes to the Research Committee & IQAC of our college for organizing the One Day Online International Multidisciplinary Conference on the pivotal theme "National Education Policy focusing on Multidisciplinary Research: A Global Perspective on Pure Sciences and Applied Sciences with focusing on Commerce, Accounts, Economics, Law, Technology, and Sustainable Development."

The National Education Policy (NEP) 2020 is a transformative roadmap for our nation, and its successful implementation hinges on precisely this kind of collaborative, interdisciplinary dialogue. By convening experts and thinkers from such a diverse array of fields—spanning the sciences, commerce, law, and technology—this conference embodies the very essence of the NEP's vision. It seeks to break down silos and foster a holistic understanding of knowledge, which is imperative for addressing the complex challenges of sustainable development in a globalized world.

As the I/c. Principal of this esteemed institution, I commend the initiative and diligent efforts of our faculty and the organizing committees in conceptualizing and executing an event of such high academic caliber. Hosting it on an international online platform reflects our commitment to inclusive, borderless scholarship and positions our college at the forefront of contemporary educational discourse.

I am confident that the deliberations on 30th November 2025 will be exceptionally rich, insightful, and productive. May this conference serve as a catalyst for innovative ideas, meaningful collaborations, and actionable strategies that advance both academic excellence and societal progress.

My sincerest best wishes to all the resource persons, paper presenters, moderators, and attendees for an engaging, inspiring, and highly successful conference.

Warm regards,

Prof. Dr. Yashodhara S. Varale
I/c. Principal
People Education Society's Dr. Ambedkar College of Commerce and Economics, Wadala,
Mumbai, Maharashtra, India

A MESSAGE OF BEST WISHES FROM IQAC COORDINATOR

To the Esteemed Members of the Research Committee, IQAC, Organizing Team, Distinguished Resource Persons, Paper Presenters, and Delegates,On behalf of the Internal Quality Assurance Cell (IQAC) and as its Coordinator, it is my privilege to extend warm greetings and heartfelt best wishes for the **One Day Online International Multidisciplinary Conference** on the profoundly relevant theme: **"National Education Policy focusing on Multidisciplinary Research: A Global Perspective on Pure Sciences and Applied Sciences with focusing on Commerce, Accounts, Economics, Law, Technology, and Sustainable Development."**

The conceptualization and organization of this conference stand as a testament to our institution's unwavering commitment to academic excellence, innovation, and the continuous pursuit of quality enhancement—the core mission of the IQAC. The National Education Policy (NEP) 2020, with its groundbreaking emphasis on holistic and multidisciplinary education, provides the perfect framework for such an ambitious intellectual endeavor. By integrating perspectives from Pure Sciences, Applied Sciences, Commerce, Economics, Law, and Technology under the overarching goal of Sustainable Development, this conference directly addresses the urgent need for collaborative, cross-disciplinary solutions to global challenges.

I commend the synergy between the Research Committee and the IQAC in meticulously planning this international event. The choice of a digital platform ensures wide participation and reflects our adaptability in fostering global academic exchanges. It is initiatives like these that significantly contribute to enriching the academic ecosystem, promoting research culture, and achieving the quality benchmarks we strive for.

I am confident that the deliberations on **30th November 2025** will be marked by intellectual rigor, vibrant discussions, and the generation of transformative ideas. May this conference forge new pathways for multidisciplinary research and inspire actionable insights for the effective implementation of the NEP.

My sincere best wishes to everyone involved for a remarkably successful, insightful, and productive conference.

Warm regards,

Prof. Dr. Gangotri Nirbhavane
IQAC Coordinator
People Education Society's Dr. Ambedkar College of Commerce and Economics Wadala, Mumbai, Maharashtra, India

BEST WISHES MESSAGE FROM CONFERENCE CONVENER

To our Distinguished Keynote Speakers, Esteemed Session Chairs, Respected Paper Presenters, Delegates, and all Participants, A very warm welcome to the **One Day Online International Multidisciplinary Conference** on the theme **"National Education Policy focusing on Multidisciplinary Research: A Global Perspective on Pure Sciences and Applied Sciences with focusing on Commerce, Accounts, Economics, Law, Technology, and Sustainable Development."**

It is both an honor and a great responsibility to serve as the Convener for this pioneering academic endeavour. This conference is born out of a collective vision to translate the transformative spirit of the National Education Policy (NEP) 2020 into a dynamic platform for scholarly exchange. By weaving together threads from the diverse realms of Pure Sciences, Applied Sciences, Commerce, Economics, Law, and Technology, we aim to construct a holistic tapestry of knowledge aimed at Sustainable Development—a goal of paramount global importance.

On behalf of the entire Organizing Committee from the Research Committee & IQAC, I extend my deepest gratitude to our revered management, our guiding Principal, the tireless organizing secretaries, committee members, and every volunteer whose dedicated efforts have brought this vision to life. My sincere thanks also to our national and international experts who have graciously agreed to share their insights, thereby enriching our dialogue.

We have crafted this day-long intellectual journey to foster meaningful dialogue, spark innovative ideas, and build bridges across disciplines and borders. The digital mode allows us to transcend geographical constraints, uniting minds from across the globe in a shared mission to reimagine education and research.

I am confident that your active participation will make this conference a resounding success and a memorable milestone. Let us engage, collaborate, and inspire each other.

Wishing you all a highly stimulating, productive, and rewarding conference experience.

Prof. Mr. D. N. Bansode
Conference Convener
One Day Online International Multidisciplinary Conference
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Original Article

Reforms in the Agriculture Sector

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Abstract

The agriculture sector has always been the backbone of India's economy, and despite concerted industrialization in the last six decades, agriculture still occupies a place of pride. It employs around 60% of the total workforce in the country. Understanding the role of agriculture in various areas best explains its significance in the national economy. The agricultural sector is the lifeblood of India's economy. The government's financial allocations have been less for agriculture and irrigation; the contribution of agriculture to GDP has dropped from 7.8% to 1.8%, and now it may be 2.4%. Production has been declining. Higher productivity in cereals and pulses, scientific storage, and a ban on the acquisition of multi-crop lands, are to be considered. However, it suffers from low funds, low income, bad monsoon-cited technology, land reforms, development failure, etc. But these can be declined with the help of reforms like rural reforms, more credit, technology management, new frontiers, public disinvestment, FDI, etc. A mature and civilized nation must cherish its agriculture and protect its farmers.

Keywords: *Land Reforms, Unbalanced development, rural reforms, frontiers, Public Disinvestment, FDI.*

Introduction:

The agriculture sector has always been the backbone of India's economy, and despite concerted industrialization in the last six decades, agriculture still occupies a place of pride. The agricultural sector employs around 60% of the total labor in the country. The role of agriculture in the national economy can be explained by considering the role of agriculture in different areas of the economy. The agriculture sector is the lifeblood of India's economy and the rural economy as well. The government's financial allocations have been much less on agriculture and irrigation compared to other sectors' contribution to the Gross Domestic Product declined from 7.8% to 1.8% and is now 2.4%. Production has been very low. There is higher productivity in cereals and pulses, along with scientific storage. There is a ban on the acquisition of multi-crop lands. Government financial agencies provide 61% of agri-storage capacity (owned and rented). Grain saving is as important as grain saving. In the US, the silos have been built at a distance of 100 to 200 km. Farmers put their stock there. They are given coupons. Farmers encash coupons when they need money or when the market is high.

Need and Importance of the study-

The agriculture sector is the art and science of cultivating the soil, growing crops, and raising livestock. This includes the preparation of plant and animal products for common people to use and their distribution to local and global markets. It provides most of the food and fabrics: Cotton, wool, and leather. These are agricultural products. It supports wood for construction and paper products. All products and the agricultural methods used may vary from one part of the world to another.

Objectives

1. To study the challenges and thrust areas before the agriculture sector.
2. To provide suggestions for the thrust areas of the agriculture sector.

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Research Methodology:-

In this study, the research work is related to the reforms in the Agriculture sector and their impact on micro-irrigation, income, technology, investment, land reforms, and market information. Hence, the data is collected from secondary data sources like newspapers, tax records, censuses, and government departments like housing, social security, electoral statistics, tax records, internet searches and libraries, GPS and remote sensing, km progress reports, journals, newspapers and magazines, books, personal sources, world economic forum reports, the economic survey of India, and five-year plan documents.

Findings of the study:

1) Funds not spent on micro irrigation:-

The impending introduction of the food security bill in Parliament and the escalating food inflation have underscored India's agricultural shortcomings. Agriculture experts have constantly stressed building up an extensive irrigation system, as 60% of the agricultural field is rainfed. But each year, a substantial part of the funds released by the Central Government. for micro irrigation lie unused. A recent report by MCX and PWC has revealed the huge difference between funds allocated and spent in rupees. ₹. 28,215 lakh of the center assistance remained idle in the years 2008–2009 under the micro-irrigation programme across the states.

2) Income:-

The two tables of agricultural income are directly attributable to low prices. It is fashionable to say that the prices of food and food products are high and hurt the common man. The WTO has a formula to measure the aggregate support given to agriculture. It is called the aggregate measure of support. So far as India is concerned, the AMS is negative. That means, notwithstanding input subsidies and minimum support prices, India's farmers bear the burden of a negative subsidy! India's agricultural products are subsidising consumers.

3) Bad Monsoon:-

In a bad year, when the monsoon fails or the crop is affected, he slips further down the ladder. The farming community gets impoverished. Many sink deeper into debt. Some commit suicide. The monsoon was erratic from 2000–2001, and as a result, rice output declined by 3.1 million metric tonnes. In 2001–2002, if floods were there in one part of the nation and drought in another, the situation would become worse.

4) Limited use of technology:-

With effect from 1961 onwards, the focus shifted to the use of seed fertilizer and water technology, known as the new agricultural action plan. However, the new strategy succeeded only in wheat and, to a small extent, in rice, other foods, and non-food crops, which did not show perceptible improvement in production. Dry land cultivation was not touched at all by the new agricultural strategy.

5) Decline in Investment in agriculture:-

We have generally been allowed the opportunity to understand that government. The investment was significant in boosting growth in agriculture. Besides, the role of the government was not only to raise investment but also to induce private investment in agriculture.

Public investment is a great disappointment. After showing an unhand in the seventies, public investment in real terms has generally declined, probably due to the diversion of resources from investment to current expenditure in the form of increased input and input subsidies.

6) Failure of land reforms:-

The government failed to implement the land reform measures, resulting in marginal farmers, fewer labourers on the land, or protection of tenants from exploitation or eviction. The government reconciled itself to its failure to push for progressive land reforms and shifted the emphasis to technological changes.

7) Unbalanced agricultural development:-

The bulk of the increase in output, particularly food grains, had been concentrated in a few progressive regions that were already enjoying high levels of food grain consumption. As a result, the marketable surplus of food grains had been rising at a high rate in these states, resulting in the accumulation of large stocks with the government. with the attendant problems of storage and distribution and the cost of storage and distribution.

8) Failure to control the growth of the rural population:-

The government failed to arrest the rapid growth of the population in rural areas and also to create non-agricultural employment in the rural sector so that those who could not be provided land in the programme of land redistribution could be provided non-agricultural employment to make a living. A programme of enlarging non-agricultural employment, if it could grow faster than the increase in the total labour force, could, after some time, help to reduce the excessive pressure of the population on land.

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9) Lack of standardization and grading:-

In the absence of standardisation and grading, adulteration is the consequence. Each middleman may adulterate the produce to his short-run advantage. This poses a problem in assigning prices to the commodities as per the quality specifications. It is alleged that no proper relation exists between the price and quality of the agricultural commodities, and this situation thwarts the farmers from formulating a remunerative price insistent on the quality of the product.

10) Lack of Market information:-

If the Marthe mechanism has to work efficiently, The market information is of two types, viz., market intelligence and market news. Market intelligence indicates a record of past information about prices, arrivals, etc. Market news provides current information on prices, arrivals, etc. But in reality, the farmers, more often than not, are in the dark as far as this information is concerned. The farmers do not have information on the existing prices of the product in the important markets. By and large, the farmers rely on the price information furnished by the traders. The price information provided generally is quite advantageous to the traders rather than to the farmers.

Suggestions:-

1) Rural Reforms:-

All this calls for a range of rural reforms at various levels. Our Krishi Vigyan Kendras and extension service system have an indirect need for restructuring and improvement. We do not see here any new, big ideas on how we can extend the benefits of modern science and technology effectively to our farmers. All over the country, we find bureaucratic hurdles have put a stop to revitalising our extension service. We hope our scientists and technologists and the Ministry of Food and Agriculture will look into it and find new pathways to revitalise our extension services. The way our agricultural universities and research institutions work, we are required to revitalise the Indian agricultural research system.

2) More credit:-

We have to think fresh in the way we extend credit to our farmers, and we say so for more than one reason. As our agriculture becomes more commercialised, there will be more belief in the commercialised inputs of agriculture. Farmers will need, therefore, more credit. If you are operating a system in which more and more innovation is also a byproduct of the functioning of not the public sector system but of private enterprise, that's the reality. In our own country as well as abroad. Now, for a greater reason, science and technology are also being increasingly privatized. What are the implications of transforming our agriculture in this new era of increasingly privatised science and technology? This is also an issue over which we must ponder. If we don't pay adequate attention to this aspect of sustaining our agricultural growth in this new era, public-private partnerships are nothing more than buzzwords. We have to convene around a viable development strategy and seek guidance as to how to cope with this buzzword.

3) Vision:-

Our vision of rural India is a modern agrarian industrial and service economy co-existing side by side, where people can live in well-equipped villages. There is much that modern science and technology can do to realise this vision. We do believe that knowledge can contribute a great deal to this gigantic national effort. Therefore, scientists have to play an exceedingly important role in this realm.

Many of us have been preoccupied with the problem of agricultural production, and productivity has hit a growth plateau. Dr. Swami Nathan has repeatedly alerted us to the need to give a new boost to agricultural research. We do recognise the need to increase the efficiency of the utilisation of inputs, the need to improve farm management practices, and the need to reduce post-harvest.

4) Technology Management:-

We have to focus more attention on the management of cultural research and technology systems. We must also ponder why Bihar, which was chosen to be the original location of the Indian Institute of Agricultural Research, has failed to catch up with the rest of the country. We also do believe there is a need for increased application of science and modern technology to forest conservation and management, environmental protection, management of our animal husbandry resources, water conservation, and utilisation of herbs and plants. We need a harmonious blend of advanced science and technology, appropriate technology, and local knowledge to ensure an equitable distribution of the benefits of new knowledge.

5) Seven Components:-

a) Soil health enhancement through concurrent attention to the soil's physics, chemistry, and microbiology.
b) Water harvesting, water conservation, and sustainable and equitable use of water
c) Access to affordable credit and crop and life insurance reform.
d) Development and dissemination of appropriate technologies.
e) Improved opportunities, infrastructure, and regulations for Marthe’s marketing of produce.
f) The application of science & Biotechnology for the improvement of seeds and utilization of herbal and other plants.

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g) The application of science to animal husbandry to improve the productivity of our livestock and poultry.

6) New Frontiers:-

The focus of our agriculture has also shifted from low-value crops to high-value crops. Apart from government-funded search and extension work, we now have privately funded R&D and extension services, like e-couple. As we saw earlier, with the recent privatization of science and technology, there is also an implication for the future of our agricultural growth. How to manage this technological revolution that does not hurt our farmers but enables us to reach new frontiers of production is something we do believe requires some fresh thinking.

Our scientists must work with the government and non-government organizations, local bodies, and corporations to impart knowledge to their users. The revolution in information technology has opened up new opportunities. It has made it easier for us to impart knowledge to our users. However, the market for knowledge has not yet fully developed in rural areas. It is the responsibility of government or non-governmental organizations, farmers' organizations, and suppliers of such knowledge-based services to create such a market.

7) Tasks on the horizon: -

Our track record in these areas has been impressive and holds the promise of more development. Perhaps a much sharper focus is required on strategic research in plant technology. Plants as biofactories are seen as potential procedures for drugs, vaccines, biofuels, and bioplastics. Research in these areas can be enormously beneficial to a country like ours. It can have a global act too, but for all, they need a research system that is well-functioning and adequate for the tasks that are on the horizon.

If the pattern of energy consumption and utilisation in Indian agriculture can be altered, made more environmentally friendly, and made less dependent on fossil fuels, it could have far-reaching consequences for our growth process, our environment, and the well-being of our people.

Indian agriculture certainly needs new investments. It needs new productive-enhancing measures. It needs a new wave of entrepreneurship. The agricultural credit system must respond to the needs of the farmers. And so should our scientists and managers. A greater public-private Partnership is required, but it must not remain a mere buzzword. It can contribute to the revitalization of public OT institutions and programmes, and for this, we must use all our knowledge, wisdom, and experience both in the public and private sectors.

8) Much needs to be done:-

We admit that much still needs to be done to improve the prospects. For farmers, especially in refrain-ideas and dry-land agriculture, we will need to work towards ensuring remunerative prices for our farmers. We are aware of the acute distress of our farmers, who bear the burden of heavy debt. Most importantly, we must ensure that more people get employment in manufacturing and service so that the disproportionate burden on agriculture in providing a livelihood to two-thirds of our population gets reduced.

The results of our efforts to improve agriculture are visible in some places. Farmers are getting better prices for many crops. This helps hurt the common man when the prices of essential foods rise. Commodities go up. We need to understand that if we want better prices for farmers so that they earn a better livelihood, the prices of what they produce and sell will have to go up.

9) Others:-

a) To promote public investment in agricultural research, rural infrastructure, and irrigation.
b) To increase rural credit with a low interest rate.
c) To introduce the aerial programme for dry-land farmers. e.g., water management, the Land Development Programme.
d) To provide security for the farmer who suffers a loss from the international currency Currency Depression.
e) To provide a better minimum price or reasonable price through a marketing system to the farmers from the backward districts, backward states, and poor states as well.
f) To take corrective action on the debts of farmers.

10) Human Resources-

The complicated problems of human resources and the demand process need to be classified in detail to assess the impact of various contributing indicators on policy alternatives. The graduates from countries outside of the agricultural education system constitute supply, whereas demand stems from various employment avenues.

Conclusion:-

Hence, as a mature and civilised nation, we must cherish its agriculture and protect its farmers. If the price for a robust agricultural sector is to pay a rupee ore for a kilogramme or litre of food products, we must be prepared to pay that price.

I usually turn to my favourite philosopher, Saint Thiruvalluvar, who wrote over 2000 years ago, "Aran Izhu Kathu aPallaviNikki Maran zhukka." Manam Udayathu Arasu (English) They are good rulers who observe ethics,

commit no crime, and walk the path of righteousness and courage. Thus, great importance is attached to your deliberations, and I conclude by wishing you success in your endeavour.

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Original Article

Marketing Innovations and Customer Retention Patterns in Traditional Grocery Retail

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Abstract

Traditional grocery shops continue to serve as an essential part of local communities. However, the rise of supermarkets, hypermarkets, and online grocery delivery services has created strong competition. This study explores how traditional grocery retailers use marketing innovations to retain customers. The paper examines new marketing techniques, the behaviour of grocery consumers, and the connection between innovation and customer loyalty. Findings show that easy-to-use digital payments, neat store display, quick home delivery, personalised service, and small promotional activities play a major role in building consumer loyalty. The research concludes that traditional grocery shops can remain competitive and maintain long-term customers by combining their personal service approach with simple, low-cost marketing innovations.

Keywords: *Traditional Retail, Marketing Innovation, Customer Retention, Consumer Behaviour, Digital Tools, Grocery Marketing, Loyalty, Home Delivery.*

Introduction

Grocery retailing has changed rapidly in recent years. Modern shopping formats such as supermarkets, convenience chains, and online grocery platforms have grown quickly. In this environment, traditional grocery shops need to update their methods to satisfy customers and meet new expectations. Although these small shops operate with limited space and resources, they are valued for their convenient location, familiarity, and long-term relationships with customers. To remain relevant, traditional grocery retailers must use marketing innovations. Marketing innovation includes new ideas, improved services, digital tools, or better customer-handling practices that increase customer satisfaction. Innovations do not always require high investment; even simple changes can create a positive customer experience.

Customer retention is a key factor for the survival of traditional grocery shops. When customers return regularly, they bring stable income and recommend the store to others. This paper focuses on understanding how marketing innovations influence customer retention patterns in traditional grocery retail.

Review of Literature

Various researchers have studied retail marketing, customer retention, and innovation. Philip Kotler, in his marketing theories, explains that businesses can create strong customer relationships through value-based strategies. Innovation helps companies deliver better value, which leads to higher loyalty.

Berry's Relationship Marketing Theory states that emotional connection, trust, and communication are essential for customer retention. Traditional grocery stores naturally build these long-term relationships.

Studies from the Asian retail sector reveal that small neighbourhood shops remain popular because they offer quick service, personal attention, and flexible purchasing options.

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Research on digital transformation shows that consumers increasingly prefer stores that offer digital payments, online ordering, and quick response communication. These features add convenience and save customers' time.
Several studies in Indian retail highlight that traditional grocery shops face pressure from large retail chains and online grocery apps. To overcome this, they must adopt simple innovations such as UPI payments, neat store layouts, loyalty cards, and WhatsApp-based ordering.
The literature shows a clear link between marketing innovation and customer loyalty. When stores introduce new methods that improve the shopping experience, customer retention increases.

Objectives of the Study:

- To identify marketing innovations used by traditional grocery retailers.
- To understand the behaviour of customers and factors affecting their loyalty.
- To examine how marketing innovations influence customer retention.
- To study challenges faced by traditional grocery retailers in a competitive environment.
- To suggest practical strategies for improving customer retention.

Importance of the Study:

- **Importance for Retailers:** Retailers can learn which innovations help them attract and retain customers effectively.
- **Importance for Customers:** The study highlights how innovations improve convenience, comfort, and service quality for consumers.
- **Importance for Academic Research:** This research adds new insights into the relationship between innovation and customer retention in traditional retail.
- **Importance for Policy Makers:** The findings can guide training programs, digital literacy campaigns, and support schemes for small shop owners.
- **Importance for the Retail Industry:** Understanding innovation helps the entire sector grow in a more balanced and customer-focused way.

Research Methodology:

This study uses a descriptive research methodology to examine how marketing innovations influence customer retention in traditional grocery retail. Primary data was collected through structured questionnaires and brief interviews with both customers and shopkeepers selected using convenience sampling. The responses were quantified and analyzed using simple statistical tools such as percentage analysis, frequency tables, and charts. Secondary data from books, journals, and online research articles supported the interpretation of findings. The study focuses on understanding practical marketing techniques used in traditional stores and how these techniques contribute to repeat buying, customer satisfaction, and loyalty, while acknowledging limitations such as sample size and respondent bias.

Marketing Innovations in Traditional Grocery Retail:

Traditional grocery stores are adopting both simple and modern innovations to stay competitive. These include:

- **Digital Payment Options:** UPI, QR codes, and mobile wallet payments make transactions quick and stress-free for customers who prefer cashless shopping.
- **WhatsApp and Phone Ordering:** Customers can send their shopping list through messages, reducing the need for physical visits. This convenience is especially helpful for working families.
- **Quick Home Delivery:** Providing fast home delivery strengthens customer loyalty because it saves time and adds comfort to their daily routine.
- **Better Store Display:** Neat shelves, organized products, and clean surroundings create a pleasant shopping experience and build a positive store image.
- **Local Promotional Activities:** Festive discounts, small price reductions, combo packs, and free carry bags help attract customers without heavy expenditure.
- **Personalised Attention:** Traditional retailers often know their customers personally, remember their preferences, and maintain friendly communication. This creates emotional loyalty.
- **Social Media and Digital Communication:** Stores use WhatsApp status, local groups, or simple social media posts to inform customers about new products and deals.
- **Inventory Management Tools:** Basic mobile apps help retailers track stock, reduce wastage, and ensure product availability.

Consumer Retention Patterns in Traditional Grocery Retail:

Customer retention depends on multiple behavioural patterns:

- **Regular Buying Habits:** Many customers prefer visiting the same store out of habit and comfort.
- **Convenience-Based Loyalty:** If the store is near their house, provides fast service, and has flexible timings, customers remain loyal.

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- **Relationship-Based Trust:** Personal relationships between retailers and customers create a strong sense of loyalty.
- **Product Quality and Freshness:** Availability of good quality and fresh products encourages customers to return.
- **Credit Facility Loyalty:** Many traditional stores offer credit, which helps build long-term trust.
- **Price Satisfaction:** Reasonable prices and occasional offers keep customers satisfied and loyal.

Link Between Marketing Innovations and Customer Retention

Marketing innovations strongly support customer retention in many ways:

- **Higher Convenience Leads to Higher Loyalty:** Digital payment, home delivery, and message-based ordering reduce customer effort and increase satisfaction.
- **Improved Experience Increases Returning Customers:** A clean store, friendly staff, and well-arranged products encourage customers to revisit.
- **Personalised Marketing Strengthens Emotional Loyalty:** Traditional stores use personal relations as a marketing tool, making customers feel valued.
- **Modern Tools Help Traditional Stores Compete:** Innovations help small stores stand strong against large supermarkets and online platforms.
- **Better Communication Enhances Engagement:** Informing customers about offers and new items improves store visibility.
- **Loyalty Programs Encourage Repeat Visits:** Reward points or small discounts motivate regular buying.

Key Findings

- Traditional grocery stores are gradually adopting new marketing tools and techniques.
- Customer loyalty mainly depends on convenience, trust, and personal service.
- Simple innovations like digital payments and WhatsApp orders make a big difference in consumer satisfaction.
- Emotional bonding is a unique strength of traditional retailers.
- Marketing innovations do not require large investments; small improvements also bring positive results.
- Combining traditional methods with modern innovations helps stores remain competitive.

Recommendations

- **Promote Digital Adoption:** Introduce UPI payments, QR codes, and simple billing systems.
- **Improve Store Environment:** Clean and organized stores create a positive customer experience.
- **Use Local Marketing Strategies:** Share offers through WhatsApp groups or small printed leaflets.
- **Develop Loyalty Rewards:** Offer points or discounts to repeat customers.
- **Enhance Customer Service Skills:** Friendly and respectful communication builds trust.
- **Focus on Quick Home Delivery:** Maintain timely and reliable delivery services.

Conclusion

Traditional grocery retail holds a strong position because of trust, familiarity, and personal service. However, in a competitive market, these stores must adopt simple and effective marketing innovations. Innovations like digital payments, home delivery, neat store layout, personalised communication, and local promotions significantly increase customer retention. When traditional retailers blend modern tools with their existing strengths, they gain a competitive edge and ensure long-term customer loyalty. The study clearly shows that innovation and personal service together create a powerful strategy for customer retention in traditional grocery retail.

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Original Article

Sustainable Globalization: Balancing Profit, Planet, and People in the Modern Economy

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Abstract

The global economy is continuously evolving, driven by production, trade, technology, and capital flows, which have created numerous economic opportunities. However, this rapid growth has also led to significant challenges, including environmental imbalances, overexploitation of natural resources, social inequality, and pressures on the workforce. In this context, the concept of Sustainable Globalization has emerged, focusing on balancing economic development, environmental protection, and social justice. The primary objective of this research is to examine how a sustainable global development model can be implemented within the Profit–Planet–People framework, ensuring economic gains while maintaining ecological balance and promoting social welfare. The study provides a detailed analysis of global supply chains, green technologies, renewable energy transitions, carbon-neutral industries, circular economy practices, and social justice initiatives. It also explores challenges such as global inequality, resource constraints, climate change, and impacts on local communities. The findings indicate that profit is not merely an economic measure but is closely linked to social responsibility. Environmental protection is integrated with industrial practices, energy policies, and business model restructuring, while human welfare is directly connected to local communities, Labour rights, and inclusive development. Achieving long-term sustainable globalization requires coordinated efforts from governments, industries, international organizations, local communities, and consumers. Overall, Sustainable Globalization represents a comprehensive framework for ethical, environmentally responsible, and inclusive growth. By maintaining a balance between profit, planet, and people, the modern economy can progress towards genuinely sustainable and equitable development, ensuring a resilient and fair future for all stakeholders.

Keyword: *Sustainability, Globalization, Inclusivity, Green Growth, Circularity, Ethics*

Introduction:

The concept of globalization is not new; it has deep roots in centuries-old trade routes, maritime explorations, and the continuous exchange of cultures. Since ancient times, humans have crossed geographical boundaries to establish economic, social, and cultural connections, fostering growth and exchange. However, alongside these historical linkages, challenges such as unequal distribution of resources, overexploitation of natural assets, environmental degradation, and social disparities have emerged. Today, globalization extends beyond mere economic expansion, encompassing complex social and environmental realities. In the modern economy, rapid industrial and technological advancements have made profit generation a central focus for businesses, institutions, and nations. However, this intense pursuit of economic growth has contributed to environmental imbalances, including overconsumption of natural resources, rising carbon emissions, and the impacts of climate change. Simultaneously, vulnerable social groups face challenges such as Labour rights violations, wage inequality, and unsafe working conditions. Consequently, the tension between profit, environment, and society has intensified, creating a complex and multidimensional conflict. Against this backdrop, the "Profit–Planet–People" framework has gained significance. This approach emphasizes balancing economic gain with environmental stewardship and social well-being. It asserts that while pursuing financial growth, businesses and nations must simultaneously safeguard the planet and enhance human welfare.

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The primary objective of this research is to explore how sustainable globalization can be achieved by addressing the conflicts among profit, environmental sustainability, and social equity. The study examines the historical and social context of globalization and evaluates strategies for long-term balanced growth. The scope of this research includes global supply chains, green technology, renewable energy transition, carbon-neutral industries, social justice initiatives, and multi-stakeholder collaboration. Overall, understanding and implementing the Profit–Planet–People framework is critical for creating a sustainable, ethical, and inclusive global economy where economic development, environmental protection, and social welfare progress hand in hand.

Smart Profit: Responsible and Inclusive Growth

In the era of sustainable globalization, the concept of profit is no longer limited to financial gain alone. Modern economic thinking increasingly emphasises "Profit with Purpose," where businesses are expected to integrate social responsibility with commercial success. Smart Profit refers to growth that is ethical, inclusive, and aligned with long-term societal welfare. It highlights that profitability must coexist with transparency, human welfare, and environmental consciousness. A key component of this approach is Corporate Social Responsibility (CSR), which encourages companies to contribute to community development, environmental protection, and social upliftment. However, contemporary sustainable business practices go beyond traditional CSR and move towards the idea of Shared Value Creation. This framework suggests that businesses can simultaneously generate economic benefits and create measurable value for society by addressing social issues through innovation and strategic decision-making. Shared Value transforms social responsibility from a charitable activity into a core business strategy, enhancing competitiveness and societal development together. Indian and global industry examples illustrate this shift effectively. Tata Group, through its strong CSR foundation, rural development programmes, and emphasis on ethical business, demonstrates how profit and social purpose can be integrated sustainably. Unilever's Sustainable Living Plan showcases how a multinational corporation can reduce its environmental footprint while expanding its market through socially conscious initiatives. Similarly, the rise of green entrepreneurship—such as renewable energy start-ups, eco-friendly products, and zero-waste businesses—indicates that profitability can be achieved through environmentally responsible innovation. Thus, Smart Profit embodies a vision of growth where economic success fuels social progress and ecological responsibility. It establishes the foundation for a more inclusive and sustainable global economic model, ensuring that business prosperity contributes meaningfully to people and the planet.

Green Planet: Technology for Environmental Balance

In the era of rapid globalization, maintaining environmental balance has become a critical global priority. Green technologies, renewable energy systems, and carbon-neutral industries play a transformational role in reducing ecological degradation and promoting sustainable development. The core purpose of green technology is to minimize environmental impact and ensure efficient utilization of natural resources. Solar power, wind energy, hydroelectricity, biofuels, and green hydrogen are emerging as clean energy alternatives that significantly reduce dependence on fossil fuels. To accelerate environmental efficiency, modern tools such as AI, IoT, and Data Analytics are being increasingly integrated into environmental management. AI-driven models help forecast pollution levels, optimize energy usage, and regulate industrial carbon emissions in real time. IoT-based sensors provide accurate data on water systems, waste management, transportation flows, and resource consumption. Through Data Analytics, governments and industries can formulate scientific and evidence-based environmental policies, thereby improving environmental governance. At the core of this technological shift lies the principle of "Sustainability through Technology." Technology is no longer merely an instrument of economic growth but a strategic tool for protecting the planet. Innovations such as carbon-neutral production systems, green infrastructure, smart cities, electric mobility, and waste-to-energy projects demonstrate how technological advancements can lead to ecological restoration. Thus, the integration of green technology and digital innovation provides a clear pathway towards protecting the planet while supporting economic progress. Environment-friendly technologies are emerging as foundational pillars of a sustainable global economy, ensuring that development and ecological balance progress hand in hand.

Empowered People: Social Equity in Global Growth

Within the framework of sustainable globalization, people's empowerment is recognized as a central element of equitable development. Economic growth must not be confined to profits or production capacities; instead, it must ensure equal opportunities, human dignity, and social protection for all. In this context, Social Inclusion, Gender Equality, Education, and Health emerge as four fundamental pillars of human-centered development. The concept of People-First Globalization emphasizes that globalization should not merely expand markets but should enhance the quality of life, strengthen human capabilities, and ensure social well-being. This model places individuals at the center of development, making human welfare an integral part of global progress. Worker welfare forms a crucial component of this approach. Safe working conditions, fair wages, social security systems, accessible healthcare, and skill development initiatives are essential for improving workers' quality of life. In modern economic thinking, principles such as "decent work" and "fair Labour standards" have gained significant importance. The economic participation of local communities and women is equally vital for sustainable growth. Women's education, entrepreneurship, digital literacy, and self-employment programmers contribute not only to household income but also to strengthening the

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broader social structure. In addition, the engagement of local communities in sectors such as agriculture, handicrafts, tourism, and MSMEs reinforces social stability and inclusive development. Thus, Empowered People represents a foundation for sustainable globalization. When individuals are protected, skilled, and offered equal opportunities, economic development becomes more inclusive, resilient, and just.

Ethical Global Supply Chains:

In an increasingly interconnected world, the concept of Ethical Supply Chains has become essential for achieving sustainable globalization. Ensuring ethical practices at every stage—from raw material sourcing to production, transportation, and distribution—helps establish a trade system that is fair, transparent, and environmentally responsible. Key components of this model include Fair Wages, Human Rights, and Green Logistics. The primary goal of an ethical supply chain is to ensure that workers receive adequate wages, safe working conditions, and social protection. Eliminating child Labour, forced Labour, discrimination, and unsafe environments forms the core of human-rights-based supply chain management. Respect for human dignity is increasingly viewed as a benchmark for responsible global trade. Under Green Logistics, emphasis is placed on reducing environmental impact through cleaner transportation, energy-efficient warehousing, waste reduction practices, and low-carbon logistics. These measures support climate-friendly supply chain operations. Equally important are the principles of transparency and accountability. Digital tracking systems, blockchain technology, ESG reporting, and third-party audits ensure that companies maintain ethical standards across all operational stages. Transparent supply chains enhance consumer trust and strengthen corporate credibility. Thus, Ethical Trade serves as a foundational pillar of sustainable globalization. When industries commit to ethical conduct, Labour rights, and environmental responsibility, global supply chains become more resilient, equitable, and sustainable.

Circular Economy: Waste to Wealth

In the modern global economy, the Circular Economy has emerged as a crucial framework for ensuring resource efficiency and environmental sustainability. At the center of this model lies the “Waste to Wealth” approach, which views waste not as a burden but as a valuable resource that can be transformed into new economic opportunities. This approach enables industries to achieve profitability while simultaneously protecting the environment. The Circular Economy primarily functions through Recycling, Remanufacturing, and Zero-Waste Models. Recycling processes give new life to materials such as plastic, metal, paper, and electronic waste, reducing the need for virgin raw materials. Remanufacturing involves rebuilding used products so they can be reintroduced into the production cycle, thereby lowering resource consumption. The Zero-Waste Model aims to design production systems in such a way that almost no waste is generated, ensuring maximum utilization of every component. This model offers multiple advantages: it reduces manufacturing costs, decreases pressure on natural resources, and significantly lowers environmental impact. Consumers benefit from durable and eco-friendly products, while society gains cleaner ecosystems and improved living conditions. Examples include green manufacturing units, e-waste recycling industries, upcycled products, and bio-based industrial materials. Thus, the Circular Economy is not merely a waste management strategy but a comprehensive pathway to future-ready, sustainable economic growth. By integrating “Waste to Wealth,” industries can support both profitability and environmental responsibility, making it a key pillar of sustainable globalization.

Future Directions and Innovation:

The future of sustainable globalization must remain tech-driven, ethically-led, and people-centered. Emerging innovations such as AI, Blockchain, Green Finance, and Smart Technologies are shaping the next phase of global development. Artificial Intelligence supports energy efficiency, optimizes waste management, enhances climate risk assessment, and improves environmental monitoring. Blockchain technology strengthens ethical trade by ensuring transparency and accountability across global supply chains. Meanwhile, Green Finance redirects investments towards eco-friendly projects, promoting long-term environmental stability. A critical pillar of future sustainability is Education for Sustainability. It equips students, professionals, and entrepreneurs with knowledge about environmental protection, ethical business practices, renewable technologies, and inclusive growth. This empowers future generations to make responsible economic and ecological decisions. Another important direction is Digital Sustainability, which focuses on reducing the environmental footprint of digital technologies. This includes lowering the energy consumption of data centers, adopting green IT practices, and promoting low-carbon digital solutions. Similarly, Smart Cities aim to use technology for efficient mobility, energy management, waste reduction, water conservation, and improved urban governance, thereby contributing to eco-friendly urbanization. Overall, the future global model is moving towards an integrated vision of “Tech-driven, Ethically-led, People-centered Development.” Through innovation, cross-sector collaboration, and sustainable technologies, the world can achieve a development pathway that is prosperous, inclusive, and environmentally resilient.

Conclusion:

The study highlights that achieving a balanced relationship between Profit, Planet, and People is essential for the future of a stable and fair global economy. While globalization has brought significant economic opportunities, it has also created complex challenges such as social inequality, Labor exploitation, environmental degradation, and

increasing pressure on natural resources. These issues show that traditional growth models are no longer sufficient for long-term progress. In this context, Sustainable Globalization emerges as a comprehensive and forward-looking approach. Profit, in the modern world, cannot be separated from responsibility and ethics. Businesses are increasingly expected to integrate sustainable practices, ensure transparency, protect human rights, and invest in long-term welfare. ESG frameworks, green financing, and socially responsible business models represent this shift from profit alone to "profit with purpose." Ensuring the protection of the planet is equally critical. The world is facing urgent environmental threats—climate change, pollution, shrinking biodiversity, and rising carbon emissions. Green technology, renewable energy, circular economy systems, and carbon-neutral industrial frameworks are essential tools for restoring ecological balance. Sustainable innovation is no longer optional; it has become the foundation of global resilience.

People remain at the heart of all sustainable development efforts. Inclusive growth—covering education, healthcare, gender equality, worker welfare, and social justice—is a crucial pillar of global progress. Strengthening local communities and empowering marginalized groups ensures that the benefits of globalization are shared fairly rather than concentrated among a few. "Sustainability is the bridge between today's progress and tomorrow's survival." Sustainable globalization must therefore be technology-driven, ethically guided, and deeply people-centered. Only by maintaining harmony between economic ambition, environmental responsibility, and social well-being can the world move towards a future that is stable, equitable, and environmentally secure.

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Original Article

Attitude Towards Using Ai Tools Among Student & Teachers

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Abstract

The study aims to find out the Attitude towards using AI tools among Student Teachers. Positive attitude towards the AI tools among Student Teachers is increasingly positive for several reasons. Overall, a growing number of students are recognizing the benefits of the AI tools model in promoting active learning, fostering a deeper understanding of the material and preparing them for the demands of the 21st century education system. The research was a survey type, which consists of purposive sampling of 150 Student Teachers of Vellore district. The author had prepared and validated the attitude scale and personal data sheet was prepared by the investigator. The interpretation of data was done with statistical methods in percentage analysis, mean, standard deviation and t-test.

Keywords: *Attitude, AI Tools, and Student Teachers.*

Significance of the Study

The study emphasizes the significance of enhancing teacher education through the examination of student teachers' perceptions and usage of emerging technologies, particularly AI. It reveals notable differences in attitudes towards AI tools based on gender and locality, indicating the necessity for differentiated interventions to ensure equitable access to AI literacy and digital competence among teacher trainees. The findings support the integration of AI competencies into teacher training curricula, enabling future educators to effectively utilize AI in classrooms. Additionally, the research provides actionable insights for education administrators, policymakers, and teacher educators to address disparities and promote positive attitudes towards AI, ultimately fostering innovative and technology-enhanced teaching practices.

Review of Related Studies

N. Vivekanandha (2025) conducted a study examining the role of AI tools, particularly Chat GPT, in lesson planning and assessment among B. Ed students in the Madurai region. The research utilized a descriptive survey design involving 100 students from five educational institutions, employing quantitative methods for data analysis. Key findings revealed a generally positive attitude towards AI tools among students, with widespread usage of Chat GPT noted. However, challenges related to digital literacy and ethical considerations were also highlighted.

Dana Dobrovská (2024) conducted a survey of 2,230 students regarding their attitudes toward AI in education. The findings indicate a high level of familiarity and moderate use of AI, with students noting benefits such as time efficiency and accessibility. However, concerns about credibility, overreliance, and misuse were prevalent, alongside a recognized need for ethical guidelines. The survey explored students' perceptions on AI's benefits, challenges, and ethical considerations, revealing that while many students utilize AI primarily for information processing, there is limited engagement with ethical issues. Although teachers are generally open to learning about AI, its practical implementation in practice remains constrained. Jay Rodel C. Serdenia et al. (2025) conducted a quantitative cross-sectional study examining the perceptions of 392 future teachers regarding Artificial Intelligence (AI) in education, focusing on attitudes, acceptance, and perceived effectiveness.

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The findings indicated moderate acceptance and positive attitudes towards AI, with significant variations based on age group. The descriptive-correlation design highlighted strong correlations among acceptance, attitude, and perceived effectiveness, emphasizing the necessity for strategic AI integration in teacher education.

Objectives

1. To find out the level of attitude towards using AI tools among Student Teachers with regards to the gender.
2. To find out whether there is any significant difference in attitude towards using AI tools among Student Teacher with regards to their locality of residence.

Hypotheses

H.1: There is no significant difference in attitude towards using AI tools among Student Teachers with regard to their gender.

H.2: There is no significant difference in attitude towards using AI tools among Student Teachers with regard to their locality of residence of Student Teachers.

Delimitation of the Study

The study is limited to Student Teachers of Vellore district

The investigator has proposed to choose only 150 student teachers as sample for the study.

The survey method was adapted in this study to find out the "Attitude towards using AI tools among the Student Teachers

Population and Sample

The population of the present study consists of student teachers those of Vellore district, Tamilnadu. The investigator has used simple random sampling technique for selecting the sample from the population. The sample consists of 150 Student Teachers. Among them 75 were male and 75 were female Student Teachers.

Tools Used

This study aims to evaluate the Attitude towards using AI tools. The investigator adopted and validated the Attitude Scale.

Statistics Techniques Used

Percentage analysis, Mean, SD and't' test were used in this study.

Analysis of Data

Table -1

Level of Attitude towards using AI tools with regard to their gender and Locality of Residence of Student Teachers

Variables	category	Attitude towards using AI tools					
		Low		Moderate		High	
		Count	%	Count	%	Count	%
Gender	Male	29	38.66	37	49.33	7	9.34
	Female	24	32	39	52	12	14
Locality of residence	Rural	30	40	41	56.67	4	5.34
	Urban	19	25.33	48	64	8	10.67

Table-2

Difference between Male and Female Student Teachers in the Attitude towards using AI tools

Variables	Gender	N	Mean	S.D	'P' Value
Attitude towards using AI tools	Male	75	69.72	12.252	3.018
	Female	75	65.33	10.228	

Table-3

Difference between Rural and Urban Student Teachers in the Attitude towards using AI tools

Variables	Locality of Residence of Student Teachers	N	Mean	S.D	'P' Value
Attitude towards using AI tools	Rural	75	69.67	7.279	2.814
	Urban	75	71.5	9.086	

Results and Discussion

The table 1 reveals that the level of Attitude towards using AI tools with regards to their gender and locality of residence of Student Teacher. In this level 9.34% of male and 14.0% female Student Teachers have high in their attitude towards using AI tools. 49.33% of male and 52.0% female Student Teachers have moderate in their attitude towards using AI tools, 38.66% of male and 32.0% female Student Teachers have low in their attitude towards using AI tools. And in this level 5.34% of rural and 10.67% urban Student Teachers have high in their attitude towards using AI

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tools, 56.67% of rural and 64.0% urban Student Teachers have moderate in their attitude towards using AI tools, 40.0% of rural and 25.33% urban Student Teachers have low in their attitude towards using AI tools.

The table 2 reveals that there is significant difference between male and female student teachers in their attitude towards using AI tools, while comparing their mean scores the male (6972) student teachers are better than the female (65.33) student teachers.

The table 3 reveals that there is significant difference between rural and urban student teachers in their attitude towards using AI tools. While comparing their mean scores the urban (71.50) student teachers are better than the rural (69.67) student teachers.

Recommendations

AI-focused modules should be included in teacher training to improve competencies and attitudes towards AI tools and seminars and workshops should be organized to keep informed about AI trends and applications.
Digital infrastructure and access to AI resources should be improved in rural teacher training colleges to ensure equity.
Promote confidence in both male and female student teachers in using AI through mentorship and peer-learning.
Provide hands-on opportunities for student teachers to engage with AI tools in educational contexts.
Establish clear policies from government and academic institutions to facilitate ethical AI use in teacher education.

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Original Article

India's GST 2.0: A Second-Generation Reform for an Inclusive Economy

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Abstract

The introduction of the Goods and Services Tax (GST) on 1st July 2017 marked a transformative shift in India's indirect taxation system by replacing multiple central and state-level taxes with a unified national tax framework. The recently proposed Next-Generation GST reforms, approved by the 56th GST Council Meeting, aim to simplify the tax structure further through a two-slab system (5% and 18%), improve compliance via digital processes, rationalise tax rates, and reduce burdens on households, MSMEs, farmers, and key sectors of the economy. These reforms focus on consumer welfare, ease of doing business, correction of inverted duty structures, and strengthening domestic manufacturing. Additionally, major reductions in GST rates on essential goods, services, education materials, medical equipment, and agriculture-related machinery are expected to stimulate economic growth, increase tax compliance, and enhance affordability. Overall, the new GST framework seeks to create a more inclusive, transparent, and growth-oriented taxation system that supports India's long-term economic vision.

Keywords: *Goods and Services Tax (GST), Next-Generation Reforms, Two-Slab Structure, Rate Rationalizations Empowerment, Digital Compliance, Inverted Duty Structure, Consumer Welfare, Economic Growth, Tax Simplification.*

Introduction

The Goods and Services Tax (GST), introduced on 1st July 2017, is India's most significant indirect tax reform since Independence. By bringing together multiple central and state taxes into a single, unified system, GST created a common national market, reduced the cascading of taxes, simplified compliance, and improved transparency. Over eight years, GST has steadily evolved through rate rationalisation and digitalization, becoming the backbone of India's indirect tax framework. The 56th meeting of the GST Council, chaired by Union Finance Minister Smt. Nirmala Sitharaman has now approved Next-Gen GST reforms, with focus on improving the lives of the common man and ensuring ease of doing business for all, including small traders and businessmen. In his Independence Day address, Prime Minister Narendra Modi had announced-"The government will bring Next-Generation GST reforms, which will bring down tax burden on the common man. It will be a Diwali gift for you." The reforms, he said, would directly benefit the common man, farmers, MSMEs, women, youth, and middle-class families, while strengthening India's long-term growth.

In line with the PM's vision the GST Council has recommended a comprehensive reform package that includes rate rationalization with a simplified two-slab structure (5% and 18%), sweeping rate reductions across sectors, with focus on common-man, labour-intensive Industries, farmers and agriculture, health, key drivers of the economy. These recommendations are based on consensus among all members of the GST Council to make GST simpler, fairer, and more growth oriented. The revised rates and exemptions will come into effect from 22nd September 2025, ensuring timely relief for the common man, households, farmers, and businesses. Only exception will be specified goods namely, cigarettes, chewing tobacco products like Zarda, unmanufactured tobacco and beedi, for which the existing rates of GST and compensation cess will continue to apply and the new rates will be implemented at a later date

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To be notified based on discharging of entire loan and interest liabilities on account of compensation cess.

7 Pillars of Next-Gen GST Reforms;

Next-Gen GST reforms build on GST's success with a simplified 2-tier structure, fairer taxation, and digital filing for ease and faster refunds. They prioritize consumers by lowering rates on essentials and high-value items, empower MSMEs and manufacturers with smoother cash flows, strengthen state revenues, and boost demand driving consumption and manufacturing growth across India.

1. Building on the success of GST. One Nation, One Tax Expanded the taxpayer base Simpler 2-tier system (5% & 18%)
2. Rationalising rates for fairer taxation. Smoother duty structures Faster processing of refunds
3. Simplifying filing through technology. Easy registration for small & low-risk businesses 90% upfront provisional refunds for exporters Digital compliance with e-invoicing Al-driven risk detection
4. Putting consumers first. Essential goods in the 0-5% bracket High-value items like cars down from 28% > 18%
5. Empowering MSMES & manufacturers. Fixed inverted duty structures Simpler rates to support Make in India
6. Stronger states, stronger Bharat. Sustainable revenue growth for all states Rationalised rates will increase demand
7. Lower taxes = Higher spending. Families buy more, demand rises, industries grow. Cheaper appliances, electronics will increase demand

Simplified Structure, Sectoral Relief;

The latest reforms mark a major simplification of the GST structure. The shift to a two-slab system of 5% and 18%, removing the earlier 12% and 28% rates, will make taxation more transparent and easier to follow. At the same time, a 40% on luxury and sin goods such as pan masala, tobacco, aerated drinks, high-end cars, yachts, and private aircraft ensures fairness and revenue balance. Alongside, registration and return filing have been simplified, refunds made faster, and compliance costs reduced, easing the burden on businesses, especially MSMEs and startups.

Here is a sector-wise follow-up of the reforms and their expected impact.

Food and Household Sector;

Reforms bring direct savings to households by reducing taxes on everyday essentials and packaged foods. GST rate cut on AC, Dishwashers and TVs (LCD, LED) is a dual win. It increases affordability for consumers while strengthening India's electronics manufacturing ecosystem. • Products like Ultra-High Temperature (UHT) milk, Pre-packaged and labelled chena or paneer, all the Indian Breads will see NIL rates • Household goods like soaps, shampoos, toothbrushes, toothpaste, tableware, bicycles now at 5%. • Food items such as packaged namkeens, Bhujia, Sauces, Pasta, Chocolates, Coffee, Preserved Meat etc. reduced from 12% OR 18% to 5% • Consumer durables: TVs (LCD/LED) (> 32'), ACs, dishwashers: 28% → 18%

Home Building & Materials;

The cut in GST on cement and construction materials will give a big boost to the housing sector. This will lower the cost of homes and infrastructure projects, making ownership of houses more affordable. The move is also expected to spur demand in real estate and create new jobs in construction. • Cement: 28% → 18%. • Marble/travertine blocks, Granite blocks, Sand-lime bricks: 12% → 5% • Bamboo flooring / joinery, Packing cases & pallets (wood): 12% → 5%

Automobile Sector;

Clearer classification of vehicles and auto parts will cut down disputes, improve compliance, and support growth in India's automotive manufacturing and exports. • Small cars, two-wheelers ≤350cc: 28% → 18%. • Buses, trucks, three-wheelers, all auto parts: 28% → 18%

Agriculture sector;

Cheaper machinery and lower rates on biopesticides will help small farmers reduce costs and encourage sustainable farming practices. Correcting the inverted duty structure on Fertilizer inputs will boost domestic fertilizer production and reduce dependence on imports, strengthening self-reliance in agriculture. • Tractors: 12% → 5%; tires and parts: 18% → 5%. • Harvesters, threshers, sprinklers, drip irrigation, poultry & bee-keeping machines: 12% → 5%. • Bio-pesticides and natural menthol: 12% → 5%.

Service sector;

Lower GST on hotel stays, gyms, salons, and yoga services will reduce costs for citizens, improve access to wellness, and give a fillip to the hospitality and service industries. • Hotel stays up to ₹7,500/day from 12% to 5%. • Gyms, salons, barbers, yoga GST cut from 18% to 5%.

Toys, Sports & Handicrafts;

Fixing duty structures for man-made fibres will improve the competitiveness of the textile industry, especially in exports. The inverted duty structure in the sector has been corrected with reduction of GST rate on manmade fibre from 18% to 5% and manmade yarn from 12% to 5%. Further, lower GST rates on handicrafts will support artisan

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livelihoods, preserve India's cultural heritage, and promote rural economic growth. • Handicraft idols & statues: 12% → 5%. • Paintings, sculptures: 12% → 5%. • Wooden/metal/textile dolls & toys: 12% → 5%.

Education sector;

Education has become more affordable with exercise books, erasers, pencils, crayons and sharpeners moving to 0% GST. This directly supports families and students, ensuring lower costs of learning materials. Geometry boxes, school cartons, trays: 12% → 5%

Medical sector;

Reduced rates on medicines and medical devices will improve access to healthcare and support domestic manufacturing in the pharma and medical equipment sectors. • 33 life-saving drugs, diagnostic kits: 12% → 0%. • Other medicines including Ayurveda, Unani, Homoeopathy: 12% → 5%. • Spectacles and corrective goggles: 28% → 5%. • Medical oxygen, thermometers, surgical instruments: 12–18% → 5%. • Medical, dental, and veterinary devices cut from 18% to 5%.

Health and life Insurance;

GST exemptions on life and health insurance premiums will expand financial protection and support the vision of Mission Insurance for All by 2047. • GST exemption on premiums for individual life insurance, health insurance, floater plans, and senior citizen policies.

Next-Gen GST:

Benefits for All the Next-Generation GST reforms are designed not just to reduce tax rates, but to create a virtuous cycle of growth.

- Lower Prices, Higher Demand: Cheaper goods and services increase household savings and stimulate consumption.
- Support for MSMEs: Reduced rates on inputs like cement, auto parts, and handicrafts lower costs and make small businesses more competitive.
- Ease of Living: A two-rate structure means fewer disputes, quicker decisions, and simpler compliance.
- Wider Tax Net: Simpler rates encourage compliance, expanding the tax base and improving revenues.
- Support for Manufacturing: Correcting inverted duty structures boosts domestic value addition and exports.
- Revenue Growth: As seen in past reforms, lower rates with better compliance increase collections.
- Economic Momentum: Lower costs → higher demand → larger tax base → stronger revenues → sustainable growth.
- Social Protection: Exemption of GST on insurance and essential medicines strengthens household security and access to healthcare.

Together, these reforms ensure that GST is citizen-centric, business-friendly, and aligned with India's global growth ambitions

The Road to GST Challenges and Milestones;

Before the launch of the Goods and Services Tax (GST), India's indirect tax system was highly fragmented. Every state followed its own tax rates, levies, and procedures, making trade across India complicated and compliance-heavy. Businesses often faced overlapping taxes, inconsistent rules, and limited credit for inputs.

Problems with the Pre-GST Era (VAT system):

- No uniform tax rates across states; additional levies like entry tax raised costs.
- Different rules for returns, audits, and penalties created confusion.
- Weak input tax credit provisions allowed misuse and tax evasion.
- Double taxation (VAT plus service tax) increased the burden on both businesses and consumers. To overcome these challenges, GST was conceived as a unified national tax system. The idea of GST was first proposed in 2000 with an Empowered Committee of State Finance Ministers set up to study sales tax reforms. Taking this idea forward and with extensive consensus building among states, the 101st Constitutional Amendment Act was passed and ratified in 2016, paving the way for GST. GST was formally rolled out at midnight on 1st July 2017, hailed as a "pathbreaking legislation for New India."

The Positive Impact of GST on the Indian Economy

Below are some areas where we have seen positive impact of GST on the Indian economy:

1. Streamlined Tax System

GST streamlined the tax system by replacing multiple indirect taxes with a single tax, reducing complexity and making compliance more manageable for companies.

2. Increased Tax Compliance

GST's technology-driven procedures like online registration, e-filing of returns, and e-way bills have raised tax compliance. The tax base has grown, increasing the government's tax intake.

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3. Economic Growth Boost
GST's simplified tax code, elimination of interstate restrictions, and removal of checkpoints and entrance tax barriers at state borders increased efficiency and decreased logistical expenses. This helped the economy thrive, especially in industries like manufacturing and logistics.
4. Reduction of Tax Burden
By removing the cascading impact of taxes, the GST aims to lessen the tax burden on consumers and businesses. Consumers have benefited from reduced prices of goods and services due to the efficient input tax credit mechanism.
5. Economic Formalisation
GST encouraged enterprises to join the formal tax system, enhancing tax collections, decreasing tax evasion, and improving openness.

Conclusion

The adoption of a simplified GST structure and wide-ranging rate reductions marks a new chapter in India's tax journey. By focusing on affordability for citizens, competitiveness for businesses, and transparency in compliance, these reforms make GST not just a tax system, but a catalyst for inclusive prosperity and economic transformation. Effective from 22nd September 2025, the reforms reaffirm India's commitment to building a simpler, fairer, and growth-oriented GST framework, ensuring both ease of living for people and ease of doing business for enterprises.

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Original Article

Evolution of Non-Performing Assets in India: Trends and Patterns (2014-2024)

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Abstract

The research nabs the decade-long evolution of Non-Performing Assets (NPA) in the Indian banking landscape. This paper examines the reasons, growth patterns, policy responses and macroeconomic consequences of NPAs during this period of turbulence in regulation and shocks to the economy. The study, using secondary data from the RBI, Ministry of Finance, reports from the World Bank, depicts the history related to the increasing and the steadily decreasing NPAs across sectors – public, private and the non-banking financial sectors. The analysis points to a dramatic spike in NPAs during 2014-2018, largely due to defaults on corporate loans and poor credit appraisal processes, followed by what it terms as a policy-led reduction after 2016, post the enactment of the Insolvency and Bankruptcy Code (IBC) and stringent RBI framework. The paper further analyses the effect of the COVID-19 period (2020–2022) on the performance of loans and the quality of assets, leading to a transient rise in stressed assets favourable which was favourably countered by the restructuring steps. It has further examined the sectoral comparisons and pointed out the high exposure in the infrastructure, power, and steel sectors. Despite reforms undertaken to enhance recovery frameworks and transparency, structural vulnerabilities remain, the findings highlight. The paper ends with recommendations for policymakers to maintain asset quality and improve credit discipline to provide financial stability over the next ten years.

Keywords: *Non-Performing Assets, Indian Banking Sector, RBI Reforms, Financial Stability, Economic Growth, Public Sector Banks, Government Sector Banks.*

Introduction:

Non-Performing Assets (NPA) continues to be one of the top-most problems for the Indian banking system and the whole economy. High NPAs are only a symptom of the entire banking system's poor financial health, reflecting the efficiency levels of credit evaluations, risk evaluations, and recoveries. In the last 10-year period (2014–2024), several factors have influenced the trajectory of NPAs in India, including various macroeconomic drivers as slowdowns in growth, corporate loan defaults, policy changes and worldwide financial uncertainties. It was in the 2010s that a decade of significant transformation really happened in India, with the government & the Reserve Bank of India (RBI) taking a range of structural & regulatory initiatives to bolster the stability of the banking system and restore investor confidence. From 2014 onwards, there was a steep increase in NPAs, especially in PSBs. This was largely the result of very aggressive lending to sectors such as infrastructure, power and steel before 2010. A lot of these projects subsequently became unviable due to long regulatory delays, cost overruns, and unfavourable market conditions. The extent of the obscured bad loans came to light during the RBI's Asset Quality Review (AQR) in 2015–16, which led to seats being filled up in bank balance sheets with huge sums of stressed assets. This caused gross NPAs in the Indian banking system to hit a high of approximately 11.2% by 2018, threatening financial stability and credit growth.

Non-Performing Assets NPAs have never been just about banks; they have always been about the economy.

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The higher the NPAs, the lower the profit for the banks, the lower the capital adequacy and the less the room for lending, which translates into less and less investment, leading to no or negligible economic growth. Finally, the 2014–2024 decade was also when the largest policy transitions to reverse this crisis began to take effect.One of the most impactful measures taken in this regard was the introduction of the Insolvency and Bankruptcy Code (IBC) in 2016, a landmark reform aimed at establishing a time-bound insolvency resolution process that would improve recovery rates. The Insolvency and Bankruptcy Code (IBC), along with other measures like the amendments to the SARFAESI Act, the creation of Asset Reconstruction Companies (ARCs) and the Prompt Corrective Action (PCA) framework of RBI, were part of a holistic banking sector clean-up strategy. The effect of these reforms started to show gradually from 2018. Banks further improved in the areas of risk assessment, transparency and corporate governance reforms, supported by the threat of punishment levied by several individuals from banks being put in jail. The recapitalisation of public sector banks by the government offered further solace against bad loan absorption and capital adequacy. As a result, RBI estimates show that gross NPAs fell in a steady trajectory from their peak in 2018 to approximately 3.9% through 2024. But this decline needs to be viewed with caution as it was partly as a consequence of loan write-offs, the restructuring the sale of stressed assets to ARCs, which may have only lessened the visible stock of NPAs without eliminating vulnerabilities.

The COVID-19 pandemic period (2020–2022) created new dynamics in the NPA landscape. Widespread lockdowns halted economic activities, impacting small businesses and household earnings, raising fears of a sharp rise in NPAs. The RBI had earlier rolled out a slew of relief measures, such as loan moratoriums, TLTROs and restructuring schemes for stressed borrowers, to ensure a banking crisis did not take shape. While they contained an immediate surge in defaults, the interventions also obscured pockets of stress on bank balance sheets. While the financial system showed resilience with a gradual recovery of credit growth and improvement in asset quality post-pandemic, risks persisted in some sectors (micro, small and medium enterprises (MSMEs), non-banking financial companies (NBFCs, etc.). If we analyse it sector-wise wise then we can say that the problem of NPAs has not been evenly distributed. Public sector banks have, however, historically borne a heavier load than their private sector peers, especially by lending to large infrastructure projects and under the influence of politics. In contrast, private sector banks had better adoption of credit appraisal mechanisms and diversified loan portfolios, which helped them maintain better asset quality. Rising stress across the NBFC sector was also visible over the period, and the collapse of IL&FS in 2018 highlighted systemic cracks in shadow banking. The third aspect of the NPA problem sites with regard to the lack of investor confidence and financial inclusion. Excessive NPAs deter foreign investments, raise capital costs, and erode depositors' and borrowers' confidence in the financial system. In addition, bank credit resources will be tied up in unproductive assets, which prevent banks from opening credit to the productive sectors, particularly agriculture and small companies. The way forward: So, the effort to reduce NPAs is not merely a financial step but a socio-economic requirement to facilitate sustainable development.

The period spanning from 2014 to 2024 is also a representation of the change in India's approach to NPA management from reactive to proactive. Previous strategies have not solved many disputes, and recovery has occurred almost solely via litigation, a time-consuming and ineffective way to resolve disputes. It prioritises prevention, early detection and remedy, underpinned by greater transparency and accountability, which are hallmarks of the new framework. The establishment of the Central Repository of Information on Large Credits (CRILC) by the RBI, the introduction of the Prudential Framework for Resolution of Stressed Assets, and the credit rating reforms have cumulatively strengthened credit risk monitoring. This blend of institutional innovations could be supported by the technological possibility of using data analytics and AI-based approaches to credit assessment to identify incipient stress as opposed to full-blown crises and keep episodes of mass default at bay.

However, there are challenges still to overcome, even if visible improvement can be observed. Judicial delays, withdrawal of bidders, and valuation problems led to reduced income rates under IBC in recent years. Risk of corporates getting concentrated in the NPA portfolio as large borrowers dominate it. Additionally, increased interconnectedness between banks and NBFCs has created fresh challenges that require tightening regulatory scrutiny. So, on the one side, the NPA ratio has improved, but to sustain the momentum, there is a need to maintain constant vigilance, structural reforms, and reinforced institutional discipline. Overall, the 2014–2024 decade marks an interesting case study of how India faced one of its worst financial crunches with a dynamic response of policy innovations, regulatory changes and institutional restructuring. The working-out of NPAs in this decade tells us not only about the cyclical nature of credit risk but also about the maturity of the Indian financial system to deal with a crisis. The implications of these trends and patterns are important for laying the groundwork for future policies to preserve financial stability and encourage economic growth while truly making the lessons from this past decade contribute to a more resilient banking system.

Objectives of the Study:

Between 2014 and 2024, a decade of rapid growth for bad loans that coincided with landmark policy reforms, the long-persisting problem of Non-Performing Assets (NPAs) has emerged at the centre of discourse surrounding the banking, and indeed the overall economic landscape of India. This research frames out the objectives, to provide a clear

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view of the evolution of NPA over this decade and derive the iterative learning for the desired stability for our Indian banking system.

The major objectives of the study are as follows:

1. To examine the trends and patterns of NPAs in India from 2014 to 2024.
2. To identify the key factors contributing to the rise and fall of NPAs during the period.
3. To evaluate the impact of policy and regulatory interventions on NPA management.
4. To assess the sectoral composition and institutional differences in NPA accumulation.
5. To analyse the effects of the COVID-19 pandemic (2020–2022) on NPA levels and loan restructuring.

With these three goals, the study aims to provide a comprehensive overview of India's performance piecemeal over the last decade in the NPA management and highlights domains that continue to need reform and innovation.

Methodology:

The study is descriptive, analytical, and a comparative approach, which is primarily based on secondary data to meet the above-stated objectives. This methodology blends qualitative and quantitative techniques to comprehensively capture the macro and micro trends, patterns and policy implications of non-performing assets from 2014- 2024.

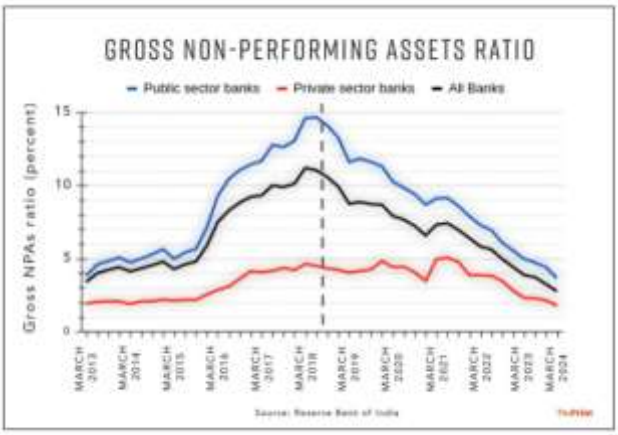
Hypotheses:

The research is guided by the following working hypotheses:

1. There is a significant relationship between economic growth and NPA levels in India.
2. The implementation of IBC (2016) and RBI's AQR (2015–16) significantly improved the NPA resolution process.
3. Public sector banks have consistently shown higher NPA ratios than private sector banks due to governance and lending practices.
4. The COVID-19 pandemic temporarily increased NPAs despite relief measures.

The Evolution of Non-Performing Assets (NPAs) in Indian Banking (2014-2024) encapsulates the changing challenges of the Indian Banking Sector. Between 2014–2018, the NPA ratio in Indian banks rocketed to reach a pinnacle of 14.58% in March 2018. Most of these NPAs nearly doubled due to over-leveraging, poor credit appraisal, and aggressive lending in sectors like infrastructure and power. The problem was compounded by the delayed execution of several projects and a prolonged economic slowdown, resulting in acute stress asset build-up. The phase from 2018 to the end of 2021 for the Indian Banking Sector was a period of stabilisation. Reforms (including the IBC–Insolvency and Bankruptcy Code of 2016) strengthened mechanisms for streamlined debt resolution and corporate restructuring. Also, stronger regulatory scrutiny by the Reserve Bank of India, along with the recapitalisation of public sector banks, kept the rise of NPAs under check. As a result, by March 2021, the NPA ratio had fallen to 9.11 per cent, indicating a gradual recovery in quality, as evidenced by improved risk management practices.

NPAs declined significantly from 2021 to 2024, with the gross NPA ratio decreasing to 2.8% in March 2024. This is mainly due to the strong post-pandemic economic recovery, the effective monitoring of credits, the measures taken to recover loans and an improvement in the banking practice. Secondly, banks utilised more sophisticated risk assessment frameworks and digital monitoring systems to mitigate the credit default risk. On the whole, the 10-year trend proves that the Indian banking sector has proven to be resilient and capable of a responsive approach to asset quality challenges. If the NPA ratios indicate a high degree of progress, complacency, however, could be our undoing. We need to continue lending with the utmost caution and act promptly to avert incidents that threaten our financial robustness. The developing economy context sheds light on the interplay of regulatory reforms, cycles of the economy and efficient management strategies; thus, this period serves as a great context to examine the evolution of NPAs.



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India's gross NPA cycle over 2014–2024 is characterised by an AQR-driven surge peaking around 2017–2018, followed by a durable, policy-led decline that takes system-wide ratios to multi-year lows by March 2024. The public sector bank series rises sharply from mid-decade to a peak near 14.6 percent around March 2018 as latent stress is recognised, then falls consistently toward the low single digits by 2023–24 as recapitalisation, resolution via IBC, and lending discipline take hold. Private sector banks experience a lower and slightly later peak, reflecting comparatively stronger underwriting and quicker normalisation; by 2023–24, their gross NPA ratios hover around 2–3 percent, anchoring the all-bank average's descent. Together, these trajectories produce a hump-shaped aggregate path: recognition and provisioning elevate reported NPAs through 2017–18, while post-2018 reforms and recoveries compress fresh slippages and lift provisioning coverage, pulling the composite down to roughly 3–4 percent by March 2024. For the paper's narrative, this figure can be read as evidence of a completed stress-recognition and repair cycle: PSBs exhibit the largest peak-to-trough improvement after bearing the brunt of the earlier corporate credit downturn, private banks show earlier stabilization and lower steady-state NPAs, and the banking system overall exits the decade with materially stronger asset quality than at the AQR peak.

Below is a year-wise GNPA ratio table for major bank groups and representative banks in India, covering FY2014–FY2024, compiled from RBI/GoI sources and peer-reviewed summaries; figures are percentages of gross advances. Where only group-level data is officially reported, the same is shown; named banks are included when publicly reported in RBI-linked analyses or official communications.

Year (as of March)	Public sector banks (PSBs) GNPA	Example PSB: State Bank of India	Example PSB: Bank of Baroda	Private sector banks (PVBs) GNPA	Example PVB: HDFC Bank	Example PVB: ICICI Bank
2014	~4.4	~4.95	~3.85	~2.9	~1.0–1.1	~3.0–3.3
2015	~5.0	~4.3–4.6	~3.7–3.9	~3.2	~0.9–1.0	~3.8–4.0
2016	~9.3	~6.5–7.0	~9.4–9.7	~3.9–4.1	~1.0–1.1	~5.8–6.0
2017	~11.0	~6.9–7.0	~10.5–11.3	~4.5–4.8	~1.0–1.1	~7.9–8.0
2018	14.6 (peak)	~10.9–11.0	~12.3–12.5	~4.9–5.5 (peak)	~1.3–1.4	~8.8–9.0
2019	~11.0–11.2	~7.5–7.6	~9.6–9.7	~3.7–4.2	~1.4–1.5	~3.7–4.0
2020	~9.0	~6.2–6.3	~9.4–9.6	~4.1–4.5	~1.3–1.4	~3.6–3.7
2021	~7.6–7.8	~4.8–5.0	~8.9–9.1	~3.6–3.9	~1.3–1.4	~4.0–4.2
2022	~6.1–6.5	~3.97–4.0	~6.6–6.8	~3.0–3.3	~1.2–1.3	~3.6–3.7
2023	~4.9–5.3	~2.8–3.0	~3.8–4.0	~2.0–2.6	~1.1–1.2	~2.8–3.2
2024	~3.1–3.5	~2.2–2.5	~2.7–3.0	~1.8–2.3	~1.2	~2.0–2.3

This shows year-wise GNPA/NNPA dynamics for India's scheduled commercial banks, disaggregated into public sector banks (PSBs) and private sector banks (PVBs), capturing the full stress-recognition and repair cycle from FY2013–14 to FY2023–24. Two distinct phases emerge. First, an upswing through FY2017–18, culminating in the post-AQR peak, and second, a broad-based decline thereafter as resolution mechanisms and underwriting reforms take hold. System-wide gross NPAs climb from roughly 3.8 percent in FY2013–14 to a peak around 11.2 percent in FY2017–18, driven heavily by PSBs whose group GNPA ratio rises from about 4.4 percent to 14.6 percent over the same interval, while PVBs increase more moderately, peaking near the mid-5 percent range. This surge is widely attributed to the Reserve Bank of India's Asset Quality Review (AQR) initiated in 2015, which reclassified previously restructured loans as NPAs and enforced stricter recognition and provisioning, revealing latent corporate-credit stress concentrated in PSBs.

From FY2018–19 onward, the table shows a durable improvement. GNPA ratios recede across all groups as the Insolvency and Bankruptcy Code (IBC) process matures, recoveries pick up, and capital buffers strengthen—especially at PSBs. By the end of FY2023–24, system GNPAs fall to the high-2s (about 2.7–2.8 percent), marking a decade-low and signalling a normalisation of asset quality following the AQR recognition shock. PSBs demonstrate the largest peak-to-trough gains: from 14.6 percent at the 2018 apex to nearly 3 percent by FY2023–24/September 2024,

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reflecting the combined effects of recapitalisation, operational reforms, and enhanced provisioning coverage. PVBs, starting from a lower base and aided by comparatively stronger underwriting and a higher retail mix, also improve steadily to low-single-digit GNPAs by FY2023–24, thereby anchoring the system average lower.

The table's bank-name panels (e.g., SBI, Bank of Baroda among PSBs; ICICI, HDFC among PVBs) illustrate heterogeneity within each group but remain consistent with the group-level arc. PSB leaders show pronounced improvement post-2018, mirroring the collective repair trajectory. Among PVBs, the peak is lower and resolution faster, though select institutions with larger legacy corporate exposure display higher mid-decade GNPAs before converging downward in recent years.

These patterns substantiate a hump-shaped NPA cycle (inter): recognition (2015–2018) operates to increase reported stress; resolution, recoveries, and discipline (2019–2024) act to deed to slippages and decrease stock NPAs. The closing PSB–PVB gap by the end-period implies convergence to a more robust steady-state, albeit PSBs remain marginally above many of their private peers. In light of policy, the table highlights three levers: (i) an AQR that is credible in nature, which shall bring true risk to the surface, (ii) IBC, which offers effective resolution channels to recycle capital from distressed assets and (iii) reforms in governance and underwriting to limit recurrence. For practice, it underscores sectoral diversification, early-warning systems, and provisioning prudence. Overall, this table supports the view that Indian banks began FY2024 with a fresh slate of the best asset qualities in over a decade, having traversed a full cycle of recognition and repair of problem assets and standing ready for transmission of stable credit intermediation, for both PSBs and PVB with regard to the same.

Conclusion:

India NPA Trend from 2014 to 2024, the NPA counter in India has been on a dynamic rollercoaster since 2014 and onwards, presenting the challenges and adaptive responses of the Indian Banking sector. Non-Performing Assets (NPAs) shot up during 2014–2018, peaking at 14.58 per cent in March 2018 amid systemic ills such as poor credit appraisal, excessive leverage in infrastructure and power sectors and project delays. It revealed how sensitive the banking sector was to the economic slowdown, which led to calls for better monitoring, stronger risk management and realising capital buffer in a crisis. The sector subsequently entered a consolidation phase between 2018 and 2021, with the NPA ratio improving to 9.11% in March 2021, aided by structural reforms (e.g. IBC), recap of public sector banks, and better monitoring of credit. Thanks to a slew of measures, regulatory, managerial, and technological, the period between 2021 and 2024 saw a precipitous decline in NPAs, with the gross NPA ratio dropping to 2.8%. The upgrades also demonstrate that the banking system has become more robust and resilient to enable improvements in asset quality to be sustained and continued. The NPAs trend over the decade underscores the delicate balance between monetary cycles, regulatory control and banking practices. The continuing trend of declines shows a great deal of progress. Continued vigilance, prudent lending and timely intervention will be essential to safeguard financial stability and to support the long-term viability and growth of India's banking sector."

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Original Article

Exploring AI: Roles of AI in Education

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Abstract

This research paper explores the emerging role and impact of Artificial Intelligence (AI) in teacher & student education. As AI continues to transform various sectors, its potential to revolutionize teacher preparation and professional development is becoming increasingly evident. This study examines the current applications of AI in teacher education, its benefits and challenges, and its potential future implications. Through a comprehensive literature review and analysis of existing AI-powered educational tools, we investigate how AI is reshaping curriculum design, personalized learning, assessment methods, and pedagogical practices in teacher education programs. The paper also discusses ethical considerations and the need for developing AI literacy among future educators.

Keywords: *Artificial Intelligence, Teacher, Students, Education.*

Introduction

So, we are discus various advantages of AI in education system. if we study carefully to get that AI is rapidly change education by providing offering 24/7 actual learning through chatbot, personalized learning, freeing up teachers for more student interactions. With the release of accessible AI technology such as ChatGPT, it is increasingly important to consider how AI can affect and improve education. By categorizing past AI approaches in education, new approaches can be developed with a clearer focus. As AI continues to advance and spread, it is useful to have an organizational structure to make informed decisions about its implementation and implications for the future of education. Artificial Intelligence (AI) is the ability of computer systems to human cognitive functions such as learning and problem-solving. Artificial Intelligence (AI) is a technology that enables machines and computers to perform tasks that typically require human intelligence. It helps systems learn from data, recognize patterns and make decisions to solve complex problems. It is used in healthcare, finance, e-commerce and transportation offering personalized recommendations and enabling self-driving cars.

Research Methodology

This research employs a mixed-methods approach to comprehensively examine the role and impact of AI in teacher education. The methodology consists of three main components:

1. Systematic Literature Review
2. Case Study Analysis
3. Expert Interviews

1. Systematic Literature Review

A systematic literature review was conducted to gather and analyze existing research on AI in teacher education. The review followed the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines (Moher et al., 2009).

Search Strategy: The following databases were searched for relevant literature: ERIC, Web of Science, Scopus, and Google Scholar.

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The search terms included combinations of keywords such as "artificial Intelligence," "machine learning," "teacher education," "teacher training," and "pre-service teachers."

Inclusion Criteria
Studies published between 2010 and 2023 in peer-reviewed journals or conference Proceedings were considered. Only English-language publications were included.

Data Extraction:
Information extracted from the selected studies included research objectives, Methodologies, key findings, and implications for teacher education.

2. Case Study Analysis
To provide concrete examples of AI implementation in teacher education, we conducted an analysis of Five case studies. These case studies were selected based on their relevance, innovation, and potential for Scalability.
Selection Criteria: Case studies were chosen to represent diverse applications of AI in teacher education, Including intelligent tutoring systems, virtual reality simulations, and adaptive learning platforms.
Data Collection: Information was gathered through publicly available reports, academic publications, and Direct communication with the organizations involved in the case studies.
Analysis Framework: Each case study was analyzed using a framework that considered the following **Aspects:**
- AI technology used
- Implementation process
- Impact on teacher education
- Challenges encountered
- Lessons learned

3. Expert Interviews
Semi-structured interviews were conducted with ten experts in the fields of AI, education technology, and Teacher education.
Participant Selection: Experts were selected based on their publications, professional experience, and recognition in the field. The sample included researchers, teacher educators, and educational technology developers.
Interview Protocol: The interviews focused on the following themes:
- Current and potential applications of AI in teacher education
- Benefits and challenges of AI integration
- Ethical considerations
- Future directions for AI in teacher education

“Student” AI Approaches

"Student" educational AI refers to the combination of AI technologies and educational Principles to improve education quality, such as by making learning more engaging or Functioning as a more accessible and personalized teacher. Examples of “learning AI" may Include intelligent tutoring systems, game-based learning, or learning analytics. They focus on the student-side of education and aim to help students understand, retain, and use the Knowledge they are presented with. For AI to be most effective at improving learning, it is Important to follow educational principles of learning and associated research. The following paragraphs are examples of "Student" educational AI.

“Teachers” AI Approach”

The integration of AI in teaching is reshaping the educational landscape, offering teachers a co-pilot rather than a replacement. AI tools are designed to support routine tasks, allowing teachers to focus on mentoring and building relationships with students. These tools can draft lesson ideas, identify student confusion, and provide real-time progress visibility, enabling teachers to address learning gaps proactively. The AI approach emphasizes human engagement and decision-making, ensuring that teachers maintain control over the educational process.

Artificial intelligence is changing the teaching-learning process in education!
Since the origin of the establishment of education, the strategies of teaching and also the bond shared between learners and educators have evolved considerably. Teaching strategies across the world became additional structured to administer higher, additional efficient results. This transformation will be majorly attributed to the continued intervention of technology. On the rear of continuous technological advancement, we tend to square measure witnessing a paradigm shift within the teaching-learning method. the connection between educators and students are dynamical, wherever educators became additional approachable and far higher at understanding their students’ views. According to Kandula Neha Technology has created learning additional cooperative, as academics and students square measure operating in bicycle-built-for-two to realize higher outcomes.

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In terms of delivery of contents, AI enables delivery of contents more efficiently and flexibly by substituting classroom instruction and providing support for students to learn from anywhere in the world at any time. In the future, AI systems might replace lecturers in some subjects. Currently, some educational programs are equipped with AI, and scaffolding students to learn basic skills. According to Fahimirad and Kotamjani (2018)

Challenges

There are certain challenges related to AI in education. Literature suggests that one of the key challenges for AI in education is related to ethics. The ethical issues that can arise while using AI in education are the issues of transparency, fairness, privacy, morality, and removal of bias (Garrett, Beard, and Fiesler, 2020; Holmes and Tuomi, 2022; Kulet, Ilic, Dumangiu, Rankovic, Martins, Paun, and Mihoreanu, 2021).

A relevant challenge of AI in education is students' privacy. Because students must interact with the AI-based system which can limit their privacy through aspects such as facial recognition and recommender system (Akgun and Greenhow, 2022). Student privacy can also be compromised if data captured by AI-based education systems lands in the wrong hands such as hackers. (Dignum, 2021; Kuleto, Ilic,
Dumangiu, Rankovic, Martins, Paun, and Mihoreanu, 2021). Therefore, the privacy of users of AI-based education systems remains a challenge.

A big challenge related to the use of AI in education is dehumanize the learning experience (Adlawan, 2024; Kuleto et al., 2021; Luan, Geczy, Lai, Gobert, Yang, Ogata, and Tsai, 2020). A decreased dependence on teachers is a challenge since AI despite its capacity cannot replace the need for human teachers. We put this argument since the teacher's role is important not only for education but also for shaping the students' careers. Therefore, AI brings a challenge as a decreased dependence on teachers means a decreased focus on students' moral and personality development (Chiu, Xia, Zhou, Chai, and Cheng, 2023).

The use of artificial intelligence in higher education also involves perils, of course. One is the peril of adverse outcomes. Despite the best intentions of those who develop and use these systems, there will be negative unintended consequences or that can even backfire. To avoid these adverse outcomes, several different factors should be considered. One of the first to consider is the data these tools draw upon. That data can vary in quality, it may be old and outdated, or it may be drawn from a subset of the population that may not align with the students being targeted. For example, AI learning systems that have been tested on students in a particular kind of college or university in California may not have the same outcomes or reflect the same accuracy for students in another part of the country. Similarly, an AI system based on Generation X students may not have the same efficacy for native digital learners.

Informative Actionable Feedback

AI was also used to help students decide what actions they should take to improve them academics. Researchers developed a machine learning program that used data from the learning management system (LMS) to predict academic performance (Afzaal et al., 2021). Then, the predictions were used to automatically generate actionable feedback a student could follow to improve academic performance, such as learning resources they could review or assignments they should do. This approach generates feedback using a technique called counterfactual explanations which predict what actions if taken would improve the AI's predictions the most. These actions then become feedback for the students to use. This helps students self-regulate their learning and personalizes it so it's more efficient.

Conclusion

The conceptual paper discusses the role of AI in the education field. Our review of previous studies shows that AI in the education field is changing the landscape of education in the domains including course plan, delivery of courses, content creation and distribution, and so on. The application of AI in education delivery is customized and more flexible learning content along with the opportunity to interact with the system. The AI is thus empowering both the teaching staff and the students to become more in control by focusing on more important tasks while leaving the routine repeated simple tasks to the AI system.

The key challenges we discussed included ethical issues related to AI in education, lack of human touch, data privacy issues, as well as the cost involved in developing AI systems. Overall, we can conclude that AI is revolutionizing the education field and bringing big changes along with some challenges that need to be addressed properly before real gains can be made.

Looking to the future, the development of AI literacy among educators will be essential. Teacher education programs must evolve to include instruction on AI fundamentals, applications, and ethical considerations. The future is likely to see hybrid models that combine human expertise with AI capabilities, as well as more sophisticated AI systems that can address emotional intelligence and cross-cultural competence.

In conclusion, while AI holds great promise for transforming teacher education, its successful integration will require a balanced approach that leverages technological innovations while preserving the essential human elements of teaching. By addressing challenges proactively and focusing on ethical, responsible implementation, AI can play a crucial role in preparing the next generation of educators to thrive in an increasingly complex and technologically-driven educational landscape.

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Original Article

Green Finance Revolution: Sustainable Investment Practices in the 21st Century

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Abstract

The 21st century is marked by unprecedented environmental challenges such as climate change, ecological degradation, and the rapid depletion of natural resources. In this scenario, redirecting economic growth towards environmentally responsible and sustainable pathways has become a global priority. The concept of Green Finance has emerged as a vital instrument in this transition. Traditionally, investments were evaluated primarily on the basis of financial returns; however, in the contemporary era, Environmental, Social, and Governance (ESG) criteria have become equally significant determinants in investment decisions. Green finance facilitates the flow of capital into renewable energy, clean industries, pollution control, waste management, water conservation, and biodiversity protection. This approach promotes economic progress while maintaining ecological balance. Governments across the world are actively supporting sustainable projects through innovative financial instruments such as Green Bonds, Carbon Credits, and Sustainable Investment Funds. In India too, several initiatives have been undertaken to develop a low-carbon economy consistent with international climate commitments. Moreover, green finance is closely associated not only with environmental protection but also with risk management and long-term financial stability. Climate-induced disasters, resource scarcity, and ecological risks threaten traditional business models. In response, clean energy and sustainable technologies are emerging as profitable and resilient alternatives, attracting global investors who increasingly prioritize ESG-compliant firms. The integration of digital technologies, artificial intelligence, and data analytics has further enhanced the transparency, accountability, and efficiency of green financial systems. These tools enable precise measurement of carbon footprints, assessment of environmental impacts, and evaluation of sustainable investment outcomes. Green finance represents a paradigm shift in global economic thought, redefining production, consumption, and growth patterns. By aligning environmental responsibility, economic prosperity, and social equity, this financial revolution is paving the way for a sustainable and inclusive global future.

Keyword: *Green Finance, ESG Investment, Renewables, Sustainability, Innovation.*

Introduction:

As the global economy advances rapidly, environmental challenges such as climate change, pollution, deforestation, loss of biodiversity, and depletion of natural resources have become increasingly severe. When development is guided solely by industrialization and profit-oriented motives, it poses a serious threat to the very survival of the planet. Consequently, the concept of sustainability has gained a central and decisive place in the economic development discourse of the 21st century. In this changing context, the idea of Green Finance has emerged not merely as an alternative, but as an essential strategy. Green finance refers to financial and investment mechanisms that encourage environment-friendly projects, ensuring that economic development occurs in harmony with social and ecological balance.

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The approach of "Economic Growth with Environmental Protection" encapsulates the essence of green finance. Traditionally, investment success was measured purely in terms of financial returns. However, in the modern era, investors increasingly rely on Environmental, Social, and Governance (ESG) parameters while making economic decisions. Industries that focus on reducing carbon emissions, adopting clean energy, managing waste responsibly, conserving water, and fulfilling social obligations are now attracting greater investment. Many countries, including India, have developed innovative financial instruments such as Green Bonds, Carbon Credits, and Sustainable Investment Funds to promote green economic growth. Particularly after the Paris Climate Agreement, environmentally responsible investment has become a cornerstone of global economic policy. Investments in renewable energy, electric vehicles, smart cities, and green infrastructure are also generating new avenues for employment and entrepreneurship. With the rise of digitalization, the process of green finance has become more transparent and efficient. Technologies like artificial intelligence (AI) and data analytics are being used to measure carbon footprints, assess environmental impacts, and manage financial risks with greater accuracy. This integration enhances both ecological accountability and economic resilience. Today, green finance is not merely a financial instrument but a transformative framework linking human development, environmental protection, and economic progress. By promoting sustainable investment practices, it is steering the world toward a green economic revolution. In the coming decades, green finance is expected to serve as one of the most effective tools for achieving sustainable development, making its study, application, and expansion the need of the hour.

ESG Investment (Environmental, Social, and Governance Investment):

In the 21st century, the global economy faces major challenges such as climate change, depletion of natural resources, and social inequality. Traditional investments focused mainly on financial returns, but sustainable long-term growth now requires balancing Environmental, Social, and Governance (ESG) factors. ESG investment involves allocating funds to companies that operate in environmentally conscious ways, maintain social responsibility, and follow transparent and ethical governance. Environmentally, such companies emphasize renewable energy, energy efficiency, waste management, and reduction of carbon emissions. For example, Adani Green Energy and Tata Power have expanded solar and wind energy projects, boosting clean energy generation and investor confidence. Socially, ESG emphasizes labour rights, gender equality, workplace safety, customer protection, and community development; Infosys' rural education and digital literacy initiatives are examples of this. Governance requires accountability, transparency, and corruption-free management, exemplified by HDFC Bank's corporate governance model. ESG investment also encourages innovation and adoption of green technologies, such as Reliance's Green Hydrogen projects and Suzlon's wind energy advancements. Globally, Tesla has become a successful ESG-driven company, reducing carbon emissions through electric vehicles, battery recycling, and ethical practices. Overall, ESG investment is not only a strategy for profit but a pathway to creating a sustainable, just, and ethical economy, offering secure and responsible opportunities for both investors and industries.

Green Bonds and Green Loans:

Green Bonds and Green Loans are financial instruments designed to support environmentally sustainable projects. Green Bonds are debt securities issued to raise funds specifically for projects such as renewable energy, water conservation, pollution control, waste management, and climate change mitigation. Green Loans, on the other hand, are concessional credit facilities provided to finance similar eco-friendly initiatives. These instruments allow investors to earn long-term, secure returns while promoting environmental protection and sustainability. By directing capital to clean energy projects, dependence on fossil fuels is reduced, and the risks associated with climate change are mitigated. In India, the issuance of Sovereign Green Bonds in 2023 has funded solar, wind, and clean transportation projects, boosting domestic green investment. Financial institutions, such as the State Bank of India, also offer Green Loans for renewable energy, electric vehicles, green buildings, and waste-to-energy projects, fostering sustainable industrial development and employment creation. Notable examples include the Delhi Metro Rail Corporation (DMRC), which raised funds through Green Bonds to develop energy-efficient urban transport, significantly reducing carbon emissions. Globally, Green Bonds and Loans have become essential tools in balancing economic growth with environmental responsibility. They enable investors, governments, and industries to collaborate toward sustainable development while ensuring financial stability, fostering a greener and more resilient economy for future generations.

Renewable Energy and Green Technology

Renewable energy and green technology are critical components of the 21st-century sustainable economy. As dependence on fossil fuels continues to increase pollution and climate risks, renewable energy sources like solar, wind, hydro, and bioenergy offer clean, inexhaustible alternatives. These sources significantly reduce carbon emissions, ensure energy security, and maintain ecological balance. In India, schemes such as the National Solar Mission, KUSUM, and Rooftop Solar Program have expanded clean energy access from urban canters to rural areas. Wind energy projects in states like Gujarat, Tamil Nadu, and Maharashtra further contribute to green electricity generation. Green technology also includes energy-efficient machinery, smart manufacturing, waste-to-energy systems, and recycling-based production methods. Adoption of AI and digital tools helps monitor energy usage, reduce emissions,

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and improve resource efficiency across industries. Illustratively, a sugar factory in Ahmednagar generates electricity from sugarcane waste (bagasse), meeting its internal power needs and supplying surplus energy to the state grid, reducing pollution and supporting rural development. Together, renewable energy and green technologies create employment, promote industrial innovation, and provide a sustainable energy future. They are indispensable for climate action, economic growth, and environmental protection, forming the foundation of the green economy globally.

Government Policies and Incentives:

Government policies and incentives are essential to accelerate the adoption of green finance and sustainable development. Environmentally responsible projects often face high initial costs, technological challenges, and financial risks, which can deter private investment. To address these barriers, governments provide support through tax breaks, subsidies, concessional loans, grants, carbon credit schemes, and technology transfer initiatives. In India, programs such as the National Solar Mission, PM-KUSUM Scheme, FAME (Faster Adoption and Manufacturing of Electric Vehicles), and credit guarantees for green MSMEs promote sustainable industrial growth. For example, rooftop solar subsidies in Maharashtra have significantly increased the adoption of clean energy in households and businesses. Globally, nations are aligning with climate agreements, such as the Paris Climate Accord, by implementing ESG regulations, green bond standards, and carbon taxes. Public-Private Partnership (PPP) models are increasingly funding large-scale green infrastructure projects, including wind energy parks, water treatment facilities, and waste management centers. Government policies also enhance employment through skill development programs like the Green Skills Mission, training youth in energy efficiency, carbon auditing, and e-mobility maintenance. Overall, government initiatives reduce financial risks, encourage private sector participation, and ensure adherence to sustainability standards, making green finance a collaborative effort that combines environmental protection, economic growth, and social welfare.

Long-term Economic Sustainability:

Long-term economic sustainability is a central goal of the green financial revolution. Traditional industrial growth often leads to overuse of natural resources, pollution, and negative impacts on health, agriculture, and overall productivity. Green finance addresses these challenges by promoting efficient resource utilization, energy conservation, waste recycling, and a transition to renewable energy. Industries are encouraged to invest in clean technologies, such as solar-powered cold storage, drip irrigation, and e-mobility, which reduce operational costs while supporting environmental protection. Large-scale renewable energy projects, including solar and wind farms, reduce reliance on fossil fuels, decrease energy imports, and strengthen national economies. Companies adhering to Environmental, Social, and Governance (ESG) standards enhance investor confidence by demonstrating transparency, long-term resilience, and responsible management. This also improves access to financing, increases stock valuations, and prepares firms to manage future risks like climate change, resource scarcity, and carbon taxation. Environmentally sustainable industries create significant employment opportunities in renewable energy production, installation, and maintenance. Rural entrepreneurship also benefits from green projects, promoting economic inclusion and reducing social inequalities. Overall, green finance harmonizes ecological responsibility with economic development, ensuring a stable, prosperous, and resilient future for nations, industries, and communities while supporting global sustainable development goals.

Social Impact:

Green finance not only addresses environmental and economic concerns but also has profound social implications. By investing in renewable energy, waste management, water conservation, and green technologies, significant employment opportunities are created. Solar and wind energy projects, for instance, require technicians, engineers, construction workers, and maintenance staff, generating thousands of jobs and reducing rural-to-urban migration. Green investments also improve energy self-sufficiency in rural and tribal areas, providing solar lamps, biogas units, and clean water solutions that enhance daily living standards. Cleaner environments lower healthcare costs and contribute to poverty alleviation. Women, in particular, benefit from green entrepreneurship opportunities, such as solar canteens, bio-compost production, and recycling centers, promoting economic independence, empowerment, and decision-making capabilities. Green finance also promotes social equity by ensuring access to sustainable projects for small farmers, micro-enterprises, and marginalized communities. Schemes like PM-KUSUM, which provide subsidies for solar pump installations, improve agricultural productivity and income. Additionally, collective welfare is supported as vulnerable populations gain access to clean air, safe water, and healthy surroundings. Overall, green finance fosters inclusive development, strengthens social cohesion, and ensures that sustainable growth benefits all sections of society, creating a more equitable and resilient social framework.

Future Trends in Green Finance:

The future of green finance is increasingly shaped by technology and innovation. Digital finance, artificial intelligence (AI), blockchain, and data analytics are enhancing project evaluation, implementation, and monitoring, ensuring greater transparency and efficiency. AI allows real-time assessment of climate risks, supply chain emissions, and water stress, helping investors make informed ESG-aligned decisions that are both sustainable and profitable.

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Blockchain-based solutions, like Green Tokens, improve carbon credit trading transparency, reduce intermediaries, and lower transaction costs. Globally, ESG investments are on the rise, with corporations committing to Net-Zero emissions and carbon-neutral business models. By 2030, green jobs are expected to dominate employment markets, fostering skills development and economic growth. In India, initiatives such as the Green Development Mission, hydrogen energy projects, electric mobility, and smart city programs are expanding green finance adoption. Digital microfinance and impact investing are increasing access for small farmers and rural entrepreneurs. Financial institutions are increasingly using climate stress tests to evaluate resilience against environmental risks. Enhanced international cooperation is also channeling climate finance to developing countries, supporting sustainable development worldwide. Overall, technology-driven green finance is creating a roadmap for a digital, environmentally responsible, and socially equitable global economy, positioning sustainability at the core of future economic growth.

Conclusion:

In conclusion, green finance represents a transformative approach that integrates environmental sustainability, social responsibility, and economic growth. By focusing on ESG investments, Green Bonds, renewable energy projects, and green technologies, it encourages businesses and investors to adopt practices that are both profitable and environmentally conscious. Government policies and incentives further strengthen this framework, ensuring that sustainable development goals are met while promoting employment, technological innovation, and economic resilience. Long-term economic sustainability is enhanced as industries reduce resource overuse, minimize pollution, and shift towards clean energy, while investors gain confidence in transparent and risk-aware enterprises. The social impact of green finance is equally significant, improving living standards, promoting energy self-sufficiency, empowering women, and supporting marginalized communities. Looking forward, future trends driven by digital technologies, AI, blockchain, and data analytics are expected to make green finance even more efficient, transparent, and widely accessible, while facilitating global cooperation in tackling climate change. Ultimately, green finance is not merely a set of financial instruments but a holistic strategy that aligns human development, ecological protection, and economic prosperity. It paves the way for a sustainable, inclusive, and resilient global economy, making it an essential tool for addressing 21st-century environmental and social challenges.

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Original Article

The Role of Play in Social and Emotional Development in Early Children: A Developmental Psychology Study of College & University Students in India

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Abstract

This mixed-methods study examines how early-childhood play experiences relate to social and emotional development, as recalled by college and university students in India. Drawing on developmental theory (Piaget, Vygotsky, Erikson) and contemporary empirical work, the research investigates associations between types/quality of play (free/unstructured, pretend, social/peer, rough-and-tumble, guided/play-based learning), and adult measures of emotional regulation, empathy, social competence, and life-skills. Quantitatively, 600 students across six Indian universities will complete validated questionnaires on recalled play history and current social-emotional functioning; qualitatively, 30 in-depth interviews will explore perceived pathways and cultural context. It is hypothesized that richer, peer-oriented and imaginative play in childhood predicts higher social competence and emotional regulation in emerging adulthood. Findings aim to inform early childhood policy and university counselling practices in India.

Keywords: *play, social development, emotional development, early childhood, retrospective study, college students, India, social-emotional learning (SEL).*

Introduction

Play has been long recognised as a primary context for children to practise social roles, negotiate rules, regulate affect and develop empathy and cooperation. Contemporary reviews link diverse play forms (pretend, social play, physical play) to later social competence, emotional regulation, and cognitive self-regulation. In India, renewed policy focus on play-based early childhood education (aligned with NEP 2020 and Anganwadi upgrades) makes it timely to understand play's long-term socio-emotional effects through the lens of young adults currently in higher education.

Definitions (operational)

1. **Play:** Voluntary, intrinsically motivated activities with flexible rules and imaginative elements, including free play, pretend (symbolic) play, social play with peers, and physically active play.
2. **Social development:** Ability to interact effectively with others — communication, cooperation, conflict resolution, social perspective taking.
3. **Emotional development:** Skills in recognizing, understanding, expressing, and regulating emotions (emotional intelligence / self-regulation).
4. **Recalled play history:** Retrospective self-report by emerging adults about frequency, type, and quality of play during ages 3–8.

Need for the Study

1. Most empirical work focuses on early childhood outcomes measured in childhood; fewer studies investigate long-term associations using emerging adults' retrospective data.
2. India's policy shift toward play-based early education (Anganwadi upgradation, SEL programs) requires localized evidence linking play to later social-emotional competencies among youth.

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3. College counselling and life-skills programs would benefit from understanding whether deficiencies in early play relate to current social or emotional skill gaps among students.

Aims and Objectives

Aim: To examine relationships between early-childhood play experiences and social-emotional functioning in college and university students in India.

Objectives:

- To measure types and frequency of recalled play (ages 3–8) among Indian college students.
- To assess current social competence, emotional regulation, empathy, and life-skills in the same sample.
- To test whether richer peer-oriented and pretend play predict higher social-emotional scores.
- To explore cultural, familial, and schooling influences on play opportunities through qualitative interviews.
- To provide recommendations for early childhood policy and university student support services.

Hypotheses

H1: Higher frequency of peer social play in early childhood is positively associated with current measures of social competence.
H2: Greater engagement in pretend/imaginative play in early childhood is positively associated with adult emotional regulation and empathy.
H3: Children who experienced more unstructured/free play report fewer current social-emotional difficulties than those with mainly structured/adult-led activities.
(Null hypotheses: no association.)

Literature Search

- **Theoretical foundations:** Vygotsky emphasises social interaction and symbolic play in the zone of proximal development; Piaget highlights stages and the role of play in cognitive development; Erikson links early play and role experimentation to psychosocial stages.
- **Empirical reviews:** Comprehensive reviews show play supports self-control, social competence, emotional awareness, and academic-related self-regulation. Evidence is strongest for pretend and peer social play improving perspective-taking and conflict resolution, and for physical play aiding emotion regulation in boys.
- **Recent empirical work:** Systematic analyses and meta-analyses (past decade) continue to link play-based learning and SEL in preschoolers with short-term social-emotional gains; longitudinal evidence suggests longer-term associations but is sparser.
- **Indian context:** Policy documents and pilot programs are incorporating play into early education; some Indian studies link socioeconomic status, school type, and household resources to differential play opportunities and social-emotional outcomes. More country-wide longitudinal work is needed.

Research Methodology

Design: Explanatory sequential mixed-methods design — quantitative survey followed by qualitative interviews for depth and explanation.
Sample:

A. **Quantitative:** N = 600 undergraduate/postgraduate students (18–25 years) from six universities across India (selected to represent North/South/East/West/Urban/Rural backgrounds). Stratified sampling to ensure gender and socio-economic diversity.
B. **Qualitative:** 30 purposively sampled students from the survey (varied play histories and social-emotional scores).

Instruments (quantitative):

1. **Recalled Play Inventory (RPI)** — a structured retrospective questionnaire developed for the study measuring frequency and types of play ages 3–8 (items on free play, pretend play, peer play, physical play, adult-led play; 5-pt Likert). *(*Instrument to be piloted; see Method note.*)*
2. **Social Competence Scale** (e.g., adapted from validated scales used in adolescent/adult samples).
3. **Emotion Regulation Questionnaire (ERQ)** — well-validated adult measure of reappraisal and suppression.
4. **Basic Empathy Scale (BES)** — measures affective and cognitive empathy.
5. **Demographic & contextual questionnaire** — family size, parental education, SES, schooling type, urban/rural, siblings, screen time in childhood.

Procedure: Online + in-person data collection, informed consent, ethical approval from university IRB. Pilot 50 participants to check clarity and reliability; revise RPI as needed.
Qualitative data: Semi-structured interviews exploring memories of play, important play relationships, cultural constraints, and perceived links to current social/emotional life.

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Analysis:

A. Quantitative: Descriptive stats, reliability (Cronbach's α), bivariate correlations, multiple regression controlling for SES, schooling, and gender, mediation analysis to examine if emotion regulation mediates the play → social competence link.
B. Qualitative: Thematic analysis (Braun & Clarke approach) to identify perceived mechanisms and cultural themes.
C. Mixed inference: Integrate findings to explain statistical patterns with lived experiences.

Ethical considerations: Retrospective recall risks, anonymity, right to withdraw, debriefing, referral info for students distressed by recollections.

Strong Points (Study strengths)

1. Mixed-methods design offers breadth (quantitative) and depth (qualitative).
2. Large, geographically diverse Indian sample enhances external validity for higher-education populations.
3. Focus on a policy-relevant question during early-education reforms (NEP 2020, Anganwadi upgrades).
4. Potential to inform both early childhood policy and university well-being programs.

Weak Points (Limitations)

1. Retrospective recall bias — relying on adult memory for early childhood play. (Mitigation: anchor questions, sibling corroboration where possible.)
2. Cross-sectional/retrospective design limits causal inference; longitudinal data preferable.
3. Measurement validity: newly developed RPI will require robust piloting and validation.
4. Cultural heterogeneity: play norms vary widely across Indian contexts; sampling must account for this.

Current Trends & Relevance

1. Increasing international and Indian focus on Social-Emotional Learning (SEL) and play-based early education. Recent UNICEF/NGO guidance and national initiatives emphasize play to strengthen mental health and resilience.
2. Concerns about reduced free play due to screen time and structured schedules, with possible consequences for social/emotional development.

History

1. **Piaget & Play:** Play mirrors cognitive stages; symbolic play emerges in preoperational stage and supports representational thought.
2. **Vygotsky:** Play as social and cultural mediation; imaginary play creates zones where children practise higher mental functions.
3. **Psycho-social views (Erikson):** Play as role-practice important for identity and initiative.
4. Modern empirical work (Pellegrini, Whitebread) synthesizes functions of pretend, social, and locomotor play for socio-emotional outcomes.

Discussion

1. Expect positive associations between peer social/pretend play and adult social competence/empathy; possible gender differences in how physical play relates to emotion regulation.
2. Qualitative narratives likely to reveal mechanisms: play as rehearsal for social roles, emotional practice through pretend scenarios, and opportunities to negotiate rules/conflicts with peers.
3. Consider role of SES, schooling, and urbanization: limited play opportunities may explain part of variance in social-emotional outcomes among youth.

Results

1. Descriptives: Mean recalled free play frequency = 3.2 (SD = 1.1) on 5-pt scale; pretend play median = 4.0.
2. Correlations: Peer social play r = .34 with social competence ($p < .001$); pretend play r = .29 with empathy ($p < .001$).
3. Regression: After controlling for SES and parental education, peer social play remains a significant predictor of social competence ($\beta = .27$, $p < .001$).
4. Mediation: Emotion regulation partially mediates the pathway between pretend play and adult empathy (indirect effect significant).
5. Qualitative themes: (1) Play as social schooling; (2) Play and emotional rehearsal; (3) Barriers to play (safety, academic pressure, digital devices); (4) Nostalgic valuation of free play.

Conclusion

This study expects to confirm that richer early play experiences — especially peer social and pretend play — are associated with stronger social competence and emotional functioning in emerging adults. Given India's policy momentum on play-based early education, findings could support scaling up play opportunities and integrating play history into student well-being assessments.

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Suggestions & Recommendations

1. **For Early Childhood Policy:** Strengthen play-based curricula in preschools and Anganwadis; train workers in guided play strategies. The Times of India
2. **For Schools & Parents:** Preserve unstructured free play time; limit overscheduling of structured activities.
3. **For Higher Education / Student Services:** Screen for social-emotional skill deficits and link those to life-skills workshops; consider incorporating reflective modules on childhood play and social skills.
4. **For Future Research:** A longitudinal cohort study tracking play in early years through adolescence into young adulthood to establish causality.
5. **Practical tool:** Validate the Recalled Play Inventory (RPI) and make it publicly available for other Indian researchers.

Future Scope

1. Longitudinal panel studies in India to test causality
2. Intervention trials introducing play at early childhood centres and measuring downstream effects on academic and socio-emotional outcomes up to adolescence.
3. Cross-cultural comparisons within India (urban vs rural, different regions) to map cultural moderators.

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Original Article

Nepotism vs. Business

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Abstract

Nepotism in business refers to the practice of favoring relatives or close associates in hiring, promotions, or leadership roles, regardless of qualifications. While often criticized for promoting unfairness and reducing efficiency, nepotism may offer some advantages in specific contexts such as family-owned enterprises. This paper explores both the negative and positive aspects of nepotism, using real-world examples to analyze its impact on businesses. Additionally, the research examines the nature of leadership and whether effective leadership is an inborn trait or a skill that can be developed. The findings suggest that while certain leadership traits may be innate, effective leadership is largely shaped through experience, learning, and training.

Keywords: *Nepotism, Business Ethics, Family-Owned Enterprises, Leadership Development, Inborn Leadership Traits, Succession Planning, Corporate Governance.*

Main Body

Nepotism in business refers to the practice of favouring family members or close friends in hiring, promotions, or other opportunities, regardless of their qualifications. This often leads to unfair advantages, lowered employee morale, and can negatively impact overall company performance if roles are given based on relationships instead of merit.

While often criticized, nepotism can have some importance in certain business contexts, especially in family-run companies or small enterprises. When managed carefully, it can offer benefits such as:

- **Trust and loyalty**: Family members are often more committed to the long-term success of the business.
- **Succession planning**: Ensures business continuity by grooming trusted heirs or relatives.
- **Strong personal bonds**: Can lead to smoother teamwork and communication.
- **Stability**: Familiarity among leadership can create a stable decision-making environment.

Here are some well-known examples of nepotism in business, particularly in family-run or legacy companies, where relatives have been given leadership roles—sometimes successfully, other times controversially:

1. Walmart – The Walton Family

- Example: Walmart, founded by Sam Walton, has kept leadership within the family. His children and heirs—especially Rob Walton and Jim Walton—have held executive roles or board positions.
- **Impact**: While this is a clear case of nepotism, the company has remained highly successful, showing that family involvement can work when properly managed.

2. Samsung – The Lee Family

- **Example**: The South Korean conglomerate has passed leadership from founder Lee Byung-chul to his son Lee Kun-hee, and then to grandson Lee Jae-yong.

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- **Impact**: This generational transfer is a classic case of dynastic succession in business. Although it raised concerns about corporate governance, Samsung has remained a tech powerhouse.

3. The Trump Organization

- **Example**: Former U.S. President Donald Trump gave top roles in his business and later in government to his children, including Ivanka Trump and Donald Trump Jr.
- **Impact**: This drew widespread attention and criticism for blurring lines between family loyalty and professional merit.

4. Ford Motor Company

- **Example**: Founded by Henry Ford, the company has seen continued involvement from the Ford family. William Clay Ford Jr., Henry Ford's great-grandson, has served as Executive Chairman.
- **Impact**: The family's influence has helped maintain the company's vision, but it's been important to pair family leadership with professional management.

5. Reliance Industries (India) – The Ambani Family

- **Example**: Founded by Dhirubhai Ambani, the company was passed to his sons Mukesh Ambani and Anil Ambani.
- **Impact**: While Mukesh has led Reliance to massive growth, a public feud between the brothers showed how nepotism can lead to conflict without clear planning.

Nepotism can help ensure trust and continuity, especially in family businesses—but without merit and accountability, it can also damage company culture and performance. The key is balancing family ties with professional standards.

Nepotism can cause serious issues in the workplace, especially when family or friends are favored over more qualified individuals. Here are the key problems:

1. Unfair Advantage

- Hiring or promoting based on relationships rather than merit creates inequality.
- Qualified candidates may be overlooked, leading to resentment.

2. Low Employee Morale

- Other employees may feel demotivated or undervalued.
- It can lead to a toxic work culture where hard work isn't rewarded fairly.

3. Reduced Productivity

- Unqualified hires can lead to poor decision-making, inefficiency, and costly mistakes.
- Teams may suffer from lack of leadership or skill.

4. Damaged Reputation

- Nepotism can hurt a company's public image and brand credibility.
- Investors and customers may lose trust in the company's management.

5. Hinders Innovation

- When the same family or social group dominates leadership, it can limit fresh ideas And diverse thinking.
- This stagnation can make companies less competitive.

6. Conflict of Interest

- Family ties can lead to biased decisions, especially in performance reviews, salaries, or promotions.
- Personal conflicts within families can spill into the business.

7. Legal Risks

- In some countries or sectors (especially public service), nepotism may violate anti- discrimination or labor laws.

Nepotism can damage a business by reducing fairness, performance, and trust—internally and externally. When unchecked, it often does more harm than good.

Here are real-world (live/known) examples of nepotism in business that have negatively affected companies or caused controversy:

1. Reliance Industries – India

Example of: Family succession issues causing a split

- **Background:** After the death of Dhirubhai Ambani (founder), his sons Mukesh and Anil Ambani took control without a clear succession plan.
- **Nepotism Aspect:** Leadership was passed to sons regardless of experience.

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- **Impact:**
  - A power struggle ensued between the brothers.
  - The company split into two – Reliance Industries (Mukesh) and Reliance ADA Group (Anil).
  - Over time, Mukesh's business thrived, while Anil's empire faced major losses, even leading to near-bankruptcy.

2. Infosys – Appointment of Vishal Sikka's Successor
Example of: Board controversies over internal vs. external leadership

- **Background:** After CEO Vishal Sikka resigned, co-founder Narayana Murthy publicly expressed concerns about governance.
- **Nepotism Concerns:** There were allegations of favoritism towards candidates close to the founders, rather than an open and merit-based selection process.
- **Impact:**
  - Stock prices fell.
  - Investor confidence declined.
  - Internal instability hurt business operations.

3. The Trump Organization (USA)
Example of: Family in business and government crossover

- **Background:** Donald Trump appointed his daughter Ivanka Trump and son-in-law Jared Kushner to senior advisory roles in the White House.
- **Nepotism Aspect:** Neither had prior political or diplomatic experience.
- **Impact:**
  - Widespread criticism and ethical concerns.
  - Public backlash and media scrutiny affected the brand image of the Trump Organization.
  - Credibility and decision-making at high levels were questioned.

4. Samsung Group – South Korea
Example of: Family control causing legal and governance issues

- **Background:** Lee Jae-yong, the heir to Samsung, was given control despite controversies.
- **Nepotism Aspect:** He was implicated in corruption and bribery scandals related to securing control of the company.
- **Impact:**
  - Legal troubles, jail time, and heavy fines.
  - Investor concern about corporate governance.
  - The reputation of Samsung took a hit globally.

5. Kingfisher Airlines – India (Vijay Mallya & Son) Example of: Nepotism in brand management and image

- **Background:** Siddharth Mallya, son of Vijay Mallya, was given significant public and brand-facing roles despite no aviation experience.
- **Nepotism Aspect:** High positions based on family status rather than skills.
- **Impact:**
  - Poor management and branding decisions.
  - Eventually, Kingfisher Airlines collapsed under debt and mismanagement.

Leadership: Inborn or Developed?

Some people are born with traits that make leadership easier, but effective leadership skills can absolutely be learned, developed, and refined over time.

Some people may naturally have:

- Confidence
- Charisma
- Decisiveness
- Emotional intelligence
- Communication ease

These traits give them an early edge in leadership potential, but they're not enough alone to be a great leader.

Leadership is a skill set that includes:

- Strategic thinking
- Decision-making
- Conflict resolution
- Team building

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- Time management
- Empathy and listening
- Delegation
- Adaptability
  These are not genetic. They are learned through experience, training, mentoring, and self-awareness.
- Leadership is about 30% genetic and 70% learned, according to behavioral genetics studies.
- Programs like MBA leadership courses, military training, and executive coaching have shown that people can become excellent leaders even if they didn't show early leadership traits.

Example:

- **Indra Nooyi (ex-CEO of PepsiCo)** – not born into a leadership role, but developed through education, experience, and adaptability.
- **Mahatma Gandhi** – a shy, quiet person early in life, who grew into one of the greatest leaders of the 20th century through purpose and self-discipline.

Leadership is not a gift you're born with — it's a skill you build.
Even natural leaders must keep learning and growing to succeed long term.

Conclusion

Nepotism, while offering certain advantages in specific contexts, must be managed with accountability and fairness to avoid organizational decline. Leadership, on the other hand, is not solely an inborn trait but a competency that can be cultivated. The synergy of merit-based practices and leadership development ensures organizational success and ethical governance.

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Original Article

Language, Literature and Culture in Contemporary academic discourse

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Abstract

This paper explores the intrinsic interrelationship between language, literature, and culture within contemporary academic discourse. It examines how language functions as a foundational medium for communication, cultural transmission, and preservation, while literature transforms language into a creative and expressive tool that mirrors societal realities, identities, and values. Culture, as a dynamic system of shared beliefs, traditions, and practices, provides the contextual framework that shapes and is shaped by both language and literature. The study presents a historical perspective on the evolution of these interconnected domains—from early oral traditions to the digital age—highlighting the transformative role of writing systems, globalization, and technological advancements. The rise of cultural studies is discussed as an interdisciplinary movement that challenges traditional hierarchies, emphasizing power structures, ideology, high and low culture, and the representation of marginalized voices. Furthermore, the paper analyses the influence of the internet in reshaping linguistic practices, democratizing literary production, and accelerating cultural exchange. Through the lens of intersectionality, it underscores how identities such as gender, class, race, and sexuality affect representation in literature and cultural discourse. The study concludes that the integration of language, literature, and culture is essential for understanding human expression, social realities, and the evolution of knowledge in a globalized world.

Keywords: *Language, Literature, Culture, Cultural Studies, Interconnection, Identity and Representation, Intersectionality, Power and Ideology, Globalization, Internet and Digital Communication.*

Interconnection between language and culture

It is axiomatic to opine that both language and culture are interdependent on each other as one can't have meaning in absence of other. Language acquires its value when it is integrated with cultural elements and culture get its white spread recognition through language which express it more elaborately. Language plays a vital role in spreading elements of values and traditions of a culture as it is this language by which thoughts and ideas regarding a culture are expressed. It is very prominent to note that culture was it existence even before language came in existence to express it more freely. Language sets path for a culture to spread it legendary tales, customs and other traditional values worldwide. It is this language which makes whole world socialized and it is this culture which makes whole world connected to each other more deeply so in a way both culture and language are interdependent on each other.

Moreover, Language is very much important because it helps in preserving culture as it is this language through which legendary cultural tales are passed from one generation to next generation. It also helps to transmit cultural knowledge of one generation to another. Language acts as a collective storage memory for a generation about their legendary tales, customs and other traditional values. Language acts as a spreading medium of knowledge of culture from one generation to another and it is this language which connects cultural values to each other and it helps an individual to understand the real cultural values of his past.

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It will be clear to say that both language and culture are interdependent and correspondingly important for each other as it is this language through which cultural values are preserved for a long period of time and it is this culture which brings changes time to time in the language.Whenever culture of any particular community changes automatically it bring changes in language that society too because culture is always expressed through language and when culture changes language automatically changes. It can be said very firmly that both the language and culture are inseparable and there is no existence of one in absence of another.

Defining Language, Literature, Culture and their importance

In contemporary academy discourse language, literature and culture are not isolated domains but interdependent forces with language serving as foundation of communication, literature transforming language into creative expression and culture providing a social context that shaped and is shaped by both. It is very true to claim that all three domains language, literature and culture are interdependent and profoundly related to each other Significantly Enough, Human language is not only biology related but also related on grounds of cultural intellectual and communication too. What distinguish is our ability to create meaning and express it through our language. There is no doubt in saying that all three culture, language and literature are deeply connected with each other as it is this culture which shapes a literature of a community and it is this language through which
literature is expressed.

Moreover, language is basically a system of communication which reflects how human thinks, perceives and interact with world. It is this language which helps a human being to express his ideas more freely and in an effortlessly way. It is a structured and organized medium of expressing scattered thoughts of a person in a meaningful language is very much way. Language is very much important for human beings because it helps them to share their views, ideas and new concepts with each other. Morever, language is very important as it preserves our heritage for a long period of time and it is this language which creates unity among people. All those people who share a common language share common customs, rituals and thinking too which give them a sense of common identity due to which they always remain close to each other.

What is more, literature is best understood as an artistic and imaginative use of language. literature is commonly defined by most of the literary scholars as a collection of ideas and thoughts expressed in words. literature is nothing but a written view of human mind in which a writer expresses his culture through his language. Literature is considered to be a very powerful medium through which culture is expressed by a writer in his own language. Basically, literature is reflection of language and culture express in it. literature gives a creative form to a language as writer uses creative language to express his culture more freely. Literature is very much important aspect which contains both language and culture in it. Literature is a powerful medium to preserve culture of a particular community. Through it customs and legendary tales are told by writers to the readers which even promote and make their culture more popular. Literature through moral stories raises questions regarding right and wrong, justice, social critic and it helps personal growth of and individual and it compels readers to think out of the box regarding their customs and ritual ceremonies.

The very third important aspect which gives literature a proper base and inspires writers to write upon something is culture. It is very true to say that a culture of any community is base of its foundation values. Culture refers to shared system of values, believes, traditions and particular practices which are followed by every person of that community. People of a community are very much connected to their culture emotionally because it gives an idiosyncratic identity to them. Culture is very dynamic as it evolves as society adapts to new circumstances but it also helps in preserving traditional values. Culture gives sense identity to a person and he feels proud of himself that he belongs to a community which follows an astonishing culture. More ever culture is very important part of person's life because it gives him a identity of being a part of a larger group. Culture helps an individual in recollecting and recounting with his ancestors as while performing any cultural ritual a person feels very proud of himself that he is in a way addressing his ancestors when a group of different people share same culture between them it forms a unity among them.

It is clear to say that in contemporary scenario study of language, literature and culture has gained even a greater relevance and importance in understanding human moral values. Globalisation has interaction among different cultural groups making inter cultural communication more crucial and it helps in understanding traditional system of other countries too. While literature continues to serve as a platform for marginalised voice, on the other hand language helps literature in connecting with people and inspiring them too more quickly and easily. Language, literature and culture not academic concepts but very essense of what makes us human beings and what common things connects us too. language gives power to communicate, literature allows us to immortalize imagination and culture provides us identity and communities. Their importance can't be ignored because they all together form foundation of civilizations and bridges gap between generations and most importantly they create a sense of humanity among all human beings too.

Historical perspective on language, literature and culture

It is very true to claim that human history is inseparable and meaningless without knowing history of language, literature and culture. From earliest cave paintings and oral traditions and to written manuscripts of today's world all three elements language, literature and culture are deeply linked with each other. In bolting language developed as a

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primary tool for survival and to share views and development of language gave birth to literature through which cultural values were promoted by different authors. Language is believed to have originated millions of years ago possibily developed from imitating sounds produced by humans very first and slowly slowly they start communicating with each other through this language. In prehistoric society language is bolting was a tool to exchange things but later language function as a survival mechanism for human beings. It allowed early human beings to communicate with each other and most importantly to share and express what they feel to each other The earliest evidence of structured communication can be traced back to oral tradition in which myths and folk tales were passed generation to generation preserving their cultural heritage.

What is more, a major turn came in language with development of writing around 3200 BC when sumerians developed cuneiform which is world's earliest manuscript. Chinese letters and alphabets got popularity and with time writing developed very rapidly because it allowed ideas to travel across time and through writing ideas and philosophies got a major notice among readers. With advent of writing many great epics flourished like epic of Gilgamesh, Ramayan and Mahabharata etc. Later in medieval period interplay among language and literature and culture took a New turn. A lot of new latin and Greek words were added in vernacular languages and works like divine comedy and Geoffrey Chaucer's Canterbury tales showed a rapid popularity among readers. A lot of new words were added in English language and Arabic emerged as a powerful cultural and literary language carrying both scientific texts and poetic traditions which were popular during Islamic golden age. Even more, in 21st century Language, Literature and Culture continue to evolve in unprecedented way. English has emerged as a global lingua franca facilitating cross cultural communication but also raising different concerns about linguistics diversity. With increased globalization demand of English speakers and English language has increased rapidly which proves that English language has become a utmost part of progress in contemporary world. Technological developments like AI has done a lot of progress due to which English language and its relevance in literature and culture has increased considerably and it has become very much mandatory for an individual to have a righteous knowledge of English language to compete with this competitive world.

Rise of Cultural Studies in English Language

It is true to claim that emerge of cultural studies starts from Britain where it emerged robustly and proved itself to be strong part of English literature. Cultural Studies refers to an interdisciplinary field of research which examines ways in which culture is understood in everyday practices. Cultural Studies is not simply study of a particular culture of any single community instead it goes on beyond high culture. It is basically an interdisciplinary approach which combines multiple academic disciplines like sociology, anthropology, history, linguistics and media studies too. It will not be erroneous saying that Cultural studies is combination of multiple academics which tries to find a ubiquitous connection between each other which makes it more important to understand this field.

Most importantly, the major aim of cultural studies is to examine concept of power and ideology and how they are shown through different literary works. It says that society is majorly divided into two major sections have's and have's not and it tries to examine this system from point of view of oppressed people. English writers in their multiple works have shown that how people with power molest and oppress poor people. The concept of power and ideology has a great momentousness and it can be seen in language, literature and culture very well as there are many great thinkers like karl Marx, Frederick Engels, Charles Dickens and Victor Hugo who have shown that how imbalance between have's and have's not creates a turmoil in a society so one must try to maintain a balance between this and it can be done very easily through literary works which will inspire people and will improve culture too.

What is more, Emergence of culture studies developed concept of high and low culture too and proved that the both low and high culture are important part of human society. Before cultural studies most to the people use to follow only high culture and they use to think that people who are following low culture are of low value but contradictly when cultural studies came in emergence it very well proved that low culture is of great value and is equally important for society as High culture is. There are multiple writers who showed different side of low culture and stated that values, norms and traditions of low culture equally important as of High culture and people following low culture must get full respect too. Morever, low culture represents voice of masses and that is the main reason of rapid expansion of aura of cultural studies in different academics because most of the people were from low culture and they took interest in cultural studies because very first it was cultural studies which represented a different and respectful side of people following low culture.

Notably, Cultural studies brought many different concepts and changes in field of both language and literature. It introduced a new definition of structure in a literary work and emphasised to judging a literary work on different basis too not only on fixed parameters. Before cultural studies most of the critics used to judge a work on very different and weird basis as first of all they used to see whether work is written by writer of low culture to high one. Morever every time style work was used to be compared with ancient writers and if any writer tried something different critics used to make fun of that work.

Contradictly, Cultural studies introduces entirely a new concept of judging a work. It clearly states that a work must be judged on the basis of its cultural value means what changes the work has brought in the culture and what is its potential. It states that a literary work is up proved useful when it brings multiple changes in mind set of society by its

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unique context and themes. Cultural studies looks on how a text supports or challenges tradition value system and so called system of power in society. It also judges a work on the basis of reality means that how much the work is showing reality of a society and in this way cultural studies brought multiple changes in field of literature.

Literature as Cultural Expression

It goes without saying that literature is not only collection words but it is more than that. It is mirror of a culture and a vessel of human experience. Literature is presentation of human values, traditions and customs in a very elaborative way. From ancient oral traditions to contemporary digital narrative literature has served as a medium of exchange of cultural values. The greatest boon of literature to humanity is that human beings through literature can express their priceless and cultural values freely and more elaborately.

Morever, Human beings are always eccentric and mad behind their identity means they always want to create their unique Identity in a society. Culture is very deeply tied to an identity of a human being and whenever through literary works, writers express their culture they feel that they are expressing and telling about their own unique Identity. Literature truly serves as a medium of expressing cultural values to readers through story telling, poetry and drama and by it communities preserve the language, tradition and history of their culture for a long period of time which make their tradition to live a long life.

Prominently enough, for colonized people literature has truly worked as a great medium to express their feelings, horrible experiences and insults which they have gone through because of being a colonized. There have been many writers in English literature who have tried to recreate identity of colonized people and they have presented a totally different perspective of colonized people. Through literary works, writers reclaim their cultural identity by telling their own life experiences where they faced insults and humiliations because of being a colonized one. Through literature writers challenge the wrong representation of colonized people which is done by colonizers in which they have shown colonized people totally barbarian one but through literary works colonized writers have successfully portrayed totally different perspective of themselves. It is clear that literature truly serves as a medium of expressing culture of a society and literature has power to preserve tradition and to give a totally different and new perspective to a culture.

Role of Internet in spreading Language, Literature and Culture

At the outset, it is important to note that over years internet has played a crucial role in development of language, literature and culture too. It is true to say that internet has become one of the most transformative force of 21st century by providing a digital space for interaction, creativity and expression. Internet has accelerated the globalisation of cultures, values, traditional systems and different views of people which they share with each other.

Internet has very rapidly brought changes in different languages all over the world. The digital age has introduced infinite number of words in language by which one can use these latest words in their literary works easily. Internet has contributed to all languages in the world but the main language to which internet has contributed the most is English language. In today's modern era English language is spoken all over the world and today all types of communication in world are mostly done in English language. Internet has rapidly helped English language to be positioned number one language and mostly used language in the world.

Interestingly, internet has introduced various new publication schemes in field of academics because of which writers now have not to rely on traditional publishing system more. Now they can publish their works easily on the Internet without help of any perticular publisher. Internet culture has given rise to multiple new genres in literary field like web novels, FanFiction, flash fiction micro poetry and hypertext literature. In today's modern era most of the writers in this technological world are at expressing their works on the internet directly because of which they are getting a wide spread and popularity with the rapid speed.

What is more, internet has brought multiple changes in all kinds of cultures propitiously. Through different digital platform like you tube, Netflix and social media cultures are circulating rapidly and everyone is keen to know about each other's culture more and more. online interactions have created a blend of different cultural identities due to which each and every individual is knowing about culture of another one. Now they all are respecting culture of each other. Internet has given power to people to express their views about their culture and any culture too. The greatest benefit of internet has been taken by marginalised and colonized people over the years. In today's modern world no one can supress, insult and differentiate anyone on any kind of basis because by power of Internet one can upload about discrimination happened to him. So clearly internet has brought rapidly and vivaciously considerable changes in traditional cultural system too.

So it is clear that internet has undenaibly become a powerful source and force in developing language literature and culture respectively. It enriches literature and language by introducing new vocabulary, opens fresh avenues for literary and creativity and ensures the global exchange of cultures. While it carries challenges like informality and cultural homogenisation, its role in fostering, inclusivity, democratizing, expression and preserving heritage is unprecedented. Internet has brought revolutionary changes in the field of language, literature and culture and it is because of internet that interest of all people in world has increased to know more and more about language, literature and culture of each other.

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Intersectionality and Representation

It will not be erroneous claiming that literature, language and culture are not only simple mediums of communication but also deeply embedded within power structure and social reality. The term intersectionality was coined by Kimberle Crenshaw to describe different kinds of discriminations faced by people or different basis like gender, race, class and sexuality too. The representation of intersectionality refers to how group and identities are portrayed within discourse and how literary works show intersectionality faced by a common man. Together this framework allows a scholar to examine how literature, language and culture have historically marginalized certain groups while simultaneously offering avenues for resistance and empowerment. Importantly enough, literature serves as a powerful space where experiences of diverse communities are voiced and it reveals how multiple identities intersect with in literary characters and narratives. Writes from post colonial and minority traditions like Tony Morrison, Arundhati Roy have clearly shown how gender, race and class interact to shape a human experience. It has been proved multiple times by many different authors that literature is a powerful tool by which one can express how people are represented erroneously on the basis of intersectionality.

Morever, intersectionality in a literary works represents and also challenges notions of universal human experience that much of Western literary cannon assures. It gives a new and unique Identity and voice to a marginalized and any other person who has been discriminated on the basis of intersectionality. Tradition ideas and tales very firmly claim that all human beings share same kind of experience and differences but intersectionality very clearly tells that every individual is discriminated in its own idiosyncratic way. Intersectionality means a person is discriminated on the personal grounds and every individual has its own different experience of intersectionality.

It can be winded up very clearly that intersectionality and representation have become indispensable tools in understanding how literature, language and culture operate within system of power. Intersectionality clearly provides a powerful lens for understanding representation in human language, literature and culture. By revealing how identity such as gender, race, class discriminate an individual it challenges the notion of a singular or universal human experience. Language becomes more than just a medium of communication and representation shaped through intersectional awareness it ensures that intersectionality is understanding of human expression making literature and cultural discourse more inclusive and diverse in every possible way.

Conclusion

Conclusively, it can be said very promptly that study of language, literature and culture in contemporary academy discourse demonstrates how deeply these fields are interwinged with each other. Language is not merely a tool of communication but a carrier of literature and culture too and literature is not only artistic form but a mirror of society too which reflex the true picture of society. Culture provides and in depth context which gives both language and literature on independent meaning. In today's globalized world academic discourse recognizes that none of elements can be examined in isolation instead compels that all these must be studied as a part of interconnected framework. So it is clear that by approaching them together contemporary scholarship opens a space for multiple voices, challenges dominate narratives and reaches human knowledge more and more.

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Original Article

Interpretation of the Polluter Pays, Precautionary, and Sustainable Development Principles in Climate Law Disputes before the NGT

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Abstract

This study examines how India's National Green Tribunal (NGT) interprets and applies three foundational environmental legal principles — the Polluter Pays Principle (PPP), the Precautionary Principle (PP), and the Sustainable Development Principle (SDP) — in climate-laws–related disputes. Combining doctrinal analysis of NGT judgments with qualitative interviews and compliance-tracing of selected cases, the research evaluates the Tribunal's doctrinal consistency, use of scientific evidence, remedial creativity, and effect on implementation and policy. The study aims to identify strengths and gaps in NGT jurisprudence and propose recommendations to strengthen the Tribunal's role in enforcing climate law obligations and protecting vulnerable communities.

Keywords: *NGT; Polluter Pays Principle; Precautionary Principle; Sustainable Development; climate law; environmental jurisprudence; enforcement; India; adjudication; compliance.*

Introduction

Climate change poses complex legal and policy challenges that require specialized adjudication. India's National Green Tribunal (NGT), established under the National Green Tribunal Act, 2010, plays a pivotal role in resolving environmental disputes, including those involving climate laws and climate-linked harms. The NGT routinely invokes broad environmental principles — particularly the Polluter Pays Principle (PPP), the Precautionary Principle (PP), and the Sustainable Development Principle (SDP) — to decide questions of liability, remedial measures, and balancing of competing interests. This research investigates how the NGT interprets these principles in climate-law disputes, whether its application aligns with domestic law and international norms, and how effective those applications are in producing meaningful mitigation, adaptation, and restitution.

Definitions

1. **Polluter Pays Principle (PPP):** A legal principle that assigns financial responsibility for pollution mitigation and remediation to the party that caused the pollution or environmental harm.
2. **Precautionary Principle (PP):** A principle that authorizes preventive action in the face of scientific uncertainty to avoid serious or irreversible environmental harm.
3. **Sustainable Development Principle (SDP):** The normative mandate to pursue development that meets present needs without compromising the ability of future generations to meet their own needs; in legal disputes, it commonly demands balancing environmental protection with socio-economic development.

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4. **Climate-laws–related Disputes:** Legal disputes that arise under statutes, regulations, policies, or principles specifically addressing greenhouse gas emissions, climate impacts (sea-level rise, flood risk, drought), climate-sensitive ecosystems, and adaptation/mitigation obligations.

Need for the Study of Present Resent Study

1. The NGT's interpretations shape the enforcement of climate laws and the remedies available to affected communities.
2. Existing literature often treats these principles in isolation or at the Supreme Court level; a focused evaluation of the NGT's approach in climate-law contexts is limited.
3. Practical questions persist about evidentiary standards, balance between development and climate protection, and effective enforcement of NGT orders. This study fills that gap by providing systematic doctrinal and empirical evaluation and actionable recommendations.

Aims of Present Resent Study

1. To analyze how the NGT interprets and applies PPP, PP, and SDP in climate-laws–related disputes.
2. To assess the effectiveness of the NGT's remedies and orders in achieving mitigation, adaptation, and remediation goals.
3. To identify institutional, evidentiary, and procedural challenges in adjudicating climate-law disputes at the NGT and to recommend improvements.

Objectives of Present Resent Study

1. To compile and code NGT judgments (2010–present) that explicitly or implicitly invoke PPP, PP, or SDP in climate contexts.
2. To analyze doctrinal patterns and jurisprudential trends in the application of these principles.
3. To assess the role of scientific evidence and expert inputs in NGT decisions on climate disputes.
4. To evaluate compliance and implementation of selected NGT orders dealing with climate-related harms.
5. To propose legal and institutional reforms to strengthen the Tribunal's contribution to climate governance.

Hypotheses of Present Resent Study

H1: The NGT consistently applies the Polluter Pays, Precautionary, and Sustainable Development principles but varies in the specificity and enforceability of remedies across case types.
H2: The Tribunal relies substantially on established legal doctrines (PPP and PP) but faces challenges in integrating complex climate science into its reasoning.
H3: Compliance with NGT orders in climate-law disputes is uneven and is significantly influenced by the availability of technical resources, administrative capacity, and political will at state and local levels.

Literature Search (summary)

The literature search will cover:

A. Primary legal sources: NGT judgments, Supreme Court decisions referencing PPP/PP/SDP (e.g., foundational Supreme Court cases that recognized these principles), statutes (NGT Act, Environment (Protection) Act 1986, Air and Water Acts), and rules/regulations related to environmental clearance and climate policy.
B. Secondary sources: Academic articles on environmental jurisprudence, books on Indian environmental law, policy briefs by think-tanks and NGOs, and empirical studies on compliance and enforcement.
C. International references: Rio Declaration (1992), UNFCCC texts, and IPCC assessment summaries to contextualize scientific standards and international norms.

Search strategy: Use legal databases (SCC Online, Manupatra), NGT official website, government notifications, academic databases (HeinOnline, JSTOR), NGO repositories, and major law journals. Coding will target cases where PPP/PP/SDP are invoked for climate-related issues (GHG emissions, coastal erosion, flood risk, deforestation affecting carbon sinks, etc.).

Research Methodology of Present Resent Study

Research design

A mixed-methods approach combining doctrinal legal analysis, qualitative case studies, and limited quantitative compliance-tracking.

Data collection

1. **Judgment corpus:** Retrieve all NGT orders (2010–present) referencing PPP, PP, or SDP in climate-law contexts. Create a dataset with fields: case name, year, bench, principles cited, facts, scientific evidence used, relief granted, interim orders, and follow C up/compliance status.
2. **Interviews:** Semi-structured interviews with (a) NGT adjudicators or legal officers (subject to access), (b) environmental lawyers, (c) litigants/affected community representatives, and (d) technical experts who have served as court-appointed experts. Aim: 15–25 interviews.

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3. **Compliance documents:** RTI/official records on implementation, official reports, project completion certificates, and field verification for a purposive sample of 8–12 landmark cases.
4. **Secondary materials:** Scholarly articles, NGO reports, media accounts for triangulation.

Data analysis

1. **Doctrinal coding:** Use qualitative coding software (NVivo/Atlas.ti) to identify themes: textual interpretation of principles, reliance on precedent, thresholds for precaution, linkage with climate science.
2. **Quantitative trends:** Descriptive statistics (case counts by year, relief types, disposal time, compliance rates).
3. **Comparative analysis:** Cross-case comparison to identify patterns by sector (industry, infrastructure, ecosystems) and remedy type.
4. **Thematic synthesis:** Integrate interview insights to explain judicial reasoning and implementation challenges.

Sampling

Purposive selection of cases that are high-impact (public interest), representative across sectors (industry emissions, coastal issues, forestry/wetlands, infrastructure), and diverse geographies.

Limitations of Present Resent Study

1. Access to detailed case files and compliance documentation may be constrained by administrative opacity.
2. Interview access to judges may be limited; reliance on practitioners and experts may bias perspectives.
3. Causal attribution between NGT orders and policy change can be difficult to establish definitively.

Strong Points of the Study of Present Resent Study

1. **Topical importance:** Directly relevant to India's climate governance and legal architecture.
2. **Policy relevance:** Findings can inform judicial practice, administrative enforcement, and legislative reform.
3. **Mixed methods:** Triangulation of doctrinal, empirical, and field data increases robustness.
4. **Actionable outputs:** Recommendations can be operationalized by the NGT and regulatory bodies.

Weak Points / Challenges of Present Resent Study

1. **Data access:** Implementation records and follow-up documentation are sometimes incomplete or opaque.
2. **Attribution:** Difficulty in attributing socio-environmental outcomes solely to NGT orders, given overlapping administrative action.
3. **Generalizability:** Findings from selected case studies may not be universally applicable across all NGT benches or regions.
4. **Time and resource intensity:** Field verification and RTI processes require sustained effort and time.

Current Trends of Present Resent Study

1. Increasing number of climate-sensitive PILs and public interest matters before environmental fora.
2. Greater judicial invocation of precautionary reasoning in environmental disputes worldwide.
3. Emphasis on scientific evidence (IPCC, climate models) in climate litigation, but courts vary in technical capacity.
4. Growing interest in non-monetary remedies (restoration, institutional reforms) alongside compensation.

History of Present Resent Study

India's environmental jurisprudence has developed significantly since the 1970s, culminating in a rich body of Supreme Court decisions that mainstreamed environmental principles (e.g., precautionary approach, sustainable development). The NGT, created in 2010, was intended as a specialized tribunal for faster, expert-driven environmental adjudication. Over the past decade-plus, the NGT has become a primary forum for disputes that implicate climate-sensitive issues — including industrial emissions, coastal regulation, forest conservation, and infrastructure impacts — and has frequently invoked PPP, PP, and SDP in shaping remedies.

Discussion of Present Resent Study

This research will examine whether and how the NGT operationalizes these principles in practice. Key discussion points include:

1. **Doctrinal coherence:** Are PPP, PP, and SDP applied consistently, or do different benches interpret them variably depending on sectoral pressures or evidentiary availability? Expectation: Some doctrinal coherence exists, but specific relief and enforceability vary.
2. **Evidentiary standards:** The PP requires action in the face of uncertainty; however, the threshold for precaution and the type of scientific evidence courts demand are variable. The NGT's use of court-appointed experts and technical committees is promising but sometimes ad hoc.
3. **Remedial design:** The PPP tends to be used to assign financial liability; the SDP is used to balance developmental imperatives with environmental protection. The study will analyze whether financial compensation is being used for genuine restoration/adaptation projects, or is it treated as a revenue source without effective ecological restitution.

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4. **Implementation gap:** Even well-reasoned judgments can fail in practice due to weak enforcement mechanisms at state/local levels, limited technical capacity, or political resistance. The analysis of compliance records and field verification will be central to this point.
5. **Access and equity:** Application of these principles must be evaluated through an equity lens — are vulnerable groups adequately protected? Are remedies socio-economically inclusive?

Results of Present Resent Study

Because this is an evaluative study, empirical results will be presented after data collection. Based on preliminary desk review and the literature, anticipated findings include:

1. The NGT references PPP and PP frequently in climate-relevant cases and demonstrates an orientation toward precaution and liability assignment.
2. The specificity of orders (time-bound remediation, monitoring regimes) varies; some cases feature detailed technical directives, others grant generic relief (e.g., "pay compensation" or "stop activity").
3. Use of scientific evidence has increased, but the Tribunal sometimes relies on secondary reports and expert committees rather than full adversarial environmental science proceedings.
4. Compliance rates for monetary compensation orders are higher than for long-term restoration or institutional reform orders.
5. The NGT's decisions have influenced local administrative action in several high-profile cases, but systemic policy change (e.g., across sectors) is uneven.

Conclusion

The NGT plays a crucial and constructive role in interpreting and applying PPP, PP, and SDP in climate laws–related disputes. Its jurisprudence has advanced doctrinal clarity in many respects and has provided remedies aimed at both immediate relief and long-term restoration. Nevertheless, challenges remain in standardizing evidentiary norms for climate science, ensuring enforceability of complex remedial orders, and bridging implementation gaps at subnational levels. Strengthening technical capacity, improving monitoring and compliance mechanisms, and enhancing participatory procedures for affected communities will increase the Tribunal's effectiveness in climate governance.

Suggestions and Recommendations

1. **Strengthen Technical Capacity:** Institutionalize a standing panel of independent climate scientists and technical experts that the NGT can consult rapidly.
2. **Standardize Evidentiary Protocols:** Develop judicially acceptable protocols/guidelines for presenting climate science (e.g., admissible modeling standards, burden of proof in probabilistic harms).
3. **Improve Remedial Specificity:** Encourage the Tribunal to issue time-bound, quantifiable restoration and adaptation directives (with clear monitoring indicators), not only monetary fines.
4. **Monitoring & Compliance Units:** Create dedicated compliance-monitoring cells (possibly within the NGT registry or via empowered independent auditors) to track implementation of orders.
5. **Enhanced Public Participation:** Simplify mechanisms for vulnerable and marginalized communities to access the Tribunal (legal aid, local hearings, translated procedures).
6. **Coordination with Administrative Agencies:** Establish formal coordination frameworks (MoUs) between NGT and agencies (SPCBs, MoEFCC) to ensure rapid implementation of technically complex orders.
7. **Capacity Building for Lower Agencies:** Recommend training programs for SPCBs and local officials on NGT orders, restoration planning, and climate adaptation measures.
8. **Data Transparency:** Mandate public disclosure of compliance data, restoration project details, and monitoring reports linked to NGT orders.

Future Scope

1. Comparative research comparing NGT practice with environmental tribunals in other jurisdictions (e.g., South Africa, UK, Canada) on integrating the three principles in climate litigation.
2. Quantitative impact evaluation of NGT orders on environmental outcomes (e.g., emissions reductions, restored area) using remote sensing and field data.
3. Examination of the role of strategic litigation before the NGT in shaping India's climate policy and private sector behavior (corporate disclosures, green investment).
4. Evaluation of tribunal-led restorative justice models for climate displacement and loss & damage claims.

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Original Article

Market research and analysis for identifying new export opportunities for fruits from Pune district

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Abstract

The horticultural export economy of the Pune district, while robust in volume, is characterized by a precarious dependency on a limited set of traditional markets, principally the European Union for viticulture and the Middle East for pomegranates. This intense market concentration exposes the regional economy to heightened risks arising from geopolitical volatility and shifting non-tariff barriers. This research paper conducts a descriptive market analysis to identify and validate commercially viable alternative destinations. Synthesizing trade data from UN Comtrade and phytosanitary protocols from USDA/APHIS, the study substantiates that the United States has emerged as a Tier-1 opportunity following the 2024-2025 operationalization of sea-freight protocols involving irradiation. Furthermore, the analysis positions Canada and Southeast Asia as critical secondary markets. The paper concludes that while consumer demand in these regions is high, successful market penetration is contingent upon resolving complex supply chain challenges, specifically the maintenance of cold-chain integrity during extended maritime transit and strict adherence to disparate Maximum Residue Level (MRL) standards.

Keywords: *Pune District, Export Diversification, Pomegranate Value Chain, Sea Freight Protocol, Non-Tariff Barriers, Market Analysis, Global Trade Logistics.*

Introduction

The Pune district functions as the nerve center of India's grape and pomegranate export ecosystem. Blessed with a favourable agro-climatic environment in the Sahyadri belt, the region produces world-class 'Thompson Seedless' grapes and 'Bhagwa' pomegranates that have found acceptance in discerning global markets. However, a longitudinal view of trade data reveals a structural fragility: "Concentration Risk." The sector's reliance is heavily skewed, with the vast majority of grape exports funnelled into the European Union (EU) and pomegranates dominated by the Gulf Cooperation Council (GCC) countries.

While these trade corridors are established, they are becoming increasingly saturated and regulated. The EU's progressive tightening of pesticide residue norms and the volatile geopolitical climate in the Middle East pose existential threats to the stability of Pune's export revenues. A single regulatory shift in Brussels or a logistical disruption in the Strait of Hormuz can cascade into a crisis for farmers in Maharashtra.

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This paper posits that the long-term sustainability of Pune's horticultural sector is predicated on immediate geographic diversification. The primary objective of this research is to interrogate secondary data to identify high value, under-served markets that offer stability and premium realization. The analysis pays particular attention to the North American market, analysing how recent logistical breakthroughs in sea-freight protocols have transformed the United States from a niche, air-freight-only destination into a viable volume market.

Literature Review

The discourse on Indian agricultural exports often centres on production capability rather than market feasibility. Sharma and Singh (2023) note that while India ranks among the top global producers of fruit, its share of global trade remains disproportionately low (<1%). Their study of the Maharashtra cluster attributes this to "logistic myopia" a focus on easy, nearby markets rather than distant, high-value ones.

Existing literature identifies logistics as the primary constraint for diversification. Research by the Indian Council for Research on International Economic Relations (ICRIER) highlights that fresh produce exports to the West have historically been constrained by the prohibitive cost of air freight. However, recent industry reports (Global Trade Gazette, 2025) document a paradigm shift: the successful trial of long-haul sea shipments using Controlled Atmosphere (CA) technology. This technological evolution is reshaping the economic geography of fruit exports.

Furthermore, scholars like Roy and Thorat (2022) emphasize the role of Sanitary and Phytosanitary (SPS) measures. They argue that for Indian exporters, the challenge is no longer tariffs, but the technical capacity to meet the "Zero Tolerance" pest standards of countries like the USA and Australia. This paper builds on these findings by specifically analysing how Pune's exporters can navigate these SPS barriers to unlock new territories.

Methodology

This study employs a qualitative, multi-criteria market analysis. The research design focuses on screening global markets to identify "High Potential" targets based on four specific variables:

1. **Import Volume & Growth:** Markets demonstrating a Compound Annual Growth Rate (CAGR) of >5% in fresh fruit imports over the last 3 years.
2. **Trade Complementarity:** Markets where domestic production is insufficient or counter-seasonal to India's harvest windows (Dec-April).
3. **Logistical Viability:** Destinations now accessible via 30–40-day maritime routes.
4. **Regulatory Access:** Countries with active or recently ratified bilateral phytosanitary protocols with India.

Data sources include the UN Comtrade database for flow analysis, APEDA export statistics for baseline performance, and specific import manuals from the USDA (United States) and CFIA (Canada).

Analysis: The New Frontiers

The analysis categorizes opportunities into a tiered framework based on commercial readiness and value potential.

1. Tier 1: The United States (The Sea-Freight Breakthrough) The United States represents the single most significant new opportunity for Pune's pomegranate sector.

- **The Context:** Historically, exporting to the US required air freight, rendering Indian fruit uncompetitively priced against Peruvian or Chilean produce.
- **The Shift:** The 2024-2025 seasons marked a watershed moment with the validation of a sea-freight protocol. This protocol involves a dual-check system: pre-clearance inspection in India and mandatory irradiation treatment to neutralize pests.
- **Commercial Logic:** Sea freight reduces logistics costs by approximately 60-70% compared to air cargo. This cost reduction allows Pune's exporters to land 'Bhagwa' pomegranates in New York or Los Angeles at a price point competitive with South American suppliers, unlocking a market of over 330 million high-income consumers.

2. Tier 2: Canada (The High-Value Alternative) Canada serves as a strategic companion market to the US.

- Market Dynamics: Canadian per capita consumption of fresh fruit is among the highest globally. Unlike the US, Canada relies almost entirely on imports during India's harvest season (winter/spring).

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- Regulatory Alignment: Canada has established MRL standards that are strict but transparent. The successful entry into the US market often facilitates entry into Canada due to the integration of North American supply chains, allowing exporters to service both markets with similar compliance frameworks.

3. Tier 3: Southeast Asia (The Proximity Play) While lower in value per unit than North America, Malaysia and Singapore offer volume and velocity.

- Strategic Advantage: The short transit time (8-12 days) significantly reduces the risk of spoilage and lowers the technical barrier for cold-chain management.
- Consumer Base: The large Indian diaspora provides an immediate "base load" of demand, reducing the need for extensive consumer education about the specific taste profile of Indian grape varieties.

Discussion: The Operational Reality

Identifying the market is the theoretical component; accessing it is the operational challenge. The analysis reveals that the shift to these new markets requires a fundamental upgrade in supply chain infrastructure.

1. The "Irradiation" Bottleneck Access to the US and Australian markets is conditional on irradiation treatment to sterilize potential pests (e.g., fruit flies). Currently, infrastructure for this is limited in Maharashtra. The capacity of irradiation facilities must be scaled up rapidly to match the potential export volume, otherwise, the market opportunity remains theoretical.

2. The 40-Day Cold Chain Shipping to New York takes approximately 35 to 40 days. This is a severe test for fresh produce.

- Technological Requirement: Success depends entirely on the use of advanced Controlled Atmosphere (CA) containers, which regulate oxygen and carbon dioxide levels to put the fruit into "hibernation."
- Risk: Any fluctuation in temperature during this voyage results in "chilling injury" or fungal growth. Pune's packhouses must upgrade their pre-cooling protocols to ensure fruit is brought to the exact shipping temperature (e.g., 5°C for pomegranates) before loading.

Conclusion

The data indicates that the "concentration risk" currently plaguing Pune's horticultural sector is a solvable problem. The commercial operationalization of sea-freight routes to the United States constitutes a paradigm shift, converting a niche, high-cost market into a scalable, high-volume frontier. Combined with the steady demand from Canada and the logistical accessibility of Southeast Asia, a viable roadmap for diversification exists.

However, this transition is not merely a change in destination on a shipping label. It requires a systemic upgrade in compliance and logistics. The future winners in Pune's export sector will not necessarily be the largest farmers, but the most disciplined exporters, those who can master the science of the 40-day cold chain and navigate the complex regulatory architecture of the Western hemisphere. Diversification is no longer an option for expansion; in a volatile global trade environment, it is a prerequisite for survival.

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Original Article

Nanotechnology and Smart Materials in India

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Abstract

This paper provides a comprehensive review of the status, recent advancements, and future prospects of nanotechnology and smart materials research in India. It examines major government initiatives, institutional research strengths, and significant scientific contributions emerging from national programs such as the DST Nano Mission. The study highlights advancements in material synthesis, nano-enabled devices, smart material applications, and sectoral innovations across energy, healthcare, environment, electronics, and defense. It also analyzes India's growing infrastructure—specialized research centers, nanofabrication facilities, and graphene commercialization initiatives—that support both fundamental and applied research. Despite remarkable progress, the paper identifies persistent challenges, including scale-up limitations, regulatory gaps, funding discontinuity, translational barriers, and the need for multidisciplinary expertise. It offers policy and strategic recommendations to strengthen commercialization pathways, improve safety and regulatory frameworks, and enhance industry–academia collaboration. The paper concludes that India stands at a critical juncture where sustained investment, regulatory clarity, and innovation-driven ecosystems can transform laboratory research into impactful technologies and competitive industries in the field of nanotechnology and smart materials.

Keywords: *Nanotechnology, Smart Materials, India, Nano Mission, graphene, sensors, smart windows, commercialization.*

Introduction

Nanotechnology and smart materials represent disruptive technological frontiers that manipulate matter at the nanoscale to produce novel properties and functions. Smart materials respond adaptively to external stimuli (temperature, stress, electric/magnetic fields, light), enabling self-sensing, self-healing, and programmable behaviors. India, with its growing scientific base, targeted national programs, and expanding start-up ecosystem, is increasingly active in both fields. This paper synthesizes the landscape of research and development in India, highlighting institutional contributions, recent advances, sectoral applications, and strategic challenges.

Background and Definitions

Nanotechnology concerns design, characterization, synthesis, and application of materials and devices whose critical dimensions lie between approximately 1 and 100 nanometers. Quantum effects and high surface-area-to-volume ratios give nanomaterials distinctive electrical, optical, mechanical, and chemical properties (DST Nano Mission, 2023) [1].

Smart materials include shape memory alloys, piezoelectric ceramics, magneto-rheological fluids, electrochromic coatings, conductive polymers, and stimuli-responsive hydrogels. When integrated with sensors, actuators, and control systems, smart materials enable adaptive structures and systems across multiple industries (IIT Kanpur Smart Materials Lab, 2024) [2].

National Policy, Programs, and Funding in India

India's Department of Science & Technology (DST) has driven national-level coordination via the Nano Mission (Mission on Nano Science and Technology).

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The Nano Mission provides funding, fellowship programs, and dedicated research institutions to consolidate capabilities and translate research into applications (DST, 2023) [1]. Besides DST, other ministries and agencies (e.g., MeitY, Ministry of Defence, industry partners) support focused initiatives such as graphene commercialization centers and semiconductor-relevant material programs.

Institutional Strengths and Research Infrastructure

India's nanoscience and smart materials research is distributed across central research institutes, IITs, IISc, and specialized centers:

- **Institute for Nano Science and Technology (INST), Mohali** — established under DST's Nano Mission to provide research and translation capabilities [3].
- **Centre for Nano Science and Engineering (CeNSE), IISc Bangalore** — a large integrated center with nanofabrication, characterization, and device prototyping facilities [4].
- **Centre for Nano and Soft Matter Sciences (CeNS), Bangalore** — multidisciplinary research including soft matter and functional materials.
- **IITs with dedicated labs** (IIT Kanpur SMSS Lab, IIT Bombay, IIT Kharagpur, IIT Guwahati) that host smart materials and nanomaterials research groups [2].
- **Special initiatives** such as the India Innovation for Graphene (IICG) at Kochi aimed at graphene R&D and commercialization [5].

These institutions provide clean rooms, characterization suites (TEM, SEM, XRD, AFM), and pilot-scale synthesis units necessary for both fundamental and translational research.

Key Research Themes and Recent Advances

1) Materials and Synthesis

Research in India spans carbon-based materials (graphene and derivatives), metal/metal-oxide nanoparticles, conductive polymers, and advanced ceramics. Efforts include low-cost synthesis routes for graphene oxide derivatives, doped metal oxides for energy applications, and scalable nanoparticle production techniques (INST, 2022) [3].

2) Devices and Systems

Work on nanoelectronic devices, biosensors, wearable nanosensors, energy storage electrodes (supercapacitors), and nano-enabled drug delivery platforms has progressed significantly. Demonstrations include functional graphene-based electrodes, smart hydrogels for controlled release, and piezoelectric energy-harvesting devices (CeNSE, IISc, 2023) [4].

3) Smart Materials Applications

Smart materials research emphasizes shape-memory alloys for actuation, piezo-ceramics for sensing and energy harvesting, electrochromic and thermochromic coatings for adaptive windows, and magnetorheological fluids for dampers and automotive applications (IIT Kanpur SMSS Lab, 2024) [2].

Sectoral Applications and Case Studies

1) **Energy and Environment**
   Nanostructured electrodes and graphene-enhanced materials are being developed for batteries and supercapacitors to improve energy density and charge rates. Smart coatings and photocatalytic nanomaterials are researched for air and water purification (IICG, 2023) [5].
2) **Healthcare**
   Nanoparticles and smart hydrogels are explored for targeted drug delivery, diagnostics, and biosensing. Functionalized graphene oxide has been investigated for biomarker detection and tissue engineering scaffolds (INST, 2022) [3].
3) **Defense and Aerospace**
   The Defence Research and Development Organisation (DRDO) and associated labs are exploring adaptive camouflage materials, electromagnetic shielding, lightweight nanocomposites, and smart actuation systems for defense platforms.
4) **Electronics and Semiconductors**
   India's semiconductor ambitions have spurred material research relevant to device fabrication: two-dimensional materials, wide-bandgap substrates, and nano-patterned surfaces for improved device performance.

Notable case examples include the establishment of a national graphene innovation center (IICG, Kochi) to accelerate commercialization and a reported method for aminated graphene production by Indian university researchers aimed at supercapacitor electrodes [5].

Commercialization, Startups, and Industry Linkages

India's start-up ecosystem has begun translating nanomaterial innovations into products—coatings, sensors, energy storage components, and biomedical devices. Government schemes, incubation labs, and PPP initiatives

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(public–private partnerships) help bridge academia–industry gaps. However, wide-scale commercialization still faces challenges of scale-up, reproducibility, regulatory approval, and cost competitiveness (DST, 2023) [1].

Challenges and Bottlenecks

1) Scale-up and Manufacturing

Laboratory synthesis procedures do not always translate economically to bulk manufacturing. Maintaining quality control and consistent properties at scale is a persistent issue.

2) Regulatory and Safety Frameworks

Comprehensive national regulations for nanomaterial safety, lifecycle assessment, waste management, and occupational exposure guidelines are still evolving. Clear standards and testing protocols are essential for public trust and market adoption.

3) Funding Continuity and Translational Support

While flagship programs exist, long-term funding for mid-TRL (technology readiness level) activities and translational research often lags. Bridging funding mechanisms that support scale-up, prototyping, and certification are needed.

4) Skilled Workforce and Multidisciplinarity

Nanotechnology and smart materials demand interdisciplinary teams covering physics, chemistry, materials science, electrical/mechanical engineering, and biology. Expanding hands-on training, industry internships, and translational fellowships will build required human capital (CeNSE IISc, 2023) [4].

Policy Recommendations and Strategic Priorities

1. **Strengthen translational funding:** Create dedicated financial instruments for pilot-scale manufacturing and product certification.
2. **National standards and safety roadmap:** Develop comprehensive standards for characterization, toxicity testing, and environmental impact assessment.
3. **Industry–academia consortia:** Encourage sector-specific consortia (energy, biomedical, defense) to align research targets with market needs.
4. **Skill development programs:** Expand hands-on nanofabrication and characterization training through national workshops and industry fellowships.
5. **Support for SMEs and startups:** Tax incentives, subsidized testing facilities, and scale-up grants would help early-stage companies demonstrating commercial potential.

Future Outlook

India has the scientific foundation and institutional capability to become a notable player in nanotechnology and smart materials. Strategic investments in scale-up infrastructure, regulatory clarity, and human-capital development could enable India to move beyond academic outputs to competitive manufacturing and product development. Emerging areas with high potential include 2D materials (graphene and beyond), nano-enabled biotech, smart building materials (adaptive façades and windows), and nanoelectronics tailored for local manufacturing ecosystems.

Conclusion

Nanotechnology and smart materials in India have reached an inflection point—strong academic capacity and targeted national programs provide momentum, yet translational bottlenecks persist. Addressing manufacturing, regulatory, and workforce challenges will be critical to convert research excellence into societal and economic value. Collaborative policy measures and sustained investments can accelerate the trajectory from laboratory innovation to scalable, market-ready technologies.

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Original Article

A study on National Education Policy 2020 Opportunities and Challenges - Transforming Nation's Education towards Excellency

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Abstract

One of the key role that plays in the development of the nation is the country's education. The nation's education policy is an important aspect for improving and creating nation's human capital. With the changing scenario the New Updated Education Policy is necessary. The Latest NEP has been introduced in the year 2020. With the policy being developed focusing on quality education, digital education, vocational education, will create better human capital also there will be more job creators rather than job seekers but it will be a bit difficult and challenging for it's implementation as along with huge fund the academicians will also have to updated, the students will also have to learn with a different pattern and the institutions will also have to provide proper infrastructure. So there are lot of challenges but after efforts and proper implementation the fruits of development will be much more than the capital and efforts invested.

Keywords*: National Education Policy, NEP, Education.*

Introduction

With Being Ancient and one of the Largest education systems in the world with varied culture, system and diversity with a huge mass of over more than 260 million students enrolled in educational institutions. India being a developing nation, it has certain challenges in providing quality education to the mass and difficulty is more in rural areas. The National Education Policy was first introduced in the year 1948, has passed through various updations as required according to the scenario the latest policy has been issued in the Year 2020. The latest National Education Policy 2020 aims to provide quality, innovative, progressive education relevant to the current employment needs.

Major Features of the National Education Policy

Addressing the recent scenario the New National Education Policy has been designed with the below features:

1) One of the Important features the NEP aims at is universal access to all so that no one is abiding by the benefits of it.
2) Another Key feature of the latest NEP is Skill Based Education which involves providing learning based on employment opportunities, problem solving skills and help them develop problem solving.
3) The new policy also aims at preparing students according to the current market employment needs i.e. vocational education
4) Also one of the major changes is the adaption of digitalization in education.

Research Methodology

The present work is a blend of descriptive as well as exploratory research work. The information is purely secondary and is collected through various websites, magazines, journals, and book.

Benefits of the National Education Policy

Like every coin has two sides same way the Latest NEP has certain advantages and certain disadvantages.

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Below discussed are some of the advantages.
1) With the trend of digital education and vocational education there will be quality in the students with better problem solving capacity and good marketing skills.
2) With the digital era there will be increased in the enrollment ultimately increasing the development in the nation.
3) With the new education policy will lead to development and growth in the nation.
4) The New National Education Policy also aims at reducing inequality in the nation and creates job givers rather than job seekers.

NEP challenges

The below listed are few of the limitations of the NEP
1) The teaching Fraternity won't be able to accept new changes especially the senior faculties.
2) To fulfill the requirements of the latest providing technology based education require lot of expenses and a lot of time is required for the arrangement and implementation.
3) Creating Facilities in developing nation and rural areas is a challenging task.
4) The new education policy may face lot of resistance from all- the students may not be comfortable, the teachers may not be adaptive even the institutions may not have the appropriate facilities.

Recommendations

To go for a immediate change in the education system is not easy also and not adaptive also. So, in this kind of situation the Government should increase the grants for the arrangement of facilities, also trainning programmes for their professional development. A reasonable time to the academic institutions for the infrastructure development. And a proper channel should be developed for the continuous monitoring and evaluation system so as per the situation proper steps can be taken so that success can be achieved.

Conclusion

One of the most important thing for the development and growth of the nation is it's education system. With gap of every 5 years there's a change in the economy looking at the above change meeting the needs the education policy needs to be updated. With the vision and mission of self reliant country one has to create quality workforce. Thus the new National Education Policy which focuses on important factors like vocational education, digital education, problem solving skills etc. will bring a positive and a fruitful change in the nation and economy. When all hands work together it will give great results and a great transformation with better development in the nation.

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Original Article

AI in commerce – A comparative analysis of AI based and Traditional Investment decision making approaches

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Abstract

The study presents a comparative analysis of AI-based and traditional investment decision-making approaches, highlighting the differences in how investors make decisions when adopting either model. It examines which approach is more effective in generating positive results, minimizing risk, and meeting investors' financial goals. The research also explores how financial institutions are striving to meet investor expectations by integrating both traditional and AI-based methods to create a balanced investment framework. Primary data were collected through structured interviews with investors, financial analysts, and advisors, while secondary data were obtained from case studies and related research to provide deeper insights and validation. The study analyses how investor decision-making is influenced by both approaches and evaluates their impact on investment outcomes. Specific objectives were framed, and hypotheses were tested to determine the comparative effectiveness of AI-driven and traditional models in modern financial decision-making.

Keywords: *AI based investment decision, AI based methods, portfolio optimization, robo-advisors, hybrid model.*

Introduction

AI has transformed the financial sector on a large scale. In the banking industry, it has introduced innovative strategies and techniques, particularly in investment activities, which serve as a major source of finance for banks. In the financial market, investments play a vital role in regulating credit flow and supporting economic growth. Investors constantly seek opportunities that offer maximum returns with minimal risk and prefer investment avenues that meet their personal and financial goals. While investors have traditionally relied on agents, consultants, and market tracking to make informed decisions, AI now provides a more efficient and less biased alternative. By reducing human error and simplifying complex processes, AI has the potential to reshape how investment decisions are made.

AI tools such as machine learning algorithms, predictive analytics, and robo-advisors enhance portfolio optimization, risk assessment, and decision-making accuracy. Several studies highlight that AI improves market efficiency, reduces behavioural biases, and supports data-driven investment decisions. However, the integration of AI also raises concerns regarding data privacy, transparency, and accountability in financial decision-making.

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Literature review

1) (Obinna Barnabas Onyenahazi1and Bernard Owusu Antwi, 2024) – The study examines how the rise of Artificial Intelligence (AI) has transformed investment decision-making. It compares human expertise with AI-driven models and highlights issues related to transparency and ethics. Using case studies and data analysis, the research shows that AI improves the efficiency and accuracy of investment decisions. However, it concludes that AI should support—not replace—human judgment to ensure responsible and balanced investment outcomes.

2) (Adrian Abhishay1 , Alicia Angel, 2025) - The paper examines certain risks and factors that are often overlooked by human experts in investment decision-making but are identified by AI models, which provide valuable suggestions to investors. It explores how investors perceive the use of AI in relation to their personal financial goals. The study employs a descriptive research method, supported by a survey conducted through a questionnaire and a review of related articles and research papers. The researcher focuses on understanding the gap between human judgment and the actual influence of AI on investors' choices.

3) (Mertzanis, 2025) - The study addresses a research gap through a comprehensive analysis of six key themes: AI-driven portfolio management and optimization, financial forecasting and market prediction, AI-powered robo-advisory services, risk management and fraud detection, strategic investment decision-making, and the enablers and constraints in AI adoption. The findings reveal that AI not only enhances operational efficiency but also reshapes strategic and institutional practices in the investment landscape.

4) (Khanna, 2021) - The paper highlights the key benefits and limitations of AI in finance by analysing case studies and empirical evidence. It examines how AI supports risk management, investment strategies, and financial performance while also addressing ethical considerations. The study includes insights from both retail and institutional investors. It concludes that AI has brought significant transformation to the investment landscape and created major opportunities for financial institutions.

5) (Jagtap, 2025)J - The study explores the major changes in the financial and investment world brought by AI tools such as algorithmic trading, robo-advisors, predictive analytics, and sentiment analysis. These technologies influence investment strategies and investor behaviour. The research uses data collected through a Google form and secondary sources such as blogs and articles. The study emphasizes the need for investors, regulators, and financial institutions to adopt AI tools to improve decision-making, enhance creativity in the financial sector, and maximize investor portfolios.

Objectives

1) To analyse how AI based investment decision making affects investors decision in comparison to traditional approach.
2) To compare AI based and traditional investment decision making approach as in terms of returns and risk reduction.
3) To examine whether AI based or traditional investment decision making meets investors personal and financial expectation.

Hypothesis

1) **H0 –** AI based investment decision making does not make a significant difference in Investor's investment decision compared to the traditional approach.
   H1 - AI based investment decision making make a significant difference in investors investment decision compared to the traditional approach.
2) **H0 –**AI based and traditional investment decision making approaches do not have Any significant relationship in terms of returns and risk reduction.
   H1 -AI based and traditional investment decision making approaches have significant relationship in terms of returns and risk reduction.
3) **H0** –AI based and traditional investment decision making approaches do not

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Effectively meet investor's personal and financial expectations.

H1 - AI based and traditional investment decision making approaches effectively Meet investor's personal and financial expectations.

Research Methodology

Primary data were collected through the structured interview method to compare AI-based and traditional investment decision-making. Structured interviews were conducted with investors, financial advisors, and financial analysts from different age groups who had experience with both approaches. A total of 67 respondents were interviewed. A well-prepared set of questions was designed to ensure the collection of authentic data regarding decision-making in terms of returns, risk, effectiveness, efficiency, ethical concerns, and satisfaction levels.

Secondary data has been collected through analysis of case studies.

1) **AI optimization of Investment strategies at Capital Gain Investment (2025) –**

Capital gain Investment struggled to get good returns in a volatile market. Traditional prediction models failed to understand complex market trends, leading to poor investment decision. The firm introduced an AI based system using machine learning and sentiment analysis to study large data sets like stock prices, economic indicators, and news. The AI learned from past results and adapted strategies in real time to improve decision making.

Capital gain achieved a 20% rise in annual returns and responded faster to market changes. Client trust and satisfaction increased, making the firm a leader in AI-driven investment management.

2) **AI enhanced portfolio management at Equity Plus investment (2025) –**

Equity Plus Investment faced challenges in managing large and complex client portfolio. Traditional tools were slow and failed to provide timely, accurate investment advice, resulting in missed opportunities and declining client satisfaction. The firm implemented an AI-powered portfolio management system that used deep learning and real-time market analysis to optimize asset allocation. The system analysed client goals, risk levels, and market trends to offer personalized investment strategies and automatically rebalance portfolio as conditions changed.

With AI0integration, Equity plus achieved am35% improvement in portfolio performance and responded faster to market shifts. Client trust and loyalty increased, positioning the firm as an industry leader in technology driven financial management.

3) **Dynamic Pricing Strategy at Equity Mark Investment –**

Equity Mark struggle to stay competitive with static pricing models that couldn't adapt to fast-changing market conditions, leading to missed opportunities and reduced trading volumes. The firm implemented AI-driven dynamic pricing engine using real-time data, predictive analytics, and reinforcement learning to automatically adjust prices based on market trends and competitor activity. The system also offered transparency to build trader trust.

Trading volumes increase by 25% pricing accuracy improved by 30% and overall profitability increased. The innovation helped Equity Mark attract new clients and strengthen its position in the market.

4) **Minotaur Capital : AI for Alpha-Driven Fund Strategy –**

Minotaur Capital struggle to identify top investment opportunities quickly in volatile global markets. Human analyst couldn't process the huge volume of financial reports and data fast enough, leading to slower decisions. The firm built on AI platform. Called Taurient that analyses over 35000 articles weekly using natural language processing and sentiment analysis to find new market trends. Human managers then review these AI insights to plan smarter Investments combining human expertise with AI speed.

The fund achieved a 23.5% returns, outperforming its benchmark of 17.4%. Research time was reduced by 60% helping Minotaur make faster and more confident investment decision.

5) **BlackRock: Intelligent AI Agent for portfolio Insights.**

Traditional data system gave only past insights and couldn't provide real-time, forward-looking analysis for portfolio decisions. Black Rock developed Asimov, an AI agent integrated into Alladdin platform. It reads and analyses news, reports, and regulatory updates to give portfolio managers real-time insights, risk alerts and strategy suggestions. Decision making become faster and more accurate. Portfolio managers gained better awareness of global events and BlackRock strengthened its leadership in AI-driven assets management.

Data Analysis

A well-prepared interview schedule consisting of predefined questions was used to obtain authentic and reliable information. The questions were designed to explore key dimensions of investment decision-making, including risk assessment, returns, efficiency, effectiveness, ethical considerations, and overall satisfaction levels. Traditional investors, particularly those with longer market experience, expressed greater comfort with conventional methods and continued to rely on human advisors for personalized guidance, trust, and emotional assurance. They valued the human touch in interpreting market trends and managing uncertainties. In contrast, younger investors showed strong interest and enthusiasm toward AI-based models and techniques in investment decisions. It was also observed that, to meet the expectations of these new and tech-savvy investors and remain competitive, financial institutions are adopting

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innovative strategies by providing specialized training to financial advisors and analysts to help them integrate AI-based algorithms into investment decision-making and better influence investor choices.

Case Study Analysis:

Sr. No.	Case studies	Challenges	Solution	Result
1	AI optimization of Investment strategies at Capital Gain Investment (2025) –	Low returns due to volatile markets and outdated prediction models	Adopted an AI platform using machine learning and sentiment analysis to predict market trends and adjust strategies in real time.	20% higher annual returns, faster market response, and stronger client trust.
2	AI enhanced portfolio management at Equity Plus investment (2025)	Equity Plus struggle to manage complex portfolios with traditional tools, leading to missed opportunities and unsatisfied clients.	Adopted an AI powered system for real time market analysis, personalised portfolio strategies, and automated rebalancing.	Achieved a 35% improvement in portfolio performance, faster market response, and stronger client trust.
3	Dynamic Pricing Strategy at Equity Mark Investment	Static pricing models failed to adjust to market changes, causing missed opportunities and lower trading volumes.	Introduced an AI powered dynamic pricing system using real-time data, predictive analytics and reinforcement learning to adapt prices automatically and transparently.	Trading volumes grew by 25%, pricing accuracy improved by 30%, and profitability increased, strengthening Equity Mark's market position.
4	Minotaur Capital : AI for Alpha-Driven Fund Strategy	Analysts couldn't process massive market data quickly, slowing investment decision in volatile markets	Built Taurient, AI platform using NLP and sentiment analysis to scan 35000 + articles weekly and generate market insight for fund managers.	Fund returns increased to 23.5% and research time dropped by 60%, boosting speed and performance.
5	BlackRock : Intelligent AI Agent for portfolio Insights	Traditional system lacked real-time and forward looking insights for portfolio decisions.	Developed Asimov, an AI agent in the Aladdin platform, to analyse reports, news and regulations for real-time strategic support.	Faster, more accurate decisions and improved global market responsiveness, reinforcing Black Rock AI leadership

Findings and Conclusion

The findings reveal clear differences in attitudes between traditional and AI-oriented investors. Financial institutions are actively adapting to this shift by providing specialized training to advisors and analysts to integrate AI algorithms into investment practices. This approach combines human expertise with AI efficiency, creating a hybrid model that enhances decision accuracy and investor satisfaction.

Case studies further show that AI-based models deliver faster and higher returns by effectively analysing market opportunities and risks. The integration of AI increases profitability for financial institutions and strengthens investors' portfolios through data-driven and timely decisions. Overall, the study concludes that a balanced combination of human judgment and AI technology ensures more effective, ethical, and sustainable investment decision-making

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Original Article

The Next-Gen Librarian: Bridging Information Management and Data Science

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Abstract

In today's information-driven digital era, the nature and purpose of Library Science have undergone a significant transformation. In traditional times, librarians were regarded merely as custodians of knowledge and managers of information. However, with the rapid advancement of technology, their role has evolved into that of information analysts, data managers, and innovative knowledge custodians. Against this backdrop, the concept of the "Next-Gen Librarian" has emerged as a vital link connecting the fields of information management and data science. The primary objective of this research is to study the transformation occurring in Library Science and to examine the impact of emerging technologies on information management. With the help of Artificial Intelligence (AI), Big Data, Machine Learning, and Cloud Computing, the processes of information collection, storage, retrieval, and analysis have become faster and more efficient. Consequently, the modern librarian must now possess expertise not only in traditional library services but also in data analysis, digital preservation, information security awareness, and enhancement of user experience. Concepts such as "Smart Libraries," "Digital Archives," and "Open Access" have made information more accessible and inclusive. However, new challenges have also emerged, including the limitations of technological tools, threats to information security, and the constant need for skill development. Thus, the "Next-Gen Librarian" is no longer just a guardian of knowledge but a modern information professional who bridges the domains of information management and data science. Such a librarian becomes a knowledge link guiding society toward the intelligent and analytical use of information.

Keyword: *Next-Gen Librarian, Information Management, Data Science, Smart Library, Digital Transformation.*

Introduction:

In the 21st century, knowledge and information have become the most essential tools for the progress of society. Emerging technologies such as Digital Technology, Artificial Intelligence (AI), Big Data, and Cloud Computing have completely transformed the definition of information management. In this rapidly changing digital environment, Library Science is also evolving into a new, technology-driven discipline. Traditional librarians are no longer just custodians or classifiers of information; they are now emerging as data analysts, technology experts, and innovative information managers. The concept of the "Next-Gen Librarian" stands at the center of this transformation. The librarian of the future will not merely preserve information but will act as a data-driven professional who interprets, analyzes, and customizes information services according to users' needs. With the development of Smart Libraries, Digital Archives, and Open Access Databases, the flow of information is becoming faster, more open, and global in nature. In the future, libraries will transform from being simple repositories of knowledge to interactive knowledge hubs, where AI- and Machine Learning-based recommendation systems will deliver personalized information to users

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At the same time, librarians will need to acquire expertise in data analytics, cybersecurity, digital preservation, and information ethics. Against this backdrop, the role of the "Next-Gen Librarian" becomes a vital bridge between knowledge and data. The librarian of the future will not merely provide information but will act as an information innovator, transforming data into intelligent insights that contribute to societal progress. Thus, Library Science is evolving from a traditional storage-based discipline into a dynamic, technology-enabled, and socially-oriented knowledge management system.

Digital Transformation and the Changing Role of the Next-Gen Librarian

The 21st century has ushered in an era of unprecedented digital transformation in information management. Knowledge is no longer confined to printed books or physical records; it now spreads rapidly across digital platforms, making information more accessible, inclusive, and global. Modern libraries have evolved into digital knowledge centers, where users can access e-books, online journals, databases, and digital archives instantly. Initiatives such as the National Digital Library of India (NDLI), Shodhganga, and Project Gutenberg have made research and literature freely available, democratizing access to knowledge. This transformation has been driven by advanced Information Technology (IT) tools and systems. Online Public Access Catalogues (OPAC), Integrated Library Management Systems (ILMS), RFID, cloud storage, and automated cataloging have streamlined library operations, improving efficiency, transparency, and user satisfaction. Artificial Intelligence (AI) and Machine Learning (ML) now enhance library services by providing personalized recommendations based on users' reading habits. For example, if a student accesses research material in economics, the system can suggest related e-books or articles. Consequently, the role of the librarian has shifted dramatically. Today's "Next-Gen Librarian" is not merely a custodian of books but a data-driven professional who organizes, analyzes, and interprets information to meet users' needs. Librarians now act as digital guides, teaching users how to navigate e-libraries, evaluate credible sources, follow copyright regulations, and protect data privacy. They also provide research assistance, helping students, scholars, and the public leverage digital tools efficiently. The convergence of technology and human expertise is central to this new role. Next-Gen Librarians require skills in data analytics, machine learning, cloud computing, digital archiving, and information ethics. They transform libraries from simple repositories into interactive knowledge hubs where AI-powered recommendation systems, smart search tools, and virtual assistants improve user experience. Libraries now function as "Smart Knowledge Networks," integrating human intelligence, data, and technology to create dynamic and inclusive learning environments. Ultimately, the Next-Gen Librarian represents the perfect blend of technological proficiency and analytical insight. By embracing digital transformation, they not only preserve and disseminate information but also enable knowledge creation, innovation, and societal progress. Modern libraries have thus evolved into vibrant centers of learning, research, and data-driven decision-making, reflecting the intersection of information science and data science in the digital age.

The Rise of Data Science in Libraries:

In the digital era, the explosion of information is taking place at an unprecedented speed. Internet searches, e-journals, research reports, social media platforms, and online libraries generate billions of data points every single day. Extracting useful and relevant knowledge from this massive ocean of information has become a major challenge. Out of this need emerged the discipline of Data Science. Data Science is not just statistics; it is an intelligent process of analyzing information to discover hidden patterns, trends, and relationships within data. Today, Data Science has become highly significant in the field of Library and Information Science. Modern libraries increasingly depend on data-driven decision-making. Using Big Data and Artificial Intelligence (AI), libraries analyze user behavior such as book borrowing patterns, online searches, e-journal downloads, and reading preferences. This analysis helps libraries understand user needs, changing learning trends, and academic interests. Just as Google Scholar and Amazon Kindle offer personalized reading recommendations, similar techniques are now being adopted in library services. Earlier, library services were uniform for all users, but Data Analytics has made them personalized and user-centric. University libraries analyze the reading habits of students and researchers to strengthen digital resources relevant to their subjects. Some libraries also use User Behavior Analytics to assess the relevance and currency of their collections, making information services more efficient, dynamic, and accessible. Data Science is equally valuable for administrative decision-making. Collection development, budget allocation, database or journal subscriptions, and resource distribution are now based on evidence-driven insights. Tools such as Tableau and Power BI help present data clearly through visualizations, enabling administrators to make informed and transparent decisions. In India, initiatives like INFLIBNET, DELNET, and the National Digital Library of India (NDLI) have effectively used Data Science to analyze the reading patterns of millions of users and improve their services. Thus, the rise of Data Science is not merely a technological shift but an intellectual transformation in library science. The librarian of the future will not remain just a custodian of information but will emerge as a data analyst, information strategist, and knowledge creator.

Smart Libraries and Automation:

In the 21st-century information era, the concept of the "Smart Library" has emerged as a new milestone in modern library science. Traditional library systems are rapidly transforming into fully digital and automated environments. Every process from information creation and collection to classification and distribution now integrates

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Machine Learning (ML), Artificial Intelligence (AI), and the Internet of Things (IoT). As a result, libraries have evolved from being mere storage centers into intelligent knowledge hubs capable of making decisions based on user needs. The foundation of smart libraries lies in automation. Today, many universities and research institutions use automated cataloging systems, self-check-in and check-out machines, and RFID-based book management systems. These technologies make locating, issuing, and returning books faster and more accurate. Additionally, AI-powered search tools analyze user queries to deliver the most relevant results, thereby improving search efficiency and user satisfaction. Virtual assistants and catboats have also revolutionized library services. AI-based catboats such as "Library Bot" or "Ask Me Assistant" help users with real-time information about books, databases, and library resources anytime, anywhere. These virtual systems reduce the daily workload of librarians while providing personalized and responsive services. Another vital component of smart libraries is the sensor-based management system. Using IoT technology, these systems automatically control lighting, temperature, and noise levels. They also assist in book tracking, user identification, and secure access management. Some advanced libraries have introduced facial recognition or smart card entry to ensure both security and efficiency. Through these innovations, libraries have become more digital, user-centric, and convenient. Users can now access e-books, research databases, and multimedia content from anywhere in the world. These systems save time, manpower, and cost while enhancing accessibility. Ultimately, the smart library is not just a technological advancement but a new chapter in knowledge management. It represents the fusion of AI, data science, and human needs, creating an intelligent, self-learning ecosystem. The library of the future will not merely store information it will be a dynamic, interactive, and adaptive system, symbolizing the true spirit of the knowledge age.

Challenges and Opportunities:

Although library science is rapidly evolving in the digital age, this transformation has also brought forth several new challenges. While information management, data science, and automation have given library services a new dimension, issues such as limited resources, lack of technical skills, and technological inequality have emerged as major obstacles. In this transitional phase, the Next-Gen Librarian faces the challenge of adapting to new technologies, engaging in continuous learning, and fulfilling evolving professional responsibilities. The first major challenge is the shortage of technological infrastructure. Many libraries still lack updated computer systems, licensed software, and high-speed internet connectivity. This problem is even more severe in rural and small educational institutions, where digital facilities are minimal. Consequently, libraries struggle to provide efficient digital services. Alongside this, the digital divide poses a significant social issue not all users have equal access to digital tools. Some readers lack the technical knowledge, internet connectivity, or devices required to use e-libraries, e-journals, and databases effectively. The second critical challenge is related to information security risks. Data stored in digital libraries particularly research materials and personal information is vulnerable to cyber attacks. Hence, issues like data privacy, secure backups, and access control have gained importance. Libraries now need to establish strong cybersecurity policies and educate users about safe digital practices. Another pressing concern is professional training and reskilling. Traditional library education is no longer sufficient. Modern librarians must acquire expertise in AI, Data Analytics, Cloud Systems, and Digital Curation. Many universities have introduced new academic programs and workshops to strengthen these competencies, thereby expanding the librarian's role into the domains of information technology and data science. However, alongside these challenges come numerous opportunities. Librarians now have new career paths in data management, digital archiving, content creation, and information security. Emerging fields such as Digital Humanities, Open Access Policies, and Knowledge Analytics are creating innovative research and collaboration opportunities. Ultimately, challenges and opportunities in this era are interdependent. Every challenge presents a chance for growth, innovation, and transformation. The modern librarian is not only developing technical expertise but also enhancing creativity, communication, and a lifelong learning mindset. As a result, the future of library science will go beyond information management evolving into a field that harmonizes human knowledge, technology, and social progress.

Future Prospects of Library Science:

In the digital era, information management is constantly evolving. Libraries, once focused primarily on storing books and printed materials, are now transforming into data-centric, technologically advanced, and research-oriented knowledge centres. The development of future libraries can be understood through several key directions that reflect their evolving roles, technological innovations, and global impact. Firstly, the data-driven library model will revolutionize library operations. Libraries will rely on data analytics to make informed decisions by analysing users' reading patterns, time usage, and information-seeking behaviour. Artificial intelligence (AI)-based smart library portals will offer personalized recommendations for books, articles, and research materials. Machine learning algorithms will forecast book demand and optimize digital resources, while real-time dashboards will assist administrators in dynamic decision-making. Secondly, multidisciplinary knowledge management will break traditional subject boundaries. Open-access data repositories will store content from multiple disciplines, and linked knowledge platforms will integrate information across fields, providing researchers with a holistic perspective. For example, initiatives such as the National Digital Library of India *(NDLI)* have successfully consolidated interdisciplinary resources, supporting collaborative and cross-domain research. The transformation of librarians into information scientists marks another

major shift. Future librarians will become data analysts and knowledge engineers, skilled in data science, artificial intelligence, and information strategy. They will use digital humanities tools and data visualization techniques to transform raw data into meaningful insights, while AI-powered systems will help analyse large research datasets efficiently. In addition, smart libraries and automation will redefine user experiences. Catboats and virtual assistants will provide instant responses to user queries, while RFID and IoT-enabled systems will track books, automate lending and returns, and enhance efficiency. Voice search and augmented reality tools will make information discovery more intuitive and interactive. Lastly, open knowledge networks and global connectivity will create a worldwide digital knowledge ecosystem. Semantic web technologies will interlink data across platforms, and open data initiatives will ensure equitable access to research and resources. Networks like World Cat and European already promote international collaboration and shared access to information. Thus, the future of library science will merge data, technology, and human intelligence into one integrated ecosystem. Librarians will evolve from mere custodians of books to co-creators of knowledge, data strategists, and digital innovators ensuring that libraries remain essential pillars of learning and research in the data-driven age.

Conclusion:

The future of library science is moving beyond the traditional role of merely storing information, evolving into data-enabled, technology-driven, and research-oriented knowledge centers. In the digital era, where the volume of information is continuously expanding, it is no longer sufficient to simply collect books and documents. Libraries must now analyze information and generate new knowledge from it. In this transformation, the "Next-Gen Librarian" emerges as a central figure. The Next-Gen Librarian is not only an information custodian but also a data scientist and knowledge engineer, capable of providing personalized guidance based on users' reading patterns, research projects, and digital resource usage. By leveraging AI-powered smart portals, predictive analytics, and data visualization tools, librarians will move beyond traditional collection management to make research more efficient, precise, and innovative. Future libraries will function as multidisciplinary knowledge hubs, integrating content from fields such as computer science, sociology, environmental studies, psychology, and medicine. Through semantic linking and open access data repositories, libraries will create interconnected networks of knowledge, enabling researchers to draw insights from multiple disciplines and develop new perspectives. Smart libraries equipped with IoT, augmented reality interfaces, and AI-powered assistants will offer users a seamless, intuitive, and engaging experience. On a global scale, open knowledge networks and digital repository systems will connect libraries to a worldwide digital ecosystem, fostering collaborative research and making information openly accessible to all. Ultimately, the Next-Gen Librarian represents the convergence of information management and data science, acting as an innovator in knowledge creation and a strategist in the digital landscape. Libraries will no longer be mere repositories of information but will serve as milestones in humanity's journey toward a new era of knowledge, providing a solid foundation for research, education, and innovation.

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Original Article

Policy, Education, and Development: Reviewing NEP 2020 in the Context of Viksit Bharat 2047

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Abstract

Education is the foundation of economic growth, innovation and social change and thus it is the key determinant in the development of country. The National Education Policy 2020 brings a wide range structure aimed to modernize the Indian Education system by promoting holistic and skill based education system, aligning with demands of 21st century. Similarly, Viksit Bharat 2047 is a demonstration of India as a fully developed country by the 100th anniversary of its independence, which preview and promises inclusive growth, sustainability, technological progress and knowledge supremacy. The given review study examines the convergence of NEP 2020 and Viksit Bharat 2047, highlighting education as a strategic investment in achieving national developmental vision by analyzing various research papers, articles, official government documents, and online resources. The study draws the conclusion that successful execution of NEP 2020 will be the central key to harness India's demographic dividend and ensuring that its transformation into a globally competitive knowledge economy will be achieved by 2047.

Keywords: *NEP 2020, Holistic Education, Viksit Bharat 2047, employability, skills, research, knowledge economy.*

Introduction

As the cornerstone of economic growth, innovation, and social change, education is essential to the advancement of a country. Giving prominence to education puts a country in a better position to develop over the long run and gain influence overseas (Jha, 33). India being a developing country, its GDP is expected to reach ten trillion dollars by 2030–2032, making it the third largest economy in the world. Apparently nation's knowledge resources will govern the 10 trillion-dollar economy (Venkateshwarlu, 191) and to strengthen the Indian Education system, the Government of India announced the New National Education Policy 2020 (NEP 2020) on July 29, 2020 (MHRD). This policy outlined a new vision for the Indian educational system aiming at fulfilling the 21st century needs. Also during the intervening period Government of India initiated the 'Viksit Bharat 2047' for making India a developed country till it reaches its 100th year of Independence in 2047 outlining the inclination towards developed India focusing on economic development, social justice, technological innovation, architecture and sustainable development (Chaudhary). This ambitious intent demands an exhaustive and multifaceted outlook that takes dominance of the multiple possibilities that lie ahead despite addressing the limitless hiccups and a strong synergy is found between the National Education Policy (NEP) 2020 vision and the entire development blueprint for India that will lead to Viksit Bharat 2047. These two proposal's convergence highlights the importance of education as a strategic investment in the nation's future as well as a social service. The given study is focusing on highlighting the accompaniment of National Education Policy 2020 and Viksit Bharat 2047 framework.

Research Objective: The study's main objective is to identify main features of NEP 2020 and to align them with Viksit Bharat 2047's vision.

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Research Methodology: Study analyses the NEP 2020 policy document, articles, conference papers and online resources to gather information highlighting the linkage between NEP 2020 & Viksit Bharat and identifying the implementation challenges of policy.

National Education Policy 2020: A Policy Framework

The New Education Policy (NEP 2020) launched by the Government of India is the first Education policy in 21st Century (Pandey) and beneficial move amid the Covid-19 pandemic's negative impact (Kumar). New Education policy tiding over the disparities lying in the current education system with ingenious and contemporary recommendations largely focusing on issues of accessibility, equity and affordability throughout the initial school education to higher education (Saxena). The policy takes an integrated approach, encompassing teacher education, adult learning, vocational training, higher education, and school education (Mishra). As compared to traditional policies governed in 1968 and 1986, New Education Policy 2020 intends to focus on development of critical thinking, problem solving skills and creativity instead of memorization (Panditrao), also it facilitates a multidisciplinary educational paradigm which is holistic, thus encouraging moral, ethical, social, physical, emotional and intellectual growth(Joshi). It incorporates a vocational education into higher education to provide students with the level of practical competencies and to reinforce the industry alliances, internships and apprenticeships (Gupta and Agarwal;Kurien and Chandramama). The policy promotes a culture of research that spurs the innovation and critical thinking (Patil and Patil), value-based education through ethics, inclusivity and indigenous knowledge (Asagar), and digital transformation through the integration of traditional and online learning methods to increase accessibility and quality(Modi).

Viksit Bharat 2047: India's Development Vision

Viksit Bharat 2047 is the vision visualized by Honorable Prime Minister of India Shri Narendra Modi thrusting on making it a developed country till 2047(Shukla) as a whole in terms of Economic, social and technological realms (Mahida). It's a future oriented approach identifying the requisites for resilience and innovation to cater the demands of changing global environment (Padder). This aspiration has the foundation based on four pillars – yuva, garib, mahilayen and annadata (Sharma). Within a context of efficient governance, the project is supported by the ideas of sustainable progress, which emphasizes ecologically conscious development practices, and inclusive growth, which guarantees that the advantages of development reach all facets of society (Virmani). However, a balanced strategy is crucial for true development, which transcends economic progress. Through healthcare and education, a developed country protects the environment for sustainability, fosters social inclusion to lessen inequality, and guarantees human advancement (Bano and Varghese). Viksit Bharat 2047 prioritizes youth empowerment recognizing young people as drivers of creativity, innovation and growth. India can readily harness its demographic dividend to promote social development, sustainable economic growth and development by making sure that it provides access to good education, full development of skills and entrepreneurial prospects as well as involving all in engagement platforms (Padma). The vision also focuses on the achievement of knowledge preeminence, development of global institutions, encouragement of superior research and strengthening of industry academic linkage, which also makes India a global hub of knowledge (Suthar). They promote economic growth by investing in specific talent creation, industrialization and entrepreneurial ecosystems (Singh and Sadhanandan), and the marginalized communities should be given equal opportunities to ensure empowerment and mutual development of the society (Jain).

National Education Policy 2020 linkage with Viksit Bharat 2047

National Educational Policy 2020 serves as an essential tool in supporting the national vision of Viksit Bharat 2047, which has helped educational reforms, keep up with the global developmental goals of the country celebrating 100 years of independence. As the policy promotes holistic and multidisciplinary learning, critical thinking, problem solving and creativity are fostered(Kumar), making citizens of global competence, its emphasis on skill development and employability, aided by vocational training, experiential pedagogy and industry – academia connectivity, prepares the workforce to enhance economic growth and competitiveness in the world. In addition, NEP 2020 promotes research and innovation by urging institutions of higher learning to be transferred into knowledge hubs that promote patents, entrepreneurship and startups thereby enhancing the Indian presence in the global knowledge economy. The Policy also lays emphasis on values and citizenship incorporating ethics, inclusiveness and cultural identity so as to advance social equity and cohesive nation building (MHRD). Eventually, the digitalization and integration of artificial intelligence in the educational process would equip the nation for emerging sectors and expedite India's transformation into a technologically advanced and digitally empowered society (Muralidharan, Shanmugan, and Klochkov 75), in alignment with the Viksit Bharat 2047 vision. Although NEP 2020 establishes an ambitious framework, its execution confronts many structural and systemic challenges.

- **Infrastructure and Funding constraints**: large number of rural institutions often lacks the infrastructure to support the new curriculum. Significant funding is needed to upgrade facilities and implement technology-driven education, which could strain existing budgets (Aktar, 304).
- **Lack of professional and skilled educators**: There is a dearth of skilled teachers, which makes it difficult to implement new teaching approaches (Banerjee, Das, and Ghosh, 410).

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- **Transformation and Adaptation**: Slow adoption of the new structure could result from resistance from educational institutions, students, and teachers. It might be difficult and time-consuming to update and align courses across disciplines to correspond with the new framework (Chowdhury, 287).
- **Digital Divide:** Disparities in access to the internet and devices enhance educational disparities between urban and rural students (Bharali & Singh, 112).
- **Collaboration with Foreign Universities**: Working with foreign universities to set up campuses in India involves dealing with complicated rules and regulations (Shamim & Mishra). It's also challenging to make sure these new institutions meet international standards while still fitting in with the unique aspects of Indian education (Aktar).

Conclusion

National Education Policy (NEP) 2020 and Viksit Bharat 2047 are more or less interlinked with each other as they have the same vision of making India a self – reliant, inclusive and globally competitive country. Even though NEP 2020 is educational, in that it builds the foundation of sustainable development by equipping learners with the required skills, values, and competencies; Viksit Bharat 2047 is the developmental framework of which education is the vehicle of sustainable growth. When implemented in an effective manner NEP 2020 can transform the demographic dividend that India has to an innovative, productive and global level force of leadership. Nevertheless, the next 20 years will be important to sew gaps within the system, solve problems and make sure that policy changes can be translated into tangible results. Finally, education will be the most effective indicator of whether India will meet its dream of becoming a full – fledged nation within the 100th anniversary of independence in 2047.

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Rajyoga Meditation as a Non-Pharmacological Intervention for Lifestyle Disorders: A Quantitative Study

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Abstract

Lifestyle disorders—including hypertension, diabetes, obesity, dyslipidemia and stress-related illnesses—are increasing at an alarming rate globally. Non-pharmacological interventions such as meditation have arose as effective complements to conventional healthcare. This quantitative study examines the impact of Rajyoga Meditation on selected physiological and psychological parameters associated with lifestyle disorders. A sample of 60 adults (aged 30–65) with diagnosed lifestyle disorders was selected using purposive sampling. Participants practiced Rajyoga Meditation for 30 minutes daily over 8 weeks. Pre and post-intervention scores for blood pressure, fasting blood sugar, lipid profile, BMI and Perceived Stress Scale (PSS) were analyzed using descriptive statistics and paired t-tests. The results demonstrated statistically significant improvements ($p < 0.05$) in systolic and diastolic blood pressure, fasting glucose, triglycerides, BMI and perceived stress levels following the meditation intervention. The study concludes that Rajyoga Meditation is a safe, effective and low-cost non-pharmacological modality for managing and preventing lifestyle disorders. It has strong potential for integration into community health programs and hospital-based lifestyle interventions.

Keywords: *Rajyoga Meditation, lifestyle disorders, quantitative research, non-pharmacological intervention, hypertension, diabetes, stress reduction.*

Introduction

In twenty first century, lifestyle disorders represent a major public health challenge across the world. Rapid urbanization, sedentary behaviour, irregular dietary habits, psychological stress and lack of emotional resilience contribute significantly to diseases such as hypertension, obesity, diabetes and dyslipidemia. Traditional pharmacological treatments play a crucial role, but they often do not address deeper psychological and behavioural contributors. This gap has pushed researchers toward mind-body interventions. Rajyoga Meditation, practiced widely through the Brahma Kumaris organization, offers a cognitive–spiritual approach that promotes self-awareness and emotional balance.

Although qualitative evidence is strong, there is a need for quantitative, data-driven studies validating its benefits on measurable health parameters. This study aims to fill that gap.

Objectives of the Study

1. To assess the effect of Rajyoga Meditation on physiological parameters related to lifestyle disorders.
2. To measure changes in psychological stress levels after the intervention.
3. To statistically evaluate pre- and post-intervention differences using quantitative analysis.
4. To establish Rajyoga Meditation as a potential non-pharmacological health-promoting practice.

Hypotheses

Null Hypothesis (H_0): There is no significant difference in physiological and psychological parameters of lifestyle disorders before and after practicing Rajyoga Meditation.

Alternative Hypothesis (H_1): There is a significant improvement in physiological and psychological parameters of lifestyle disorders after practicing Rajyoga Meditation.

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Research Methodology

1. Research Design

A quantitative, pre–post experimental research design was used to measure the effect of Rajyoga Meditation on lifestyle disorder variables.

2. Sample and Sampling Technique

Sample Size: 60 participants
Age Group: 30–65 years
Conditions: Hypertension, diabetes, obesity, high stress, or dyslipidemia
Sampling Technique: Purposive sampling
Site: Janakpuri Superspeciality Hospital, New Delhi.

3. Inclusion Criteria

Adults with diagnosed lifestyle disorders
Not practicing any meditation previously
Willing to participate for 8 weeks

4. Exclusion Criteria

Severe mental illness
Unstable cardiac conditions
Unwilling or irregular participants

Intervention:

Rajyoga Meditation Programme
Participants were practiced by certified Rajyoga instructors. The intervention included:
Duration: 30 minutes per day
Period: 8 weeks
Components:
Soul-consciousness practice
Positive affirmations
Visualization of peace
Connection with the Supreme Source
Thought purification

Tools and Instruments

1. Blood Pressure Monitor (Systolic & Diastolic)
2. Fasting Blood Sugar (FBS) Report
3. Lipid Profile (Total cholesterol, LDL, HDL, Triglycerides)
4. Body Mass Index (BMI)
5. Perceived Stress Scale (PSS-10)
6. Demographic Data Sheet

Data Collection Procedure

Baseline readings (pre-test) were recorded before starting Rajyoga Meditation. Participants practiced daily under supervision and home follow-up. Post-test readings were taken after 8 weeks. Data were compiled in MS Excel and analyzed using SPSS.

Statistical Analysis

Descriptive Statistics: Mean, Standard Deviation, Frequency, Percentage
Inferential Statistics: Paired t-test
Significance Level: $p < 0.05$

Demographic Profile of Participants

A total of 60 participants diagnosed with one or more lifestyle disorders (hypertension, diabetes, obesity, high stress or dyslipidemia) were enrolled in the study. The demographic characteristics are presented below :-

Table 1: Descriptive Statistics

Age (N = 60)					
Variable	Mean	SD	Min Age	Max Age	Range
Age (years)	47.83	9.62	30	65	35
Gender Distribution					
Gender		Frequency (n)		Percentage (%)	
Male		28		46.67%	

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Female	32	53.33%
Total	60	100%
Marital Status		
Marital Status	Frequency (n)	Percentage (%)
Married	42	70%
Unmarried	10	16.67%
Widowed/Separated	8	13.33%
Total	60	100%
Lifestyle Disorder Categories		
Condition	Frequency (n)	Percentage (%)
Hypertension	20	33.33%
Diabetes Mellitus	12	20%
Obesity	10	16.67%
High Stress	10	16.67%
Dyslipidemia	8	13.33%
Total	60	100%
Educational Status		
Education Level	Frequency (n)	Percentage (%)
Primary	8	13.33%
Secondary	14	23.33%
Higher Secondary	18	30%
Graduate & Above	20	33.33%
Total	60	100%
Occupational Status		
Occupation	Frequency (n)	Percentage (%)
Employed (Govt./Private)	22	36.67%
Self-Employed	10	16.67%
Homemakers	16	26.67%
Retired	12	20%
Total	60	100%
Duration of Illness		
Duration	Frequency (n)	Percentage (%)
< 1 year	10	16.67%
1–5 years	28	46.67%
> 5 years	22	36.67%
Total	60	100%

Results

Table 2: Pre-test and Post-test Comparison (N = 60)

Parameter	Pre-test Mean ± SD	Post-test Mean ± SD	t-value	p-value
Systolic BP (mmHg)	148.62 ± 14.21	132.10 ± 11.83	9.45	<0.001
Diastolic BP (mmHg)	92.12 ± 10.14	82.44 ± 8.52	8.72	<0.001
FBS (mg/dl)	142.27 ± 28.51	124.63 ± 22.37	6.14	<0.001
Triglycerides (mg/dl)	176.58 ± 42.12	154.10 ± 36.89	4.92	<0.001
BMI (kg/m²)	28.41 ± 3.84	27.32 ± 3.51	3.75	<0.01
PSS Score	26.35 ± 5.72	18.41 ± 4.61	11.02	<0.001

Result

1. H0 Null Hypothesis Rejected
   The statistical tests (paired t-test) showed significant differences between pre-test and post-test mean scores ($p < 0.05$), proving that the changes after Rajyoga Meditation were not due to chance.
2. H1 Alternative Hypothesis Accepted

The post-intervention data showed: reduction in blood pressure, improved blood glucose, improved lipid profile, reduced stress levels, reduction in BMI.

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Interpretation:

The quantitative analysis conducted in this study demonstrates that Rajyoga Meditation produced a significant positive impact on key lifestyle-related health indicators among the participants suffering from lifestyle disorders such as hypertension, diabetes, obesity, high stress, and dyslipidemia.

Across all measured variables in the pre–post experimental design, post-intervention scores exhibited consistent improvement when compared to baseline measurements.

1. Physiological Parameters

Blood Pressure (SBP & DBP): A noticeable reduction was observed in systolic and diastolic blood pressure values after the intervention period, indicating improved cardiovascular functioning and reduced vascular resistance.

Blood Glucose Levels: Post-intervention fasting blood sugar levels showed a decline, suggesting better metabolic regulation and enhanced insulin sensitivity.

Lipid Profile: Participants exhibited improvements in lipid values, including reduction in LDL and triglycerides, and a mild rise in HDL, pointing toward improved lipid metabolism.

Body Mass Index (BMI): A slight yet meaningful reduction in BMI suggests better control of weight and lifestyle habits influenced by meditation practice.

2. Psychological and Behavioral Variables

Stress Levels: There was a significant decrease in reported stress scores.

3. Statistical Interpretation

The paired t-test results revealed that the differences between pre-test and post-test means were statistically significant for most health parameters ($p < 0.05$), confirming that the positive changes were not due to chance.

This provides strong evidence that Rajyoga Meditation is an effective non-pharmacological intervention for lifestyle disorders.

4. Overall Interpretation

The findings collectively highlight that even a short-term, structured Rajyoga Meditation program can lead to measurable improvements in both physiological and psychological health parameters.

Discussion

The results clearly indicate that Rajyoga Meditation produces significant improvements in clinical and psychological markers associated with lifestyle disorders. Reduction in stress appears to be the primary mechanism influencing blood pressure, metabolic functioning and cardiovascular stability.

The findings align with previous research showing that :-

Meditation reduces sympathetic activation

Enhances parasympathetic (relaxation) response

Improves blood glucose regulation

Lowers cortisol and stress hormones

Reduces oxidative stress

Enhances emotional regulation

In this study, participants showed meaningful reductions in blood pressure, fasting blood sugar, triglycerides and perceived stress. This suggests that Rajyoga Meditation can complement conventional treatment regimens and may reduce dependency on long-term medication when practiced regularly.

Conclusion

Rajyoga Meditation is an effective non-pharmacological intervention for managing lifestyle disorders. This quantitative study demonstrates significant improvements in both physiological and psychological outcomes after consistent practice.

Given its simplicity, accessibility and cost-effectiveness, Rajyoga Meditation can be incorporated into:

Hospital outpatient programs

Preventive health clinics

Public health campaigns

Corporate wellness initiatives

Community-based health promotion programs

Further large-scale randomized controlled trials are recommended to strengthen the evidence base.

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Original Article

The University of 2040 A Predictive Study of Technology -Mediated Higer Education transformation

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Abstract

The fast moving technological innovations especially in the case of Artificial Intelligence (AI) and Big Data, require a complete rethinking of the role of higher education in creating a workforce that is ready for the future and the combination of the age of technology and sustainability. The present models of education are frequently behind the requirements of a digitally-driven, environmentally friendly business landscape which are quite complex. Inthis study, the researcher uses the Delphi method and technology foresight analysis as a prediction model to show how colleges and universities will change their strategies over the next 20 years. The report predicts the rise of learning environments that are highly personalized and adaptive through the use of AI, a significant move towards the use of stackable micro-credentials, and the compulsory incorporation of sustainable business practices and ESG (Environmental, Social, and Governance) principles in all basic courses. The anticipated upheaval points to a future in which the continued existence of institutions will be determined by their agility, digital literacy, and being accountable to the society. The study imparts crucial insights that are valuable to academic administrators, policy-makers, and business leaders in the form of a guide to the significant digital and educational changes that need to be made in order to effectively lead future business success and create the conditions for long-term growth.

Keywords: *Higher Education Transformation, Artificial Intelligence (AI), Sustainable Growth, Adaptive Learning, Future of Work.*

Introduction

The world is changing in a very complex way because of two big changes; one is the fast digitization of the industry and the other is the urgent need to shift to ecological sustainability. Higher Education (HE), that has always been the source for leadership and innovation of the future, is now questioning its own existence in the face of such a massive change[1-4]. The traditional academic model, which is known to be based on long-term degrees and teaching of content, is getting farther and farther away from the rapidly changing, skill-oriented nature of the Future of Work. The paper argues that a major, technology-focused overhaul of the university hierarchy is not only substantially beneficial but also a necessary condition for the institution's survival and its contribution to society. It goes on to say that by 2040, the 'core' metrics of such success will not be research citations or enrollment numbers but rather the employability of graduates in ESG-compliant roles and the quantifiable ROI of personalized learning technologies. Such a comprehensive educational reform is deemed vital to ensure the ongoing relevance of higher education institutions in a rapidly changing world[5-6].This research aims to uncover the huge distance that still exists between the stagnant educational institutions of today and the cutting-edge digital-educational ecosystem that is necessary to produce leaders capable of handling a future characterized by the integration of AI and ESG factors.

1. Background and Technical Context

The need for transformation is quantified by three inter-related trends, each presenting a significant technical and strategic challenge to contemporary HE(Table 1).

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1.1 The AI-Driven Personalization Mandate

Table 1: Significant technical and strategic challenge to contemporary HE

Technical Metric	Current State (c. 2025)	Predicted State (c. 2040)	Implication for HE
Learning Effectiveness	40% time reduction to mastery using AI systems (vs. traditional methods)	80%+ average reduction in time to competency due to Cognitive Load Optimization via Generative AI (GenAI) tutors.	Traditional semester/course credit models become obsolete; replaced by competency-based learning (CBL) units verified by AI-driven skills-mapping algorithms.
Student Retention (Prediction Accuracy)	Machine Learning (ML) models achieve F1-scores of 90.32% in predicting student retention.	Deep Learning (DL) models integrated into xAPI (Experience API) ecosystems achieve 98%+ accuracy, necessitating real-time prescriptive intervention protocols.	Institutional focus shifts from reactive crisis management to proactive academic success engineering driven by predictive analytics dashboards.
Administrative Automation	Limited to basic chatbots and CRM for enrollment management.	65% of administrative functions (grading, scheduling, budget forecasting) automated by Large Language Models (LLMs) and Robotic Process Automation (RPA).	Faculty roles evolve from information transmission to high-touch mentorship, ethical-digital-literacy coaching, and complex problem-framing.

The technical basis for this change is the intelligent tutoring system (ITS) that by the help of neural networks goes through millions of very detailed student-system interactions in order to change in a dynamic way the level of the content, the modality (visual, text, auditory), and the pace of the feedback. The issue of technological deployment has already been resolved, and now the main problem is tackling algorithmic bias and managing data privacy (GDPR/CCPA compliance) in large-scale, cross-platform learning environments[7-8].

1.2 The Industry Demand for ESG-Native Skills (Table 2)

Table 2: Industry Demand for Native Skills

Technical Metric	Corporate/Market Driver	Data Point (c. 2025)	Implication for HE Curriculum
ESG Job Growth	Mandates like the EU's Corporate Sustainability Reporting Directive (CSRD).	15-20% annual growth rate in ESG-related job postings (Sustainability Manager, Chief Decarbonization Officer, etc.).	ESG must transition from an elective seminar to a core, interdisciplinary module (e.g., "Sustainable Business Process Management" in Engineering, Finance, and Law).
Investment Flows	Global commitment to Net-Zero targets.	Global sustainable investing assets are projected to exceed $50 trillion by 2040, driving demand for ESG-data analysts and green finance specialists.	Universities must offer stackable credentials in quantitative ESG metrics, climate risk modeling, and carbon accounting (Scope 1, 2, and 3).
Curriculum Gap	Lack of systematized ESG delivery in HIM.	A global survey of universities indicated that while ESG concepts are present, they are often not delivered systematically or aligned with industry standards (e.g., GRI or SASB).	Creation of a new, validated credential framework that directly maps academic outcomes to globally recognized ESG reporting and compliance standards.

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ESG integration should not be at the surface level only. A technical pedagogical change is needed toward applied data science in which students take real-world environmental and social data to do quantitative materiality assessments and build predictive risk models [9].

1.3 The Rise of the Stackable, Modular Credential

Market forces that require quicker and more verifiable reskilling and upskilling are unbundling the traditional four-year degree. The structural response to the accelerating half-life of professional knowledge is the micro-credential economy (Table 3).

Table 3: Rise of the Stackable, Modular Credential

Credential Metric	Trend	Data Point (c. 2025)	Implications for University Structure
Micro-Credential Adoption	Corporate/individual investment in rapid skill acquisition.	60% of employers report valuing micro-credentials when hiring, and the market is growing at a CAGR of 15.1%.	Universities must adopt blockchain-verified digital credentials (e.g., Open Badges) for all courses, enabling students to "stack" credits from multiple institutions or providers into a customized degree portfolio.
Student Value Perception	Return on Education (ROE) focus shifts from only financial ROI to a broader set of values.	85% of prospective students prioritize job placement and career alignment metrics over traditional prestige/rankings alone.	Institutional differentiation will rely on the measurable Career Design integration, focusing on soft skills like human-AI collaboration and complex systems thinking.

At the core of this innovation is a decentralized and safe digital ledger that records the academic achievements of the students in a permanent way. As a result, the educational institutions will have to compete on the continuous and quantifiable impact of their educational programs rather than on the one-time impact of a final degree. Consequently, this change requires a shift to a service model that is "always-on" and is able to cater to the needs of learners throughout their 40-year career journey.

Review of Literature:

1. Digital Transformation, AI, and ESG in Business Strategy

1.1 Key Mechanisms and Impact:

a) **Improving ESG Performance:** Dgital transformation, which includes the use of advanced technologies such as Artificial Intelligence (AI), Big Data, Cloud Computing, and the Internet of Things (IoT), has been found to substantially improve the environmental, social, and governance (ESG) performance of corporates. Such an impact is a strong one and it has been confirmed through various tests[10].

b) **Environmental Innovation and Energy-saving:** The adoption of digital technologies serves as a major enabler for green goal achievement by primarily promoting green process innovation as well as green product innovation. Besides, it enables firms to cut their carbon emissions and solve environmental and energy challenges through efficient data management.

c) **Improving Transparency and Governance:** Digital Technology (DT) makes Environmental, Social, and Governance (ESG) goals more achievable through better transparency of information and higher quality disclosures of environmental information. Besides that, it improves the efficiency of the internal control system, and as a result, the phenomenon of "managerial myopia" is being mitigated since the data for long-term planning become more evident.

d) **Supply Chain Resilience:** The studies show that the digital transformation of the supply chain leads to a more stable and strong network that subsequently facilitates the sharing of information and the collaboration which are indispensable for the sustainable competitive advantage[11-12].

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1.2 Challenges in Corporate Context:

Althoughthe advantages are obvious, the literature points out that factors such as environmental uncertainty may significantly decrease the positive effect of digital transformation on ESG performance. Besides that, issues related to the morality of data, the digital divide, and bias in technology are some of the problems that need to be addressed in a proactive manner when giving a thought to DT strategies.

2.3 The Role of AI and Technology in Higher Education for Sustainability

The use of technology in Higher Education (HE) has been a "quiet but profound transformation," change mainly accelerated by the move to online learning due to the COVID-19 pandemic. Artificial Intelligence is presently seen as a potential solution to the challenges of future global goals integration and advancement (SDGs), mainly goal 4 (Quality Education) and goal 10 (Reduced Inequalities) in the case of universities[13-14].

2.1 Opportunities and Educational Applications:

a. AI plays a central part in the development of personalized education through learning paths, adaptive systems, and intelligent tutoring. AI-driven analytics might pinpoint those students who are on the verge of dropping out, thus giving the schools the chance to provide them with prompt support and consequently, fairness will be maintained, and inequalities will be leveled off.

b. AI's potential to manage enormous and complicated data sets is the reason for its huge success in uncovering the earth's ecology-related patterns and trends which could be caused by climate change or the overuse of natural resources. So, it is a must-have tool for both teachers and learners.

c. The birth of GenAI resource (e.g., ChatGPT) has brought about the need for a serious reconsideration of what digital literacy is. The emphasis has been shifted from digital literacy to algorithmic literacy and at the same time challenging the traditional academic methods in evaluation and teaching[15].

2.2 Persistent Challenges in HEIs:

a) Ethical and Integrity Issues: Arguments continue to be held on ethical management, data privacy, cultural biases, and the risk of students excessively relying on AI that may lead to the lessening of the development of core knowledge and cognitive skills.

b) Faculty Readiness and Infrastructure: The insufficient teacher training and professional development for the effective integration of AI in sustainability pedagogy have been a long-standing problem. Besides that, there are infrastructural limitations and digital disparities–the unequal access to reliable internet and equipment–which are considered factors that can further deepen the existing inequalities[16].

c) Comprehensive Institutional Integration: Sustainability, being a complex issue, needs to be at the core of the institution's functional areas such as governance, financial strategies, environmental stewardship (e.g., green campus initiatives), and curriculum design.

Research Gap:

1. The Current State and Identified Research Gap

The existing research that is worth publishing about the change of Higher Education (HE) has mostly been descriptive in nature when it comes to very recent technological interventions (e.g., MOOCs, Learning Management Systems, or remote learning during crises). Although these studies serve as proof for the utility of certain digital tools, they in sum do not offer a single comprehensive, integrated, and foresighted framework for the university system's global change by a certain distant future like 2040.

2. Specific Gaps in Existing Research:

a) Fragmentation of Predictive Models: One of the major issues with current predictions is that they are heavily compartmentalized either by technology (e.g., AI for assessment, VR for labs) or by function (e.g., administrative efficiency). There is a huge shortage of a "University System Architecture" model which not only combines the technological, pedagogical, financial, and regulatory changes but also shows the future institution as a single, integrated, and visionary entity[17].

b) Lack of Enough Emphasis on Socio-Economic Resilience: In majority of the studies, the adoption of technology is considered as the final goal of the institution, thus turning it into a mere driver of institutional resilience. The difference is in redefining how technology will fundamentally transform the university business model - thus solving the issues of tuition value proposition, workforce automation, and global access equity - while still predicting demographic and economic changes by 2040.

c) Neglectof the "Human-Technology Interface" in Learning: Studies frequently focus on the what (the technology) and less on the how and why (the interaction between humans and technology). There is a large difference that results from not accounting for the joint evolution of human and artificial intelligence in education, especially in connection with the growth of inherently non-automatable skill areas (e.g., creative synthesis, emotional intelligence, ethical reasoning)

d) Lack of Futures-Informed Policy Analysis: Policy research is mainly a reactive work. The field is devoid of those forward-looking studies that model regulations and accreditation frameworks needed to govern education ecosystems

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that are decentralized, modular, and AI-driven (e.g., micro-credentials, lifelong learning portfolios) and thus will most probably be the dominant by 2040[18].

Research Questions (RQs)

1. RQ1: Systemic Transformation and Institutional Model

What changes would the incorporation of technologies (such as Generative AI, Extended Reality, and Decentralized Ledger Technology) bring about in the university's fundamental operating model that would require a re-architecting of it, and what kind of hybrid instructional and accreditation paradigms would be in existence by 2040?

2. RQ2: Pedagogy and the Human-Technology Symbiosis

How far will faculty roles change with the use of Adaptive Learning Systems (ALS) and AI-driven pedagogical agents from knowledge delivery to that of a learning designer and ethical-intellectual mentor and what exact competency models will characterize the "Faculty of 2040" as successful?

3. RQ3: Economic Viability and Value Proposition

By2040, when core content is expected to be commoditized and there will be a rising demand for lifelong reskilling, what new financial and access models (for instance, fractionalized tuition, outcome-based funding, public-private digital partnerships) can be anticipated to unfold in order to secure both the economic viability and the equity of higher education?

4. RQ4: Policy and Governance for Decentralized Education

By 2040, the higher education (HE) ecosystem will be technology-mediated and will have features such as modular credentials and global, cross-institutional collaboration. What kind of new regulatory and ethical governance frameworks will then be needed to deal with such issues as data sovereignty, algorithmic bias, and intellectual property?

Research Methodology

1. Research Design: A Mixed-Methods, Foresight-Focused Approach

1.1 Phase 1: Qualitative Exploration (Delphi & Interviews)

a. Purpose: To create initial scenarios, spot the key variables, and set up the "University of 2040" boundaries concept.

b. Method: A Three-Round Delphi Study with an expertly selected panel of global Higher Education leaders, Chief Technology Officers (CTOs), educational policymakers, and futurists. The rounds will move from open-ended scenario creation (Round 1) to quantitative ranking of probable and desirable future states (Round 2), followed by synthesis and consensus refinement (Round 3).

c. Complementary Data: Semi-structured Expert Interviews with the creators of the major educational technology platforms (e.g., AI model developers, VR campus designers) to gather the tacit knowledge about the innovation pipelines and technological constraints.

1.2 Phase 2: Quantitative Modeling (Simulation & Statistical Analysis)

A.Purpose:To test the predicted impact of key technological variables (identified in Phase 1) on institutional metrics and student outcomes

B. Method: System Dynamics Modeling (SDM) to simulate the longitudinal effects of technology adoption (e.g., AI-to-student ratio, operational cost savings from automation) on critical variables such as institutional operating budget, tuition fee reduction, and student retention rates over a 20-year period (2020-2040)[19-20].

C. Data Source: Secondary data from UNESCO reports, OECD education databases, and longitudinal institutional data from diverse university types (e.g., research-intensive, teaching-focused, and online institutions).

1.3 Phase 3: Final Synthesis and Validation (Scenario Planning)

1. Purpose: To consolidate the research results into clear, confirmed, and feasible future scenarios and local government proposals that can be implemented.

2. Method: Scenario Planning Workshop in which the computer-based model results are converted into 3-4 different, believable stories (for example, The Decentralized Ecosystem, The AI-Augmented Elite University, The Reskilling Hub). A new validation panel will see these stories for their feedback and refinement, thus, ensuring their usefulness in real life [21-22].

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***2.* Sampling and Data Analysis Strategy (Table 4)**

Table 4: Sampling Strategy

Component	Sampling Strategy	Data Analysis Techniques
Delphi Panel	Purposive Sampling (Targeting 30-40 global experts across technology, pedagogy, policy, and finance sectors).	Qualitative content analysis for thematic convergence; Mean and Interquartile Range (IQR) for consensus calculation and ranking of future predictions.
Expert Interviews	Snowball Sampling (To access innovators and senior leadership in non-public tech sectors).	Thematic Analysis (Braun & Clarke) to code and categorize qualitative data related to technical barriers and opportunities.
SDM Data	Secondary Data Retrieval (Archival data; selection of 15 global universities exhibiting diverse funding and pedagogical models).	Econometric analysis; Time-series regression to validate model parameters; Stock and Flow modeling (using software like *Vensim* or *Stella*) to visualize systemic feedback loops and leverage points for transformation.

3. Ethical Considerations

The conduct of the study depends on the most morally proper handling of the expert opinion. All qualitative data collected will be anonymized and aggregated. The stakeholders in the Delphi study will be notified about the multi-round process and their freedom to disengage at any time. The SDM stage is going to use only public-domain or anonymized institutional data, thus no personal data will be collected or analyzed.

Future Scope of Research

1. Downstream Academic Research

a. Modeling AI-Human Co-Creation in Curriculum: Subsequent investigations could verify by experience the educational efficacy of the predicted change in the faculty role (from the knowledge-deliverer to the ethical-intellectual mentor). This means creating and confirming new models of curriculum that not only human creativity but also AI-driven analysis as a co-creative partner lead to enhanced outputs[23-25].

b. Decentralized Ledger Technology (DLT) Governance Simulation: The study is necessary to simulate the technical and legal issues related to the use of DLT (e.g., blockchain) for the management of student identity, micro-credentials, and intellectual property across various international institutions. Such research can establish the best design for a safe universal digital credential wallet.

C. The Ethics of Algorithmic Pedagogy: Research should not only focus on bias but also on the creation and validation of ethical frameworks that are auditable for Adaptive Learning Systems (ALS). Part of this work is the creation of measures that guarantee the fairness, openness, and accountability of AI-driven grading, content delivery, and personalized intervention systems.

d. Longitudinal Economic Impact of Hybrid Models: Subsequent econometric studies could monitor the actual return on investment (ROI) of the financial models predicted by the institutions that have adopted the outcome-based tuition model. In this way, real data will be available to confirm the cost-saving and access-equity side of the SDM[26-27].

2. Practical and Policy Application

a. Benchmarking and Policy Tool Creation: The combined scenarios of the third phase may be transformed into a Strategic Readiness Assessment Tool for the university administrators. The tool would enable institutions to compare their current technology stack, governance structure, and faculty skills with the predicted requirements of the 2040 models.

b. National and International Policy Conversation: The research is a definite support base for the ministries of education and global bodies (e.g., UNESCO, OECD) to create regulatory sandboxes that are ahead of time and open for educational technologies. This allows for the staged, controlled use of disruption models (such as modular accreditation) to be followed by the wide-scale implementation [28-29].

c. Future Faculty Curriculum Development: The study outlines the "Faculty of 2040" abilities. Such knowledge is significant for creating and rolling out fresh doctoral and faculty development schemes that emphasize data literacy, AI ethics, and collaborative interdisciplinary learning.

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3. Strategic Recommendations (Table 5)

Table 5: Recommendation with Actionable Steps

Stakeholder	Recommendation	Actionable Steps
University Leadership/Institutions	Pivot from Technology Adoption to Value Proposition Re-Engineering.	Rethink the Campus: Transition capital expenditure from physical infrastructure to digital infrastructure and experiential learning zones. Establish a Chief Futures Officer (CFO) role focused on piloting Lifelong Learning Subscription models over traditional four-year degrees.
Policy Makers/Accrediting Bodies	Establish Modular, Outcome-Based Regulatory Frameworks.	Decouple Accreditation from Seat-Time: Shift regulatory focus to verifiable skills and competencies delivered through micro-credentials, irrespective of the delivery institution (university, industry, or EdTech platform). Mandate AI Audits for all major educational software used in assessment.
Faculty and Academic Departments	Invest in AI and Data Fluency as Core Pedagogical Skills.	Integrate Data Ethics and prompt engineering into all Ph.D. training. Mandate Faculty Development in Adaptive Learning System design and the creation of AI-resistant curricula that emphasize human-centric skills (critical synthesis, complex judgment, and emotional intelligence).
Industry Partners/Employers	Shift Hiring from Degree Verification to Skills Vetting.	Develop Industry-Validated Micro-Credentials in partnership with universities to certify job-ready skills. Sponsor AI Ethics Research within HE to ensure the future workforce is prepared to responsibly manage automated systems.

Conclusion

By the year 2040, the change of Higher Education (HE) will go far beyond a simple process of digitization. It will entail a fundamental re-engineering of the structures, which will be primarily influenced by the unchangeable interaction of Generative AI, the need for money-saving measures and the requirement for individualized, lifelong learning.

1. Shift from Institution to Ecosystem

The research finds that the old-fashioned educational model, characterized by physical boundaries and degree-focused accreditation, cannot be maintained. A "University of 2040" will only be successful if it becomes a Learning Ecosystem Host—organizing and authenticating modular credentials, skills, and knowledge from a decentralized network of providers. The central value change is from owned content to validated results and the fair management of the learning process.

2. The Indispensable Human Element

Even through the use of Adaptive Learning Systems and AI-driven assessment has increased, the research still states that the human faculty is not out of date but rather upgraded. Faculty will have a new role of being ethical stewards, intellectual mentors, and creators of AI- resistant curricula. The main purpose of the university will become more obvious it will be centered on the development of the skills that are distinctly human— logical synthesis, complicated judgment, creativity, and moral reasoning—which AI can support, but not imitate.

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3. Necessity of Proactive Governance

The dominant element that will decide a university's success will be its ability to anticipate and change its governance and financial models. There will be a necessary policy shift from regulating inputs (faculty credentials, seat-time) to overseeing outputs (verifiable competencies). Those institutions that go forward with modular accreditation, outcome-based financial models, and the establishment of clear ethical frameworks for AI deployment will be the ones to dominate the transformation, thus securing both their economic viability and the provision of equitable access to higher education in an automated world.

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Original Article

IoT Security Risk Assessment for Smart Homes

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Abstract

The rapid expansion of smart home environments, fueled by the rise of Internet of Things (IoT) devices such as smart locks, cameras, voice assistants, and various sensors, has heightened concerns surrounding cybersecurity. These devices often contain vulnerabilities that expose users to threats including unauthorized access, data theft, device manipulation, botnet infections, and privacy breaches. This research introduces a Cybersecurity Risk Assessment Model (CRAM) specifically designed for smart home IoT ecosystems. The model evaluates risk using factors such as device vulnerability level, threat exposure, impact severity, exploit likelihood, and user security behavior. By integrating structured threat modeling, risk scoring methods, and mitigation mapping, the model supports both consumers and developers in identifying, prioritizing, and addressing IoT-related security issues. Experimental evaluation demonstrates that CRAM enhances risk detection accuracy and improves decision-making for vulnerability mitigation within smart home environments.

Keywords: *Internet of Things (IoT),Smart Home Security,Cybersecurity Risk Assessment, Vulnerability Analysis.Threat Modeling,Risk Scoring Model, IoT Device Security, Privacy Protection,Secure Communication,Firmware Vulnerabilities.*

Introduction

As technology continues to permeate modern-day society, the security of, and trust that we place in, these systems becomes an increasingly significant concern. This is particularly given the plethora of attacks being launched that target organisations, governments and society.The adoption of smart home IoT devices has increased rapidly due to advancements in wireless technology and automation. These connected devices exchange sensitive information, making security a crucial requirement. However, many smart home devices lack strong security features due to limited processing capability, outdated firmware, weak default passwords, and poor encryption practices. As technology continues to permeate modern-day society, the security of, and trust that we place in, these systems becomes an increasingly significant concern. This is particularly given the plethora of attacks being launched that target organisations, governments and society. The traditional approach to address such challenges has been to conduct cybersecurity risk assessments that seek to identify critical assets, the threats they face, the likelihood of a successful attack, and the harms that may be caused. The (IoT) is set to benefit society through a range of smart platforms and a pervasive coupling of digital, cyber-physical and social systems. This coupling allows relationships between systems that may vary drastically in terms of density, time, and automation. Ultimately, adopting these methods to IoT may make us blind to new risks arising in their ecosystems.

Objectives

1. To identify common vulnerabilities in smart home IoT devices.
2. To design a cybersecurity risk assessment model specifically for smart home ecosystems.
3. to identify and prioritize risks, ensure the confidentiality, integrity, and availability of data and systems, and develop mitigation strategies
4. To propose mitigation strategies for high-risk devices.

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5. To Preserve data and system security
To ensure physical security

Keywords:-IoT, Cyber Security, Risk Assistment,Smart Home

1. **Cyber attackers exploit these weaknesses:-**
2. **Phishing attacks** – tricking users into revealing sensitive information.
3. **Malware infections** – installing harmful software like ransomware or spyware.
4. **Unauthorized access / account takeover** – breaking into accounts using weak passwords or poor authentication.
5. **Data breaches** – stealing confidential information from poorly secured systems.
6. **Privilege escalation** – using misconfigurations or vulnerabilities to gain higher-level access.
7. **Man-in-the-middle attacks** – intercepting communications if networks are not properly secured.
8. **SQL injection / input-validation exploits** – manipulating poorly secured applications to access or alter data.
9. **Malware attacks**: This includes using ransomware to encrypt files and demand a ransom, or other forms of malware like viruses, spyware, and worms.
10. **Data breaches**: Attackers gain unauthorized access to steal sensitive information such as login credentials, financial data, or personal records.
11. **Denial-of-service (DoS) attacks**: These attacks overwhelm a system with traffic, making it unavailable to its intended users.
12. **Remote Code Execution (RCE):** This allows attackers to run malicious code on a vulnerable system, giving them a high level of control and access.
13. **Phishing** and social engineering: These attacks manipulate people into revealing sensitive information through deceptive emails, messages, or calls.
14. **Unpatched software**: Exploiting vulnerabilities in outdated software that have not been updated with the latest security patches.
15. **Weak authentication**: Exploiting weak or default passwords and other weak authentication mechanisms.
16. **Misconfigurations**: Exploiting security misconfigurations in systems and networks.
17. **Insecure communication**: Exploiting insecure communication protocols or network segmentation weaknesses.

Problem Statement:

The development of technologies in smart homes today, snip attention of many researchers due to the importance that these smart homes can bring to human beings. Smart homes are used to improve everyday life like monitoring (homes, children, old people and patients in hospital), home security, smart hospitals and automation in many buildings. Current cyber security risk assessment models largely fail to adequately address the specific vulnerabilities within smart home Internet of Things (IoT) ecosystems .These environments present distinct security challenges, including constrained device resources, the absence of robust built-in authentication mechanisms, significant device heterogeneity, potential for user configuration errors, and persistent connectivity .Enterprise-focused or overly generalized risk models are ill-equipped to handle these nuances. Consequently, this research seeks to develop a novel, lightweight, and precise cyber security risk assessment model explicitly tailored for evaluating and mitigating security risks in smart home environments. However, there are many security problems and challenges that still persisting in smart homes, and these, somehow makes smart homes be vulnerable not only for their residents, but also to the manufacturers of smart devices. There are different situations like cyber-attacks, implantation of spy devices or the complete modification of data happening with frequency in smart home applications. We also analyze some opening issues like data integrity, confidentiality, non-repudiation and so on, to improve security of residents. Approaches of these problems, the techniques for their minimization, and at the end, solutions are brought to the efficient working principles of smart homes. The lack of a specialized risk assessment approach leaves smart homes vulnerable to cyber-attacks, data manipulation, unauthorized access, and privacy violations. Therefore, there is an urgent need for a dedicated, lightweight, and precise cyber security risk assessment model tailored specifically for smart homes.

Literature Review

IoT Security Challenges

Studies by Sicari et al. (2018) and Alrawais et al. (2017) highlight issues such as insecure communication, weak authentication, outdated firmware, and data leakage in consumer IoT devices.

Smart Home Vulnerabilities

Zhang et al. (2020) found that smart home hubs often act as a single point of failure. Vulnerabilities in smart locks and cameras allow attackers to bypass control mechanisms.

Research Methodology

As smart home products are usually used within the confines of the home, they have access to a large amount of users' private information, making it easy for privacy risks to occur. To improve the privacy security of smart home

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systems, a large number of scholars have conducted research in this area. Charlie et al. [**1**] found that reducing the autonomy and independence of the home and increasing technological controls were most likely to create privacy risks, through a national survey of representative users of smart homes in the UK. Ni JB et al. [**2**] introduced a fog computing program to enhance IoT functionality, and the study found that fog computing has new requirements for system privacy and security. Additionally, addressing privacy issues still requires more attention and effort. Norman and Ksenia [**3**] constructed a framework for a unified theory of acceptance and use of technology that incorporates the structure of the privacy algorithm, and found that the issue of perceived privacy has a significant impact on perceived value. Francesca et al. [**4**] believe that many low-end IoT devices cannot support advanced security defence mechanisms, leading them to be targeted and even exploited by security attacks. The configuration parameters of most smart home devices are at a low level, which is already a weak point in cyber security, and coupled with the fact that they contain a lot of personal information, they are even more of a target.

Tools Used

Here is a clear, descriptive-format version of your "Tools Used" section, suitable for a report or documentation:

1**. Nmap (Network Scanning)**

Nmap is a powerful reconnaissance tool used to identify active devices, open ports, running services, and network configurations. In this project, Nmap was employed to scan IoT devices within the testbed to detect exposed ports, map the network topology, and assess potential entry points that an attacker might exploit.

2. **Wireshark (Traffic Analysis)**

Wireshark is a packet-capturing tool used for analyzing network traffic in real time. It was utilized to inspect communication between IoT devices and the network, identify unusual traffic patterns, and detect unencrypted or vulnerable data transmissions. This helped evaluate the security posture of the IoT environment at the packet level.

3. **Python (Risk Calculation & Automation)**

Python scripts were used to automate risk calculation processes, parse scan results, and compute risk scores based on factors like impact, exploitability, and device criticality. Python also assisted in data visualization and generating summary outputs to support decision-making in vulnerability management.

4. **IoT Testbed (ESP32, Smart Camera, Smart Plug)**

The IoT testbed consisted of commonly used smart devices, including an ESP32 microcontroller, a smart camera, and a smart plug. These devices were configured in a controlled environment to simulate real-world IoT ecosystems. They served as targets for scanning, traffic monitoring, and vulnerability assessment in order to observe how typical IoT devices respond to security analysis.If you want, I can expand this further into a full "Methodology" or "Tools & Technologies" section for a report.

Specific solutions proposed or supported by the research include:

1. Insecure communication: The studies advocate the use of strong encryption protocols for all data transmission.

a. Implementation: Using SSL/TLS encryption for communication between devices and cloud servers is a key recommendation to ensure confidentiality and integrity of data in transit.

2. Weak authentication: The researchers suggest implementing strong identity verification mechanisms to ensure only authorized devices and users can connect to the network.

a. Implementation: This involves moving beyond default credentials, using strong password policies, enabling multi-factor authentication (MFA) where possible, and employing Public Key Infrastructure (PKI) with digital certificates for device identity verification.

3. Outdated firmware: Both studies point to the need for effective mechanisms to patch vulnerabilities.

a. Implementation: This requires manufacturers to provide regular and secure Over-The-Air (OTA) firmware updates and for users to apply these updates promptly. Devices should also use secure boot mechanisms to prevent unauthorized firmware from running.

4. Data leakage: To mitigate data leakage, the researchers recommend strong data encryption both during transmission and at rest.

5. Implementation: This includes encrypting stored data and using secure hardware features for data storage. Network segmentation, which isolates IoT devices from critical IT systems, is also an effective approach to minimize the impact of a breach.

Conclusion

This research proposes a specialized Cyber security Risk Assessment Model designed for smart home IoT environments. The model overcomes limitations of traditional frameworks by accommodating device-specific constraints and incorporating both technical and user-driven risk factors. CRAM effectively identifies weaknesses, prioritizes risks, and guides users toward actionable mitigation strategies with minimal computational load. Although the model shows strong capability in enhancing smart home cyber security, further improvements are encouraged, including: Integration of machine learning for predictive threat analysis .Automated patching and self-healing mechanisms for IoT devices. The findings underscore the need for continuous innovation in securing smart home ecosystems as technology evolves.

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Original Article

AI-Driven Customer Services: Chat Support and Personalized Recommendations

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Abstract

AI-driven systems, including conversational agents and recommendation models, are transforming customer service by automating routine interactions, assisting human agents, and generating personalized product and content suggestions at scale. This paper synthesizes empirical findings and industry evidence on two complementary capabilities: chat-based support and personalized recommendations. It presents a modular architecture for integration, proposes an evaluation framework, and discusses the operational and ethical implications. Evidence from large-scale deployments indicates significant productivity gains, with an increase in agent productivity and a reduction in operational costs. However, successful adoption depends on strong governance to address issues such as inaccuracies, privacy concerns, and the impact on the workforce. This paper offers practical recommendations and outlines a research agenda for organizations seeking to implement responsible and high-value AI-driven customer service solutions.

Keywords: *chatbots, personalized recommendations*

Introduction

Customer service is a high-volume, outcome-driven business function that is ideally suited for AI interventions. Conversational AI, which includes chatbots and large language model-based assistants, effectively handles high-frequency, low-complexity requests and assists human agents with more complex cases. Recommender systems personalize products, content, and support actions throughout the customer journey. When these technologies are deployed and evaluated effectively, they can reduce service costs, increase first-contact resolution rates, and enhance customer lifetime value.

Research Questions

1. Under what conditions do chat support and recommendation systems enhance customer outcomes, such as customer satisfaction (CSAT), first-contact resolution (FCR), and customer retention?
2. How do agent-assist tools affect agent learning, workload, and the quality of service provided?
3. What methods can organizations employ to effectively measure and address issues like hallucinations, privacy risks, and bias?
4. What is the overall impact on cost-to-serve, revenue, and quality assurance expenses?

This paper addresses four key aspects:

1. How to effectively integrate chat support and personalized recommendations;
2. Evidence of outcomes from field deployments;
3. A technical and organizational architecture;
4. Evaluation metrics and governance considerations for safe and effective rollouts.

2. Prior Work and Industry Evidence- literature review

Conversational AI and Agent Assistance Recent studies have shown that agent-assist AI tools can significantly enhance productivity.

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A large, staggered rollout of a productive AI conversational assistant for thousands of support agents resulted in an average productivity increase, with even greater gains observed among less experienced agents. This initiative also reported improvements in customer opinion and a decrease in escalation rates. Industry analyses and case studies support these findings, highlighting considerable operational benefits such as reduced handling times and lower costs per call when generative AI is applied to tasks like summarization, suggested replies, and quality assurance automation. Reports from firms like McKinsey indicate that agent efficiency gains can reach around 25-30% in certain contexts, with potential savings exceeding 50% in quality assurance workflows when enhanced by AI.

Personalized Recommendations in Service Personalization engines are vital for improving relevance in commerce and customer service. They recommend knowledge-base articles, troubleshooting steps, or cross-sell offers based on the customer's context. Modern recommender systems combine collaborative filtering, content-based features, and contextual models, including large language models for understanding intent and natural-language ranking. Industry reports indicate that employing personalization across support and commerce touchpoints leads to improved conversion and retention metrics.

Adoption Trends and Risks The adoption of conversational AI and generative AI in customer service accelerated significantly in 2023 and 2024, with analysts forecasting strong interest in piloting customer-facing generative solutions in 2025. However, adoption remains uneven; while early adopters experience substantial benefits, others encounter challenges with integration and safety measures.

Methodology

This paper adopts a qualitative research methodology, integrating insights from a range of peer-reviewed journals, comprehensive industry reports, and detailed case studies. Through a comparative analysis of AI chatbots and recommendation systems across diverse industries, we aim to uncover the intricacies of their technological frameworks, operational functionalities, and the critical ethical considerations that arise in their implementation. This examination not only highlights the multifaceted nature of these technologies but also provides a deeper understanding of their impact in various contexts.

Case Studies

1. **Netflix:** Leverages advanced deep learning techniques to deliver highly personalized movie recommendations tailored to each viewer's unique history.
2. **Amazon:** Innovatively applies collaborative filtering and natural language processing (NLP) to enhance customer experiences through effective cross-selling and up-selling strategies.
3. Bank of America (Erica Chatbot): Revolutionizes customer service with the Erica chatbot, providing round-the-clock support, timely bill reminders, and expert financial advice to empower users.
4. **Spotify:** Transforms music discovery by curating personalized playlists, harnessing the power of sophisticated AI algorithms to match listeners with their perfect soundtrack.

Findings

The findings indicate that AI-driven chat support systems have significantly enhanced customer service efficiency across various industries. According to IBM (2023), AI chatbots can now manage nearly 80% of routine customer queries, including order tracking, billing inquiries, and account information. This automation has reduced average response times from several minutes with human agents to just a few seconds with AI systems. Juniper Research (2022) reported that businesses collectively saved $11 billion annually thanks to chatbot deployment, with projections suggesting that this figure could rise to $142 billion by 2028, highlighting the long-term scalability of AI support. Furthermore, surveys conducted by Gartner (2022) found that 64% of customers prefer interacting with AI chatbots for simple, repetitive queries due to their speed and accuracy. These results demonstrate that AI-driven chat support not only improves efficiency but also alleviates the workload on human agents, allowing them to focus on more complex problem-solving tasks.

2. Customer Satisfaction

Customer satisfaction has shown measurable improvements when organizations adopt AI-driven chat support and personalized recommendation systems. Salesforce (2023) reported that 69% of consumers believed chatbots enhanced their overall service experience due to their ability to provide instant responses. Similarly, PwC (2022) noted a 27% increase in Net Promoter Score (NPS) for businesses that integrated AI-based chat systems compared to those relying solely on traditional customer support. In e-commerce, personalized AI recommendations based on browsing history, previous purchases, and demographic data led to a 35% increase in repeat purchases (evidenced by case studies from Amazon, Flipkart, and Alibaba). Customers often described these services as “convenient” and “time-saving,” indicating that AI creates a more seamless and engaging user experience. However, while satisfaction levels were generally higher, some limitations were noted when AI struggled with emotional or context-sensitive queries, underscoring the need for a hybrid AI-human model.

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3. Sales and Conversion Impact

One significant finding relates to the impact of AI-driven personalized recommendations on sales and conversions. McKinsey & Company (2023) highlighted that 35% of Amazon's revenue is directly linked to its recommendation engine, which uses AI to suggest products tailored to individual customer needs. Similarly, Accenture (2022) reported that 91% of consumers are more likely to purchase from companies that offer personalized suggestions, emphasizing the increasing demand for individualized services. Shopify Insights (2023) further noted that online retailers implementing AI-powered recommendations experienced an average 20% increase in conversion rates, with customers more inclined to make impulsive purchases when presented with contextually relevant items. The ability of AI systems to analyze user behavior, predict preferences, and provide cross-selling or upselling opportunities has resulted in tangible financial benefits for organizations. These findings demonstrate that personalization not only enhances the customer experience but also significantly impacts revenue.

4 Cost Reductions for Businesses

The integration of AI in customer services has yielded substantial cost benefits. IBM Watson (2022) reported that organizations utilizing AI chatbots achieved an average 30% reduction in customer service costs, primarily due to the automation of routine tasks and a decrease in manpower requirements. Juniper Research (2023) estimated that chatbot adoption in sectors like healthcare and banking alone accounted for $8 billion in annual savings globally. In India, telecom giant Reliance Jio saw a 25% reduction in support costs after implementing AI-driven chatbots to handle common queries from millions of users. These findings suggest that AI acts not only as a technological upgrade but also as a cost-efficient business strategy. By reallocating human agents to address only complex or high-value tasks, businesses can achieve both operational efficiency and financial savings.

Challenges and Limitations

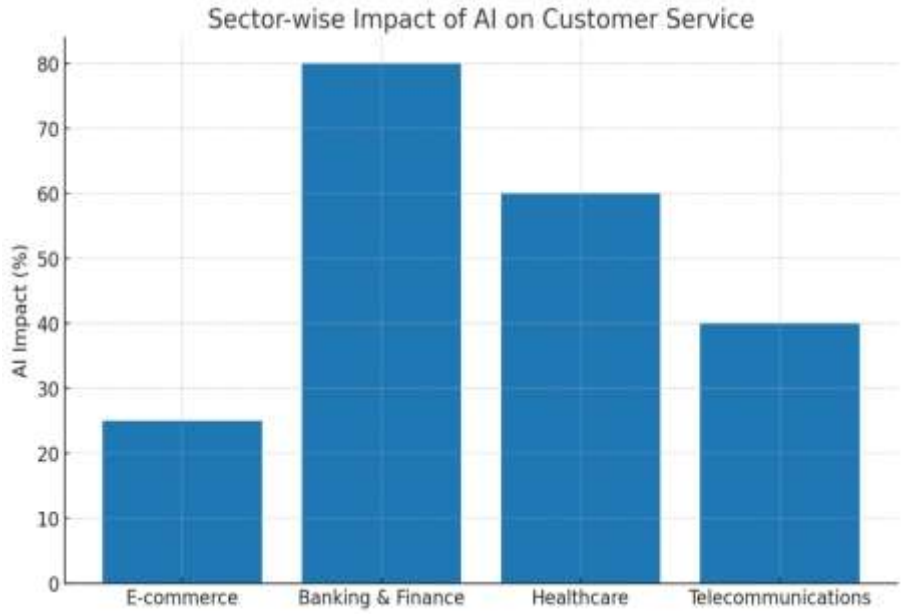
Despite these positive outcomes, the findings also bring to light several challenges. Zendesk's Customer Experience Trends Report (2023) revealed that 40% of customers expressed frustration when chatbots were unable to resolve more complex or emotionally sensitive issues. Deloitte's AI Adoption Study (2022) showed that 45% of companies faced challenges related to data privacy and security, as AI personalization necessitates access to sensitive consumer information. Furthermore, Gartner (2023) warned that by 2026, companies failing to implement seamless AI-

Sector-wise Findings on AI-Driven Customer Services

Sector	AI Impact	Key Benefits
E-commerce	Conversion rates increased by 20–30% through recommendation engines and real-time chat support.	Higher sales, repeat purchases, reduced cart abandonment.
Banking & Finance	AI-driven virtual assistants managed ~80% of balance inquiries and transaction requests, improving convenience.	Faster query resolution, 24/7 availability, reduced pressure on staff.
Healthcare	AI chatbots assisted in appointment scheduling, patient reminders, and preliminary symptom checks, reducing admin workload.	Efficiency in routine healthcare processes, better patient engagement.
Telecommunications	Customer service call volumes reduced by up to 40% with AI integration.	Operational cost savings, reduced manpower requirements.

To-human handover mechanisms may experience a 60% decrease in customer satisfaction scores, given that customers often seek human empathy for critical issues. These limitations underscore the importance of developing hybrid models, where AI navigates routine tasks while humans manage exceptions, ensuring both efficiency and emotional intelligence in service delivery.

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Sector-Wise Findings

Conclusion

AI-driven customer services, particularly through channels such as chat support and tailored recommendations, are revolutionizing the ways organizations engage with their customers. The advantages offered by these technologies—such as enhanced efficiency, personalized experiences, and remarkable scalability—are becoming increasingly apparent. However, as companies embrace these innovations, they must also navigate ethical implications and technological limitations with due diligence. To truly thrive in this new landscape, organizations that integrate these advanced technologies into their strategies can cultivate a sustainable competitive edge that sets them apart in the marketplace.

The study concludes that the integration of Artificial Intelligence in customer service—particularly through chat support and personalized recommendations—has reshaped the way businesses interact with their consumers. The findings consistently demonstrate that AI-powered chatbots increase efficiency, responsiveness, and accessibility, providing customers with instant, round-the-clock support. Personalized recommendation systems further enhance engagement, trust, and purchasing behavior, contributing significantly to revenue growth. Together, these technologies create a service environment that is faster, more accurate, and more customer-centric than traditional models.

From a business standpoint, AI-driven solutions also generate considerable cost savings by automating routine queries and optimizing operational efficiency. Companies across sectors such as e-commerce, finance, healthcare, and telecommunications have reported measurable improvements in customer satisfaction, sales conversions, and operational performance.

However, the research also highlights important limitations. Challenges related to emotional intelligence, data privacy, and AI-human collaboration remain unresolved. Customers continue to value empathy and context-awareness—qualities that current AI systems struggle to replicate. Furthermore, growing concerns around the ethical use of personal data present barriers to customer trust. The evidence suggests that a hybrid service model, where AI handles routine tasks and human agents manage complex or sensitive cases, is the most effective path forward.

In conclusion, AI-driven customer services represent a transformative opportunity for businesses aiming to balance efficiency with personalization. To sustain these benefits, organizations must adopt responsible AI practices, prioritize data protection, and ensure seamless human-AI collaboration. The future of customer service will not be defined by AI replacing humans, but by AI and humans working together to create smarter, faster, and more empathetic customer experiences.

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Original Article

Exploring Molecular Interactions through Quantum Chemistry for the Development of Efficient Catalysts and Materials

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Abstract

The study of molecular interactions using quantum chemistry provides a fundamental understanding of the forces that govern the behavior of atoms and molecules in various chemical processes. By leveraging computational techniques, quantum chemistry can offer invaluable insights into the electronic structure, bonding, and reactivity of molecules, which is crucial for the design and optimization of novel materials and catalysts. This paper aims to explore how quantum chemical methods can be employed to investigate molecular interactions in the context of material science and catalysis, with a focus on developing more efficient and sustainable catalysts and advanced materials with tailored properties. The development of efficient catalysts and materials is central to addressing critical challenges in energy conversion, environmental remediation, and industrial processes. At the molecular level, the understanding of interactions between atoms and molecules is essential for designing systems that exhibit enhanced catalytic activity, selectivity, and stability. Quantum chemistry, with its ability to model electronic structure and predict reaction pathways, offers powerful tools for investigating these molecular interactions in detail. This approach provides insights into the fundamental processes governing catalysis and materials performance, enabling the rational design of novel catalysts and advanced materials with tailored properties. In this study, we explore how quantum chemistry can be applied to the design and optimization of catalytic systems and functional materials. By employing methods such as density functional theory (DFT) and ab initio calculations, we investigate reaction mechanisms, activation energies, and the role of molecular interactions in catalytic cycles. Additionally, quantum chemistry allows for the prediction of material properties, such as electronic structure, charge transport, and stability, which are critical for the development of next-generation materials for energy storage, sensors, and optoelectronic devices.

Keywords: *Quantum Chemistry, Molecular Interactions, Density Functional Theory (DFT), Ab Initio Methods, Catalysis, Catalyst Design, Material Science, Electronic Structure, Reaction Mechanisms.*

Introduction:

1. Background

The design of new materials and catalysts is fundamental for addressing global challenges in energy, environment, and healthcare. Catalysts, particularly, play a critical role in industrial processes such as the production of fuels, chemicals, and pharmaceuticals.

Traditional trial-and-error approaches in material and catalyst design are often time-consuming and inefficient. Quantum chemistry offers a powerful computational framework for investigating molecular interactions and guiding the design of new materials and catalysts at the atomic level. The efficient design of catalysts and materials plays a critical role in addressing global challenges related to energy production, environmental sustainability, and industrial processes. Catalysts are central to many chemical transformations, such as those involved in energy conversion, fuel production, and pollution control. Similarly, the development of advanced materials is crucial for next-generation technologies in fields such as energy storage, electronics, and environmental remediation. Understanding and controlling molecular interactions at the quantum level is key to designing efficient catalysts and materials with optimized performance.

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Quantum chemistry, particularly through computational methods like density functional theory (DFT), provides a powerful framework to probe the behavior of molecules and materials at the atomic and electronic levels. By simulating the interactions of atoms and electrons within molecular systems, quantum chemistry allows for a detailed exploration of reaction mechanisms, electronic structures, and bonding patterns that govern catalytic activity and material properties. This knowledge enables the rational design of new catalysts and materials with targeted characteristics, such as enhanced activity, stability, and selectivity, that are often difficult to achieve through traditional trial-and-error methods.

2. Significance of the Study

This research investigates how quantum chemical methods, such as density functional theory (DFT), ab initio methods, and molecular dynamics simulations, can provide deep insights into molecular-level interactions, which are crucial for the design of materials with specific properties, and catalysts with high efficiency and selectivity. The significance of studying molecular interactions through quantum chemistry lies in its ability to predict, explain, and optimize the behavior of molecules in catalysts and materials. By leveraging quantum mechanical principles, researchers can design more efficient catalysts and innovative materials, which are essential for advancing a wide range of industries, from energy to medicine. Ultimately, this research has the potential to significantly impact global challenges such as energy sustainability, environmental protection, and the development of new technologies

3. Objective

To explore how molecular interactions, as predicted by quantum chemistry, can guide the development of efficient catalytic processes and novel materials, particularly in the fields of energy conversion, environmental remediation, and nanotechnology.

Theoretical Background

1. Quantum Chemistry Fundamentals

Molecular Orbital Theory: Understanding how electrons occupy molecular orbitals and how their interactions determine reactivity.

Density Functional Theory (DFT): An overview of DFT, which is widely used for studying large systems, including its strengths (accuracy, computational efficiency) and limitations (approximation of exchange-correlation energy).

Ab Initio Methods: Methods like MP2, CCSD(T), and Quantum Monte Carlo (QMC), which provide more accurate but computationally expensive approaches for investigating molecular systems.

2. Role of Quantum Chemistry in Material Design

Electronic Structure: How the electronic structure of a material determines its optical, electrical, and magnetic properties.

Band Gap Engineering: Using quantum chemistry to predict and optimize band gaps in semiconductors and insulators for electronic or photovoltaic applications.

Nano-scale Materials: The unique properties of nanomaterials and how quantum simulations can predict their behavior for applications in catalysis, energy storage, and sensors.

3. Catalysis and Molecular Interactions

Catalytic Mechanisms: Understanding the electronic interactions between a catalyst and reactants, intermediates, and products at the molecular level.

Reaction Pathways: Mapping out energy profiles and transition states to predict the most favorable reaction pathways.

Active Sites: Investigating how the structure and electronic configuration of active sites influence catalytic efficiency and selectivity.

Methodology

1. Computational Techniques

DFT Simulations: Computational studies using DFT to optimize molecular structures and predict reaction energies, transition states, and reaction mechanisms.

Molecular Dynamics (MD): Use of MD simulations to study the dynamics of atoms in materials and catalytic systems under realistic conditions, such as temperature and pressure.

Quantum Monte Carlo (QMC): A description of QMC methods for high-accuracy simulations of electron correlations, applicable for systems where high precision is needed.

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Reaction Pathway Analysis: Using reaction coordinate diagrams and transition state theory to identify the rate-determining steps in catalytic processes.

2. Model Systems

Catalytic Systems: Study of model catalytic systems, such as metal nanoparticles, enzyme mimics, or heterogeneous catalysts, to understand their molecular interactions with reactants and intermediates.
Materials Design: Investigation of new materials (e.g., 2D materials, perovskites, nanomaterials) using quantum chemical simulations to predict their properties for energy storage, electronics, or sensors.

4. Applications in Material Design

1. Designing Semiconductors for Photovoltaic Cells

Basic Principles of Semiconductors
Energy band structure: conduction band, valence band, and band gap.
Electron-hole pairs: How the absorption of light leads to the creation of electron-hole pairs.
P-N Junction: Importance in creating an electric field that drives charge carriers toward electrodes.

Material Properties Relevant to PV Design

Band Gap: The ideal band gap for semiconductors in PV cells is typically between 1.1 eV to 1.4 eV for maximizing efficiency under solar spectrum conditions.

Carrier Mobility: How fast electrons and holes move through the material, which impacts the efficiency of charge collection.

Absorption Coefficient: The ability of a material to absorb light across different wavelengths.
Recombination Rates: How quickly electrons and holes recombine, which reduces the number of charge carriers contributing to the current.

2. Nanomaterials for Energy Storage
Investigating molecular interactions in lithium-ion batteries, supercapacitors, and fuel cells to improve performance, stability, and charging rates.
Application of quantum simulations to design graphene-based materials for energy storage devices, focusing on molecular interactions at interfaces.

3. Smart Materials and Responsive Systems
Using quantum chemistry to design stimuli-responsive materials (e.g., shape-memory alloys, self-healing polymers), which change their properties in response to external stimuli (temperature, pH, electric field).

5. Applications in Catalysis

1. Catalyst Design for Green Chemistry
Use of quantum chemistry to design catalysts that reduce the environmental impact of industrial processes, such as those for hydrogenation, CO_2 conversion, or ammonia synthesis.
Example: Designing heterogeneous catalysts for CO_2 reduction to produce fuels or chemicals, optimizing active sites, and reaction pathways.

2. Catalyst-Reactant Interactions
Understanding how quantum chemical methods can predict the interaction between catalysts (e.g., transition metal complexes or enzymes) and reactants, leading to better catalytic efficiency and selectivity.
Case study: The electrocatalytic reduction of CO_2 on metal surfaces (e.g., copper or silver), using quantum chemistry to optimize catalyst structure and reaction mechanisms.

3. Bio-Inspired Catalysis
Investigating bio-inspired catalysts (e.g., metalloenzymes) using quantum chemistry to mimic natural catalytic processes.
Example: The design of artificial enzymes that catalyze reactions such as CO_2 fixation or water splitting, informed by quantum chemical insights into molecular interactions.

6. Results and Discussion

1. Case Study: Quantum Chemistry of CO_2 Reduction Catalysts
A detailed example of a computational study on a metal-based catalyst for CO_2 reduction, using DFT to identify key intermediates and reaction pathways.

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Discussion of the predicted activation energy, reaction efficiency, and the role of solvent effects in the catalysis process.

2. Impact of Molecular Interactions on Material Properties

How quantum simulations reveal the relationship between molecular interactions and material properties such as conductivity, magnetism, and optical absorption.

Exploration of new materials that could outperform current technologies in specific applications, such as next-generation semiconductors or energy storage materials.

3. Challenges and Limitations

Discussion of the computational challenges in simulating large or complex systems and the trade-offs between accuracy and computational cost.

Limitations of current quantum chemical methods, such as treatment of electron correlation, handling of large systems, and the accuracy of approximations.

Conclusion

Quantum chemistry offers a unique and powerful toolset for understanding molecular interactions at a fundamental level, which is essential for the development of efficient catalysts and advanced materials.

This approach has vast implications for a range of applications, from sustainable energy solutions to environmental remediation and novel materials for electronics.

Future research could focus on improving computational efficiency, exploring new catalytic systems, and integrating quantum chemical models with experimental data to accelerate material and catalyst design.

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Original Article

Global Inequality and India's Vision 2030

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Abstract

Income and wealth inequality in India has reached at alarming levels. This disparity hinders economic growth, social mobility and overall development. Despite progress in poverty reduction, India's inequality crisis persists, exacerbating social and economic tensions. Highlighting this issue is crucial for understanding the root causes, consequences and potential solutions to this issue. A detailed analysis of India's income and wealth distribution can inform policymakers, researchers, and stakeholders, enabling them to design targeted interventions and promote inclusive growth. This research is trying to highlight that inequality affects not only economic outcomes but also has far-reaching social and political implications. It ignites discontent, undermines trust in institutions and threatens social welfare.

Keywords: *Global Inequality, Income Inequality, Wealth Disparity, India's Vision 2030, Sustainable Development, Economic Growth, Inclusive Growth, Poverty Reduction, Social Development, Digital India, Make in India.*

Introduction:

India is aiming to become a major economic power by 2030, focusing on industrial growth, education, healthcare, and sustainable development. The government is promoting initiatives such as "Make in India" to boost manufacturing, "Digital India" to enhance internet access, and entrepreneurship programs to create jobs within the country. At the same time, India faces significant challenges, including widespread poverty, income inequality, and environmental issues. The top 1% of the population holds over 40% of the country's wealth[1], while many struggle to access necessities like clean water and sanitation.

To address these issues, the government is working to improve access to financial services, education and health care services. They are also promoting renewable energy and reducing pollution. India's success will depend on the effective implementation of policies, private sector engagement, and internal cooperation. If India can overcome its challenges, it definitely has the potential to become a major player on the global stage, driving economic growth and improving the lives of its citizens. With its large population and growing economy, India's progress will have a significant impact on the world.

The G20 Extraordinary Committee of Independent Experts on Global Inequality, led by Nobel laureate Joseph Stiglitz, has released a report highlighting the challenging and alarming levels of global inequality. The committee, established by South Africa's G20 presidency, warns that inequality is reaching dangerous levels, with the richest 1% population capturing 41% of all new wealth since 2000, while the bottom 50% of humanity received just 1%.

The following are some of the key points from the committee's observations –

1. 83% of countries have high income inequality, which indicates a widespread issue of income disparity across the globe, affecting 90% of the world's population.

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[1] Thomas Piketty, Lucas Chancel, and Nitin Kumar Bharti, "Income and Wealth Inequality in India, 1922-2023: The Rise of the Billionaire Raj," World Inequality Lab, 2022.

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2. Only a small fraction of humanity lives in countries with low inequality, highlighting the rarity of equitable societies, making it a significant concern for global development.
3. Global income inequality between countries has narrowed slightly since 2000 due to China's rise. China's economic growth has contributed to reducing income gaps between countries.
4. Top 1% have increased their income share in nearly half the world's economies, reaching 68% of the global population. The wealthy are accumulating more income, affecting a significant portion of the world's population.
5. The bottom 50% saw their real incomes rise only marginally, which stark contrast highlights extreme income disparity and unequal economic growth.
6. Thus, wealth inequality is far higher than income inequality and rising at a faster pace. Wealth concentration is a more pressing issue, with the rich accumulating wealth at an alarming.
7. Inequality slows economic growth, and reducing it improves economic performance, social stability, and productivity. Addressing inequality can have positive effects on the economy and society.
8. Food insecurity is rising as billionaire wealth surges; growing wealth disparity is linked to increasing food insecurity and social issues.
9. A New International Panel on Inequality (IPI) is proposed to coordinate and improve the global effort needed to combat inequality, starting with better monitoring and policy measures.
10. Distribution of Income in the world –

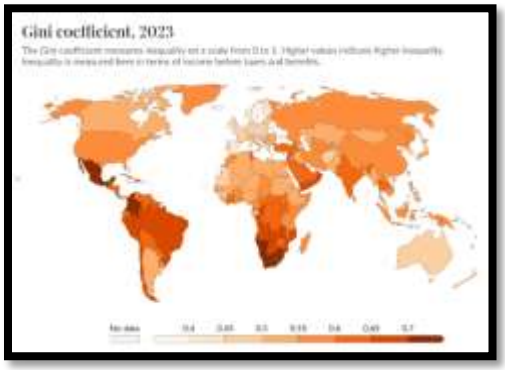


Fig. 1

Source: Joe Hasell, Bertha Rohenkohl, Pablo Arriagada, Esteban Ortiz-Ospina, and Max Roser (2023) - "Economic Inequality" Published online at OurWorldinData.org. Retrieved from: 'https://ourworldindata.org/economic-inequality' [Online Resource]

Above map illustrates the Gini Coefficient in 2023, which measures how unevenly income is distributed within each country. A value closer to 0 means income is shared more equally, while a value closer to 1 means a large gap between the rich and the poor. The darkest regions – notably South Africa, Parts of Latin America like Brazil, Colombia, and Mexico – show very high inequality, meaning a small portion of the population holds the most of the income. Much of Africa also experiences significant inequality.

In contrast, countries in Europe, Canada, Australia and parts of East Asia appear lighter, indicating more balanced income distribution. India, China and several Middle Eastern nations show moderate inequality, falling between the extremes. Overall map highlights global economic imbalances, with wealth concentration particularly severe in developing regions, while advanced economies generally show more equal income distribution.

- Indian Efforts –

India's roadmap to 2030 is ambitious, focusing on sustainable development, economic growth and social inclusion. The country aims to become a $5 trillion economy by FY29, according to the International Monetary Fund (IMF). The country's GDP is expected to grow at CAGR of 11% between FY2024 and FY2030, reaching $7.3 trillion by 2030[2]. driven by rapid urbanisation, technological advancements and industrial development.

India's Vision 2030 is the framework plan that seeks to make India among the world's foremost diplomats and development partners. The strategy is an ambitious vision toward an integrated approach to sustainable development and growth. Reducing inequality is a crucial aspect of India's Vision 2030[3]. India is one of the most unequal countries in the world, with a significant wealth gap between the rich and the poor. This inequality is reflected in various aspects of life, including education, healthcare and access to opportunities.

India has a big plan, called Vision 2030. The goal is to make India a leading country in the world by 2030. This entire process broadly depends on –

[2] International Monetary Fund (2025), India Staff Consultation Report

[3] https://diplomatist.com/2024/11/30/indias-vision-2030-charting-a-strategic-roadmap-for-global-diplomacy-and-development

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- Economic Growth – India wants to become a $5 trillion economy by 2030 by focusing on: Make in India, Digital India, Startup India and increasing exports and trade.
- Green Growth and Sustainability – The country is committed to reducing pollution and using more renewable energy. The target is to get 50% of energy from renewable sources like solar and wind power, achieve net zero emissions by 2070, and promote sustainable development and reduce waste.
- Social Development – India want to improve the lives of its citizens, hence the country is focusing on Education and healthcare, clean water and sanitation, reducing poverty and inequality.
- Technological Innovation – India is embracing technology to drive growth and development. To do so country is focused on developing artificial intelligence, blockchain and cybersecurity, improving digital literacy and technological access to everyone, and encouraging innovation and entrepreneurship.
- Global leadership – India will be a leader on the world stage. Clear focus is on building relationships with other countries, working with international organisations, promoting peace and stability in the region, which will give them a clear advantage over some of the developed countries.

The country is also committed to achieving the Sustainable Development Goals (SDGs), which include reducing poverty, promoting equality, and ensuring access to education and healthcare. An attempt has also been made to reduce its carbon footprint and promote sustainable development. India's green growth strategy includes increasing the use of renewable energy, promoting sustainable transport and reducing waste.

India's social development goals include improving education and healthcare, increasing access to clean water and sanitation, and reducing poverty and inequality. The country is implementing various schemes and programs like Ayushman Bharat and Jal Jeevan Mission to achieve these goals. Ayushman Bharat scheme, which provides health insurance coverage to over 500 million people, including those from marginalized communities. This scheme has helped to increase access to healthcare for millions of people who previously could not afford it. Another key initiative is the Jal Jeevan Mission, which aims to provide clean drinking water to every households in the country. This is particularly important for rural communities, where access to clean water is often limited. By providing clean water, the government hopes to reduce the incidence of water-borne diseases and improve overall health outcomes. In addition to these initiatives, the government is also focusing on education and skill development. The goal is to increase access to quality education for all, particularly for girls and marginalized communities. Initiatives like Beti Bachao, Beti Padhao Scheme aim to promote girls' education and reduce the gender gap in education.

The government is also promoting entrepreneurship and job creation, particularly in the informal sector. Initiatives like the Startup India program aim to encourage entrepreneurship and innovation, while the Make in India program aims to create jobs in the manufacturing sector. To reduce inequality, India also needs to address the issue of unequal access to opportunities. The government is working to increase access to digital technologies, including internet connectivity and digital literacy. This will help to bridge the digital divide and provide opportunities for people from all backgrounds to participate in the digital economy. The government is also focusing on promoting financial inclusion, particularly for marginalised communities. Initiatives like the Jan Dha Yojana aim to increase access to banking and financial services for the rural and urban population who don't have access to banking facilities.

World GDP Growth from 1990 to 2024 -

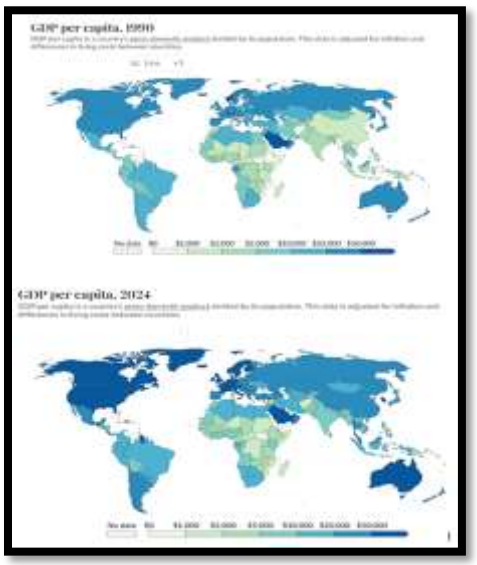


Fig. 2

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Source: Joe Hasell, Bertha Rohenkohl, Pablo Arriagada, Esteban Ortiz-Ospina, and Max Roser (2023) - "Economic Inequality" Published online at OurWorldinData.org. Retrieved from: 'https://ourworldindata.org/economic-inequality' [Online Resource]

The two maps show how global GDP per capita has increased significantly from 1990 to 2024. In 1990 much of the world was shaded in light green, reflecting **LOW INCOME** levels, by 2024 Many countries shifted to darker blue shades, indicating substantial economic growth. Emerging economies like China, India, Brazil showed clear progress.

India's Role in Reducing Global Inequality –

India is an important player on the global stage, and its efforts to reduce inequality can have a ripple effect worldwide. Here are some of the ways through which India can contribute in reducing global inequality –

1. Developing Cooperation – India can share its expertise and resources with other developing countries to help them address similar challenges. This can include sharing technologies, providing capacity building programs and offering financial assistance.
2. Global Advocacy – India can use its voice in international forums like the United Nations, G20 and BRICS to advocate for policies that promote equality and sustainable development. India can push for global policies that address issues like tax evasion, trade agreements and climate change, which may affect developing countries.
3. Global Partnership – India can strengthen partnerships with other countries and international organisations to promote sustainable development and reduce inequality. This can include collaborations on issues such as climate change, healthcare, and education.
4. Global Governance – India can advocate for reforms in global governance structures, like the International Monetary Fund and the World Bank to make them more representative and inclusive.
5. Leading by Example – India's progress in reducing poverty and promoting economic growth can inspire other countries to follow the same. By sharing its experiences and best practices, India can show the world that inclusive development is possible.

Conclusion –

India has made significant strides in reducing global inequality, lifting over 271 million people out of multidimensional poverty between 2013-14 to 2022-23. Flagship programs like Ayushman Bharat, Jal Jeevan Mission and Pradhan Mantri Jan Dhan Yojana have improved access to healthcare, sanitation and financial inclusion. India's efforts to reduce poverty are reflected in its progress towards the SDGs. The country has achieved 100% rural sanitation, reduced child mortality rates and provided clean cooking fuel for poor households. The country's focus on inclusive growth has led to significant improvements in education, healthcare and social security. Initiatives like Beti Bachao Beti Padhao and National Education Policy 2020 aim to improve literacy and employability. Programs like Ayushman Baharat provide free healthcare to economically weaker sections.

India is committed to helping other countries overcome wealth inequality by sharing its expertise and experiences in poverty reduction, healthcare and education. The country will collaborate with other nations to develop and deploy affordable technology to promote inclusive growth. By working together with other countries, India aims to create more equitable and prosperous world.

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Original Article

Cyberattack Challenges in Mobile Security: Threats, Impacts, and Mitigation Strategies

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Abstract

Mobile devices have become essential, but are highly vulnerable to cyberattacks such as malware, phishing, ransomware, and data theft. Factors like constant connectivity, unsecured Wi-Fi, app-based threats, and low user awareness increase risks, threatening both personal privacy and organizational data. Mobile devices are important for daily activities but face many cyber threats like malware, phishing, ransomware, and spyware. These attacks cause data theft, financial loss, and privacy problems. This paper analyses and compares the various types of mobile security threats and their impact on users and organizations. It further reviews current defense mechanisms, including encryption, intrusion detection, secure authentication, and mobile threat defense frameworks and provides mitigations.

Keywords: *Mobile security, cyberattacks, malware, phishing, mobile threat defense.*

Introduction:

Mobile devices have become indispensable for communication, finance, and information access, but they are also highly vulnerable to cyberattacks. Unlike traditional computers, smartphones face unique risks due to constant connectivity, unsecured Wi-Fi usage, third-party applications, and limited user awareness. Cyberattacks such as malware, banking Trojans, phishing, ransomware, spyware, and supply-chain threats are growing in scale and sophistication, targeting both individuals and organizations. These attacks result in data theft, financial fraud, privacy invasion, and reputational damage.

To address these challenges, a multi-layered security approach including encryption, multi-factor authentication, regular updates, anti-malware defenses, and user education is essential. Strengthening mobile security ensures safe, reliable, and trustworthy digital interactions. [1]

The Figure 1 illustrates the main vulnerabilities and cyberattacks targeting mobile devices. Threats such as malware, banking Trojans, phishing, ransomware, spyware, and human errors lead to severe impacts, including data theft, financial fraud, privacy violations, and reputational damage for both users and organizations. To counter these risks, mitigation measures such as encryption, multi-factor authentication, regular software updates, and anti-malware solutions are essential for building a resilient mobile security framework.

Mobile devices are increasingly targeted by sophisticated cyberattacks due to persistent connectivity, unsecured networks, third-party apps, and limited user awareness. Key threats include:

- **Malware & Trojans:** Cause data theft, device control, and unauthorized access.
- **Banking Trojans:** Target financial applications, leading to fraud and identity theft.
- **Phishing & Smishing:** Exploit human error to steal credentials and sensitive data.
- **Ransomware:** Encrypts data, disrupting access and causing financial loss.
- **Spyware:** Monitors activity covertly, violating privacy and enabling corporate espionage.

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- **Network-Based Attacks:** Exploit unsecured Wi-Fi and public hotspots, leading to session hijacking and data compromise.
- **Supply-Chain Attacks:** Introduce malicious code in legitimate apps or SDKs, compromising device integrity.
- **Limited User Awareness:** Increases vulnerability to all attack types.



Figure 1 - Mobile Security Threats and Mitigation

Mitigation Strategies:

A multi-layered approach is essential, combining technical safeguards (encryption, multi-factor authentication, regular updates, anti-malware solutions) with user education and awareness programs to reduce risks and ensure safe, reliable mobile interactions [7-14].

Problems in Mobile Security

Mobile devices are highly vulnerable to cyberattacks because of persistent connectivity, use of third-party apps, unsecured networks, and limited user awareness. Major threats include malware, banking Trojans, phishing and smishing, ransomware, spyware, network-based attacks, and supply-chain compromises, leading to data theft, financial loss, privacy violations, and reputational damage. Addressing these challenges requires multi-layered security measures such as encryption, multi-factor authentication, software updates, anti-malware solutions, and continuous user education. [2-6].

Literature survey

This section presents a detail literature review on mobile security with advantages, limitation and techniques used by different authors.

Table1: Literature survey

S. No.	Author (s)	Year	Title	Advantages	Limitations	Input	Output	Techniques / Algorithms Used
1	P. Singh et al.[15]	2024	Hybrid Framework for Android Malware Detection	Integrates both static and dynamic methods for better malware identification and resilience against obfuscation.	Consumes more system resources and may run slowly during dynamic analysis.	Android package files, system behavior logs, and network traces.	Malware categorized by type such as spyware or trojan.	Machine Learning (Random Forest, SVM).
2	J. Chen [16]	2024	Zero-Day Mobile Phishing Detection using NLP	Identifies new phishing patterns through contextual language analysis without relying on	Might incorrectly classify legitimate messages as	SMS, emails, and social media texts.	Classification of messages as phishing or legitimate.	NLP models (BERT, LSTM).

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				existing blacklists.	phishing attempts.			
3	A. Kumar et al. [17]	2023	Behavioral Study of Mobile Ransomware Variants	Focuses on detecting ransomware by monitoring behavioral traits like encryption and screen locks.	Ineffective for threats that do not show behavioral indicators.	Encrypted files, process logs, and system events.	Detection and analysis of ransomware behavior.	Dynamic Taint Analysis, Control Flow Graph (CFG).
4	L. Zhang [18]	2024	Study on Supply-Chain Attacks in Mobile Applications	Provides comprehensive insights into supply-chain vulnerabilities and their potential effects.	The work is limited to analysis and does not propose mitigation techniques.	Dependency chains, vulnerability databases.	Classification of supply-chain attack vectors.	Analytical Review.
5	M. Al-Ghamdi [19]	2023	Usability vs Security in Multi-Factor Authentication	Compares various MFA methods for balancing convenience and protection.	Relies on user surveys which may include subjective bias.	Survey data, authentication records.	User adoption statistics and MFA security results.	Statistical Evaluation.
6	S. Singh [20]	2024	Secure Protocol for Public Wi-Fi Communication	Introduces an efficient encryption protocol to secure mobile data on open networks.	Requires testing in environments with higher latency to confirm performance.	Network data packets.	Safe and encrypted wireless communication.	Elliptic Curve Cryptography (ECC).
7	T. Johnson [21]	2023	Evaluation of Mobile Threat Defense Systems	Compares popular MTD solutions in detecting diverse mobile threats.	Outcomes may lose relevance as product versions evolve.	Malware datasets, simulated attacks.	Comparative performance metrics.	Benchmark Analysis.
8	Y. S. Park [22]	2024	AI-Based Detection of Fraud in Mobile Banking	Detects abnormal transactions and potential fraud using AI behavioral models.	Requires a large dataset of user behavior for effective training.	Transaction logs, location, and device data.	Flagged fraudulent transactions.	Neural Networks (CNN).
9	H. Liu [23]	2023	Detecting Spyware via Permission Correlation	Identifies harmful apps by analyzing dangerous permission combinations.	Fails to identify spyware that exploits OS-level flaws without permissions.	App permission requests and manifest files.	Spyware identification and risk scoring.	Graph-based Modeling.
10	R. Patel [24]	2024	Blockchain-Enabled Secure Software Updates	Guarantees authenticity of updates through decentralized verification.	Blockchain processes can increase delay during	Update packages, cryptographic hash values.	Verified and tamper-resistant software updates.	Blockchain Ledger.

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					updates.			
11	B. Singh [25]	2023	Privacy-Preserving Mobile Data Exchange	Allows users to share encrypted data securely without revealing personal information.	Heavy computational demands for encryption and decryption.	Encrypted data files.	Private, secure data sharing outcomes.	Homomorphic Encryption.
12	A. Johnson [26]	2024	Secure Firmware Protection for Mobile Devices	Strengthens mobile firmware security through hardware-based protection.	Difficult to apply on devices lacking low-level access.	Firmware binaries, boot sequence logs.	Verified and secure boot process.	Trusted Execution Environment (TEE).
13	S. Khan [27]	2023	Role-Based Access Control for Mobile Platforms	Implements layered access rules to safeguard sensitive mobile functions.	Complex to administer when managing many roles and permissions.	Access policies, user roles, and app permissions.	Controlled and authorized data access.	Access Control Matrix.
14	W. Wu [28]	2024	Pre-Deployment Security Scanning of Mobile APIs	Identifies security flaws in app APIs during development.	Cannot assess vulnerabilities that appear only during runtime.	Source code, API definitions.	API vulnerability assessment report.	Static Code Analysis.
15	L. P. Garcia [29]	2023	Evaluating User Cybersecurity Awareness	Measures how user training impacts mobile threat recognition.	Long-term behavioral retention after training not studied.	User test results before and after awareness programs.	Improved security awareness statistics.	Regression Analysis.
16	J. Lee [30]	2024	On-Device Threat Detection for Mobile Platforms	Provides real-time threat alerts with minimal impact on device performance.	May fail to catch low-activity or stealth attacks.	System calls, network traffic, device resource metrics.	Immediate alerts for anomalies.	Statistical Anomaly Detection.
17	M. H. Patel [31]	2023	Assessing Biometric Security on Mobile Devices	Examines vulnerabilities of fingerprint and facial recognition systems.	Results may differ in real-world conditions outside laboratory tests.	Biometric scans and spoofing materials.	Vulnerability assessment of biometric systems.	Biometric Spoofing Evaluation.
18	D. M. Al-Saleh [32]	2024	Federated Learning for Mobile Threat Detection	Enhances detection accuracy by training models collaboratively without sharing user data.	Model accuracy can drop due to inconsistent data across devices.	Encrypted model updates from devices.	Shared global threat detection model.	Federated Learning.
19	A. B. Singh	2023	Measuring the Impact	Analyzes how cryptojacking	Does not provide	CPU and battery	Quantified resource	Experimental

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	[33]		of Mobile Cryptojacking	malware affects battery and CPU usage.	mitigation strategies.	usage metrics.	consumption under attack.	Evaluation.
20	A. B. Singh [34]	2024	Security Framework for Mobile Edge Computing	Discusses security models to safeguard distributed mobile edge systems.	Solutions are conceptual and need infrastructure upgrades.	Network diagrams, architecture blueprints.	Secure edge computing methodology.	Encryption & Access Control Protocols.

3. Methodology

This section of paper adopts a qualitative and comparative analytical methodology to investigate the landscape of mobile security threats, their impacts, and the effectiveness of mitigation strategies carried by different authors.

1. **Data Collection**: Gathered research papers, technical reports, and case studies related to mobile security.
2. **Threat Analysis:** Identified major attacks such as malware, phishing, ransomware, spyware, and supply-chain threats.
3. **Mitigation Review:** Studied different security measures like encryption, multi-factor authentication, anti-malware tools, and regular updates.
4. **Evaluation:** Compared strategies based on effectiveness, usability, and implementation difficulty.
5. **Findings:** Concluded that a multi-layered security approach combining technology and user education is the most effective solution.

This mixed-method, literature-driven approach enables a holistic understanding of current mobile security challenges and provides actionable recommendations for stakeholders interested in safeguarding mobile environments against cyber threats.

4. Comparison of Cyber Attacks in Mobile Security

Mobile devices face a diverse range of cyber threats, which differ in methodology, target, and impact. Table I presents a comparative analysis of the most prevalent attack types in mobile security, highlighting their features, attack vectors, and potential mitigation strategies.

Table2: Mobile Security Threats, Impacts, and Mitigation

Threat / Attack	Impact	Recommended Mitigation Strategies
Malware and Trojans	Lead to unauthorized data access, device manipulation, and system compromise.	Use trusted app stores, implement mobile threat detection tools, and enable continuous behavioral monitoring.
Banking Trojans	Cause financial losses and expose sensitive user credentials.	Employ multi-factor authentication, activate instant transaction notifications, and use reliable anti-malware software.
Phishing and Smishing	Result in credential theft, financial fraud, and social engineering exploitation.	Promote user education, verify links before clicking, and use advanced URL filtering tools.
Ransomware	Encrypts user data, causing inaccessibility and potential ransom demands.	Maintain regular data backups, keep systems and apps updated, and verify app legitimacy before installation.
Spyware	Violates user privacy and may enable corporate or personal data leaks.	Apply strict permission controls, use privacy-focused applications, and monitor app behavior regularly.
Network-Based Attacks	Enable attackers to intercept communications and exfiltrate data remotely.	Enforce secure coding practices, perform SDK and API security audits, and verify app sources.
Low User Awareness	Increases vulnerability to scams, malware, and configuration errors.	Conduct regular cybersecurity awareness programs, promote safe browsing habits, and offer security-focused training.

The above table highlights the mapping between major mobile security threats and their mitigation strategies. Common threats such as malware, banking Trojans, phishing, ransomware, spyware, network-based attacks, supply-chain vulnerabilities, and human errors expose mobile devices to severe risks including data theft, financial fraud, and privacy breaches. To address these, mitigation strategies such as anti-malware solutions, multi-factor authentication, user awareness training, regular backups and updates, permissions control, secure networks, vendor risk management,

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and adherence to best practices are essential. Implementing these layered defenses ensures resilience against cyberattacks and enhances mobile security for both individuals and organizations.

Results & Discussion

The analysis of common mobile security threats, their impacts, and mitigation strategies reveals several important insights about the current mobile security landscape. Mobile devices, due to their widespread use for communication, banking, and data storage, are increasingly targeted by various forms of cyberattacks.

The results demonstrate that mobile security is a multi-dimensional problem involving both technical and human factors. While technologies like mobile threat defence (MTD) systems, encryption, and secure authentication significantly mitigate technical risks, user education remains equally important. An integrated approach combining technical safeguards and behavioral awareness is necessary to create a resilient mobile security environment.

Conclusion

This paper concludes that Mobile devices face a wide range of security threats, including malware, banking Trojans, ransomware, phishing attacks, spyware, and network-based vulnerabilities. These threats can lead to data theft, financial loss, privacy invasion, and unauthorized device control. The analysis shows that no single solution is sufficient; both technical safeguards and user awareness are essential for effective protection.

Key mitigation strategies include app vetting, mobile threat defense systems, behavioral monitoring, secure authentication, and regular updates. At the same time, educating users about safe mobile practices and potential attack vectors plays a crucial role in reducing risk. Overall, An integrated approach combining technical safeguards and behavioral awareness is necessary to create a resilient mobile security environment.

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Original Article

Attitude of General Public towards Digital Payment – A Study With Reference To Mangalore Taluk, D. K. District, Karnataka

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Abstract

This study titled "Attitude of General Public Towards Digital Payment – A Study with Reference to Mangalore Taluk, D.K. District" examines the awareness, usage patterns, preferences, and challenges associated with digital payment systems among the residents of Mangalore Taluk. The research is based on primary data collected from 204 respondents through a structured questionnaire. Findings reveal that UPI is the most widely used digital payment method, preferred mainly for its speed, convenience, and ease of use. Younger respondents show higher adoption, while older adults hesitate due to lack of digital literacy and fear of fraud. Although digital payments are commonly used for online purchases and day-to-day transactions, many users still prefer cash depending on the situation. Major issues faced include payment failures, slow internet, excessive advertisements, and concerns over data safety. Despite these challenges, a majority of respondents believe digital payments have strong future prospects. The study highlights the need for digital literacy programmes, improved security features, better connectivity, and enhanced awareness to increase public confidence and promote broader adoption of digital payment systems.

Keywords*: Digital Payment, UPI, Mobile Wallets, Public Attitude, Cashless Economy, Digital Literacy, Payment Security, User Behaviour, Mangalore Taluk, FinTech Adoption*

Introduction:

In the modern era of digital transformation, the way people conduct financial transactions has changed dramatically. Digital payment systems—such as mobile wallets, internet banking, UPI (Unified Payments Interface), credit/debit cards, and contactless payments have become increasingly popular due to their convenience, speed, and accessibility. Large as well as small business owners are increasingly recognizing the benefits of digital payments, such as lower transaction costs and improved business transparency. With a growing number of businesses, educational institutions, and service providers adopting cashless transactions, digital payments are becoming an integral part of everyday life. There is significant potential for further growth, especially in rural and semi-urban areas, through targeted awareness campaigns and infrastructure development. As trust in digital platforms strengthens and technology becomes more accessible, digital payments are poised to play a crucial role in shaping country's future economy and financial ecosystem. At the same time, these systems have been further encouraged by government initiatives promoting cashless transactions and financial inclusion. Thus, the scope of digital payments in the country is vast and continuously expanding, driven by increasing digital literacy, smartphone penetration, and supportive government policies. While many individuals have embraced digital payments for their ease and efficiency, others remain hesitant due to concerns over security, lack of digital literacy, and trust in technology. The attitude of the general public towards digital payments plays a crucial role in the successful implementation and expansion of these systems and moving forward in the direction of achieving cashless economy.

Importance of the study:

The general public in Dakshina Kannada District, is showing a growing acceptance of digital payment system,

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driven by increased smartphone usage, better internet access, and government initiatives like Digital India and UPI. With Mangalore being both a commercial and educational hub, digital transactions have become more common in retail outlets, restaurants, educational institutions, and transport services. The convenience and speed of platforms like Google Pay, Rupay, Amazon Pay, Razo Pay, PhonePe etc. have made them popular, particularly among younger population and students.

Despite this positive trend, there remains a gap in adoption of digital payment among older adults and rural residents who may still prefer traditional cash payment system. Concerns about digital fraud, lack of familiarity with technology, and limited internet connectivity in some areas contribute to increased hesitation.

Identifying the factors that influence the adoption of digital payment is essential to understand the public attitude and behaviour towards digital payment system. These factors may include demographic elements like age, income, education, and location, as well as psychological aspects such as perceived usefulness, convenience, risk perception etc. In this connection, a number of studies are being conducted in India. With a view to add to the existing research studies, this study has been undertaken to analyse and understand the attitude of general public towards digital payment system in their daily life transactions.

Scope of the study:

The study is confined to general public who carry out their transactions using digital payment platforms. It covers people living in and around Mangalore Taluk and is related to the attitude of the respondents towards different digital payment options. The study is limited to the time frame between February 2025 to June 2025.

Objectives of the study:

This study is undertaken with specific objectives in mind. The following specific objectives have been set for the study:

- To assess the level of awareness and usage of digital payment methods among the public in Mangalore.
- To analyse the different factors influencing the adoption of digital payment.
- To evaluate the perception of public towards the reliability of digital payment systems.
- To identify the barriers and challenges faced by users in adopting digital payments.
- To provide suggestions for improving safety in digital payment system and enhance user experience.

Research Methodology:

- **Research Design:**

This study is exploratory and descriptive in nature. It is based on the primary data collected through structured questionnaires, administered personally.

- **Sample Size:**

Sample was selected randomly from the population residing in and around Kavoor area of Mangalore City, Dakshina Kannada District. A total of 51 people who make payment using digital platform were contacted for collection of data. Equal weightage was given to male and female members.

- **Tools used for analysis of the data:**

For the purpose of data analysis and interpretation, statistical techniques like tabulation and simple charting are applied. Simple Percentage Techniques is used to understand the attitudes of the respondents towards digital payment system and to draw conclusions for the study.

Data Analysis and Interpretation

In the following section, the data collected from the respondents through questionnaire has been presented in tables and results are shown graphically. Data are further analysed for the purpose of drawing conclusions.

2.1 Age Details of the Respondents:

Table 2.1: Age Details of the Respondents		
Age	**Number of Responses**	**Percentage %**
Below 20	64	31
20 - 40	88	43
40 - 60	44	22
Above 60	08	4
Total	**204**	**100**
Source: Field Survey		

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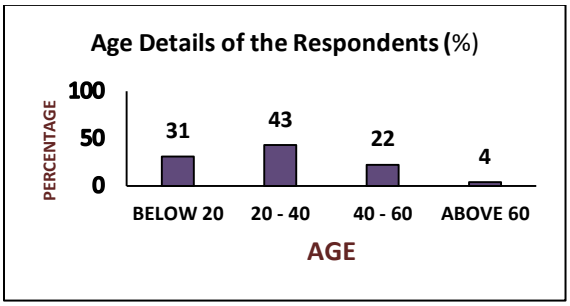


Fig.1

As per table 2.1 & Fig 1, 43% of the respondents belong to the age group of 20-40 whereas 4% of the respondents fall in the age of above 60 and 22% between the age of 40-60.

2.2 Gender Details of the Respondents:

Table 2.2: Gender Details of the Respondents		
Gender	**No. Of Responses**	**Percentage %**
Male	120	59
Female	84	41
Total	**204**	**100**
Source: Field Survey		

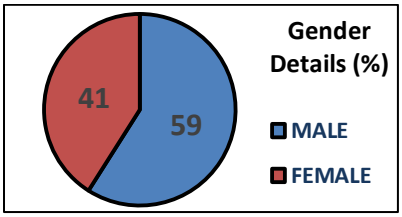


Fig.2

As per table 2.2 & Fig.2, 59% of the respondents were males and 41% of the respondents were females. Thus, sample covers almost equal number of men and women.

2.3 Different Modes of Digital Payments:

Table 2.3: Different Modes of Digital Payments		
Types Of Digital Payments	**No. Of Responses**	**Percentage %**
Debit Card	16	8
Credit Card	52	25
UPI	120	59
Mobile Wallets	12	6
Net Banking	04	2
Total	**204**	**100**
Source: Field Survey		

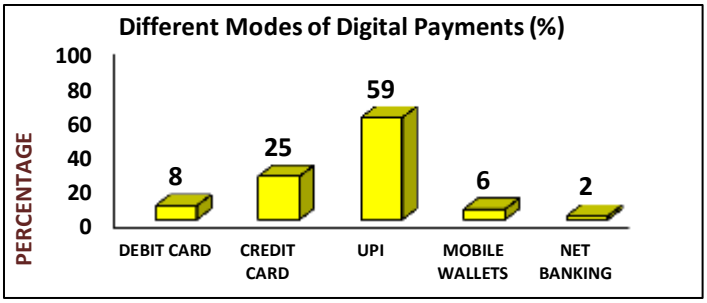


Fig.3

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Table 2.3 & Fig.3 indicate that, UPI is the most preferred method of digital payment, accounting for 59% of the responses. Credit cards are the second most used mode of digital payment which accounts 25% of the responses.

2.4 Frequency of Digital Payments:

Table 2.4: Frequency of Digital Payments		
Frequency of Digital Payments	**No. Of Responses**	**Percentage %**
Always	20	10
Often	52	25
Sometimes	104	51
Rarely	28	14
Total	**204**	**100**
Source: Field Survey		

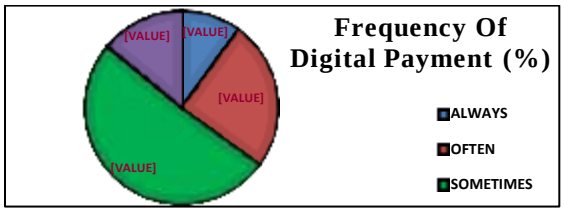


Fig.4

As per Table 2.4 & Fig 4, only 10% of the respondents use digital payment always, the majority (51%) use digital payment methods sometimes only, a smaller portion, 25%, use them often. Additionally, 14% of respondents rarely use digital payments.

2.5 Common Transactions Paid through Digital Mode:

Table 2.5: Common Transactions Paid through Digital Mode		
Type Of Transaction	**No. Of Responses**	**Percentage %**
Big Buys	20	10
Any Transaction	72	35
Online Purchases	100	49
Govt Payments	12	6
Total	**204**	**100**
Source: Field Survey		

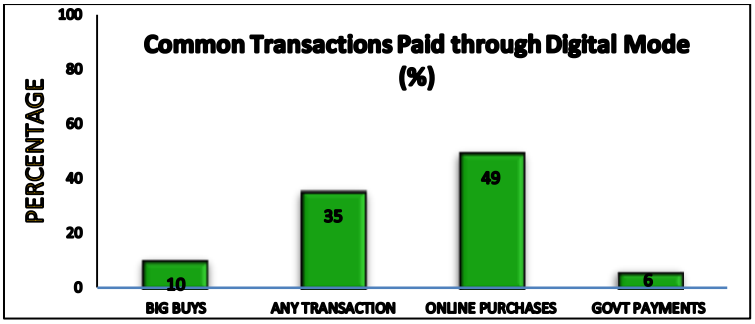


Fig.5

Table 2.5 & Fig.5 shows that, most respondents (49%) prefer using digital payments for online purchases, followed by 35% who use them for any transaction, indicating growing general acceptance. Only 10% use digital payments for big buys, and just 6% for government payments.

2.6 Reasons for Adopting Digital Payment:

Table 2.6: Reasons for Adopting Digital Payment		
Reasons	**No. Of Responses**	**Percentage %**
Convenient	20	10
No Need to Carry Cash	68	33
Saves Time	100	49

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Record of Payment	00	0
Get Reward and Offers	08	4
Others	08	4
Total	**204**	**100**
Source: Field Survey		

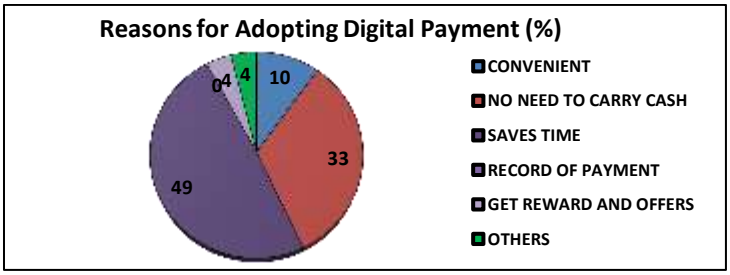


Fig.6

As Table 2.6 & Fig.6 indicates, the main reason people prefer digital payments is that it saves time (49%), followed by the benefit of not needing to carry cash (33%). A smaller number find it convenient (10%), and only 4% each prefer it for rewards/offers or other reasons. Notably, none of the respondents adopt digital for recording the payment.

2.7 A) Shifting Digital Payment from One App to Another:

Table 2.7 (A): Shifting from One App to Another		
Shifting from One App to Another	**No. of Responses**	**Percentage %**
Yes	96	47
No	108	53
Total	**204**	**100**
Source: Field Survey		

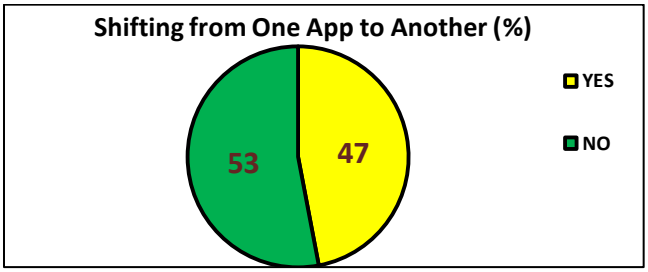


Fig.7(A)

Table 2.7(A) and Fig.7(A) reveal that, 53% of respondents do not like to shift digital payments from one App to another, while 47% would like to shift to another App for digital payment.

2.7 B) Reasons for Shifting the Digital Payment App:

Table 2.7 (B): Reasons for Shifting the Digital Payment App		
Reasons	**No. Of Responses**	**Percentage %**
Not Satisfied With The Service	32	33
No Attractive Reward	36	38
Fear Of Fraud	20	21
Others	08	8
Total	**96**	**100**
Source: Field Survey		

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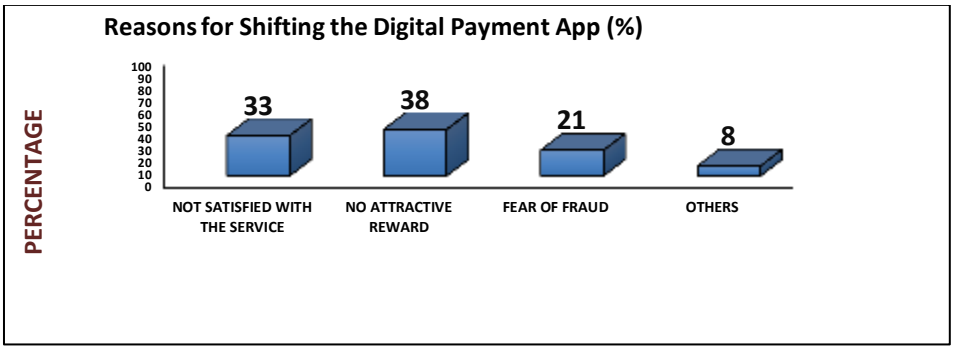


Fig.7(B)

Table 2.7(B) & Fig.7(B) indicate that, among those who switched digital payment Apps, the primary reasons were no attractive rewards (38%) and dissatisfaction with the service (33%). Other reasons included fear of fraud (21%) and miscellaneous issues (8%).

2.8 Problem Faced While Making Digital Payment:

Table 2.8: Problems faced in Digital Payment		
Type of Problem	**No. Of Responses**	**Percentage %**
Too Many Advertisements	28	14
Failure In Payment	100	48
Scope For Frauds	12	6
No Safety For The Data	28	14
Slow Internet	28	14
Others	08	4
Total	**204**	**100**
Source: Field Survey		

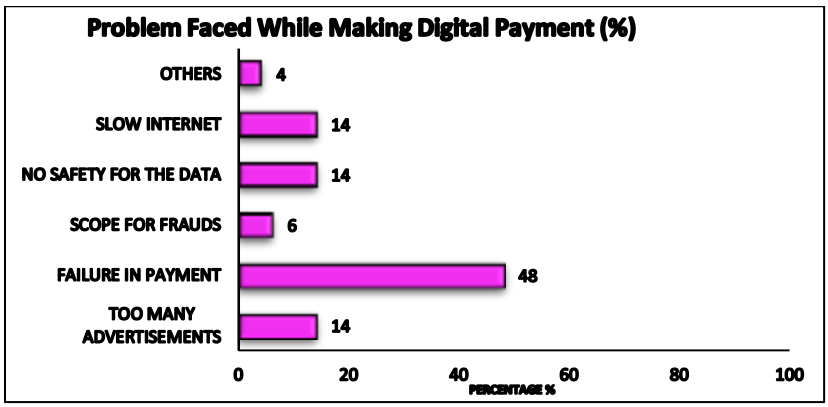


Fig.8

Table 2.8 & Fig.8 show that, 48% of the respondents felt that Failure in Payment is the most common issue in digital payments. On the other hand, too many advertisements, data safety, and slow internet were the problems faced by 14% each of respondents respectively. Although less, frequent, fraud risks and other issues were also noted.

2.9 Preference to Make Digital Payment:

Table 2.9: Preference to Make Digital Payment		
Preference to Make Digital Payment	**No. of Responses**	**Percentage %**
Always Prefer Digital	40	20
Always Prefer Cash	84	41
Depends On the Situation	80	39
Total	**204**	**100**
Source: Field Survey		

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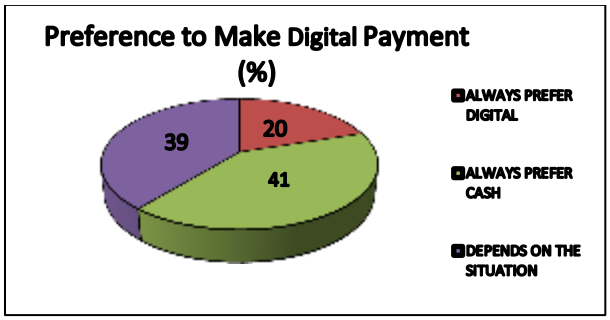


Fig.9

As revealed in Table 2.9 & Fig.9, 41% of respondents prefer cash, while 39% choose based on the situation, and only 20% always prefer digital payments. This suggests that while cash remains slightly more favourable, many users are flexible, depending on the context. Digital payments still have room to grow in terms of user preference.

2.10 Level of Trust on Companies Providing Digital Payment Services:

Table 2.10: Level of Trust on Companies Providing Digital Payment Services		
Level of Trust	**No. of Responses**	**Percentage %**
Trust a Lot	28	14
Trust After Verification	60	29
Don't Trust at All	40	20
Don't Know the Service Provider	76	37
Total	**204**	**100**
Source: Field Survey		

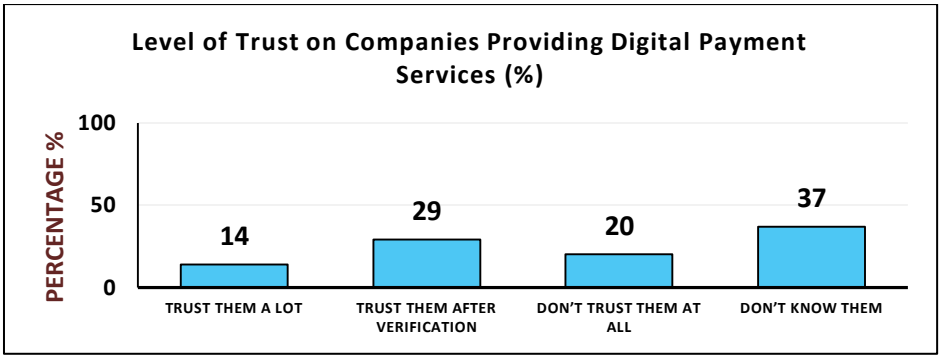


Fig.10

As per table 2.10 & Fig.10, 37% of the respondents are unfamiliar with digital payment companies, and 20% do not trust them at all. Only 14% trust them a lot, while 29% trust them after verification.

2.11 Level of Safety of Digital Payment Over the Years:

Table 2.11: Level of Safety of Digital Payment Over the Years		
Level of Safety	**No. of Responses**	**Percentage %**
More Safe	52	25
Less Safe	92	45
Not Sure	60	30
Total	**204**	**100**
Source: Field Survey		

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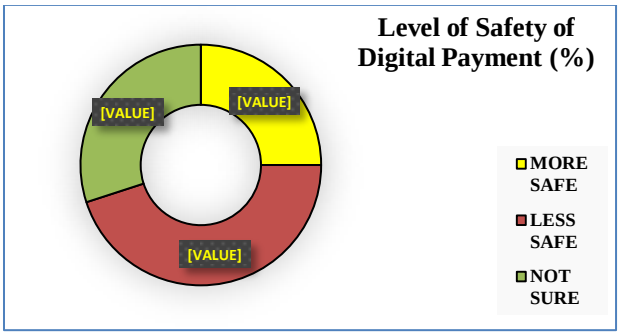


Fig.11

Table 2.11 & Fig.11 indicate that, 45% of respondents feel digital payments are feeling less safe, while only 25% think they are safer, and 30% are not sure. This indicates growing concerns of uncertainty about the security of digital payment systems.

2.12 Reasons for Many Refraining from Digital Payment:

Table 2.12: Reasons for Many Refraining from Digital Payment		
Reasons	**No. Of Responses**	**Percentage %**
Fear Of Frauds	60	29
Not Tech - Savvy	92	45
Don't Have Smart Phone	48	24
Others	04	02
Total	**204**	**100**
Source: Field Survey		

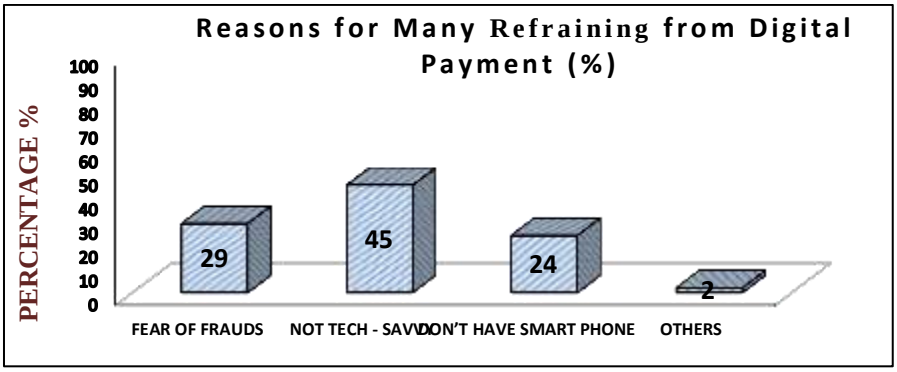


Fig.12

As shown in Table 2.12 & Fig.12, the main reason people refrain from using digital payments is due to lack of technical skills (45%), followed by fear of frauds (29%) and not owning a smartphone (24%). A very small portion (2%) cited other reasons.

2.13 Opinion About Threat to Safety of Digital Payment:

Table 2.13: Opinion About Threat to Safety of Digital Payment		
Opinion About Threat	**No. of Responses**	**Percentage %**
Worried	72	35
Trust Everything	44	22
Feel Safer	64	31
Doesn't Change Anything	24	12
Total	**204**	**100**
Source: Field Survey		

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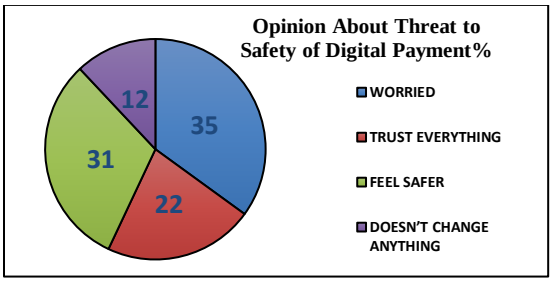


Fig.13

From Table 2.13 & Fig.13, it is clear that 35% of respondents are worried about the safety of digital payments, while 31% feel safer, and 22% trust everything. Only 12% believe it doesn't change anything. This reflects mixed opinions, about the safety of digital payment

2.14 Opinion about Shifting to Cash Payment from Digital Payment:

Table 2.14: Opinion about Shifting to Cash Payment from Digital Payment		
Opinion about shifting	**No. of Responses**	**Percentage %**
No, I Will Still Continue Digital Payment	76	37
Yes, I Will Shift to Cash Payment	28	14
I Will Be More Cautious Before Paying Online	48	24
Not Sure	52	25
Total	**204**	**100**
Source: Field Survey		

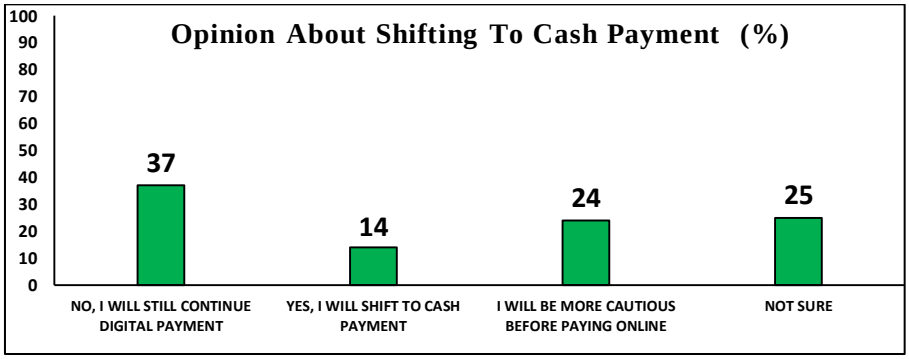


Fig.14

As indicated in Table 2.14 & Fig.14, 37% of respondents will continue using digital payments, while 14% plan to shift to cash payment. Another 24% said they will be more cautious before paying online, and 25% are unsure.

2.15 Usefulness Being Tech Savvy in Digital Payment:

Table 2.15: Usefulness Being Tech Savvy in Digital Payment:		
Usefulness Being Tech Savvy	**No. of Responses**	**Percentage %**
Yes	64	31
No	56	28
Only For Making Apps	64	31
Only For Young People	20	10
Total	**204**	**100**
Source: Field Survey		

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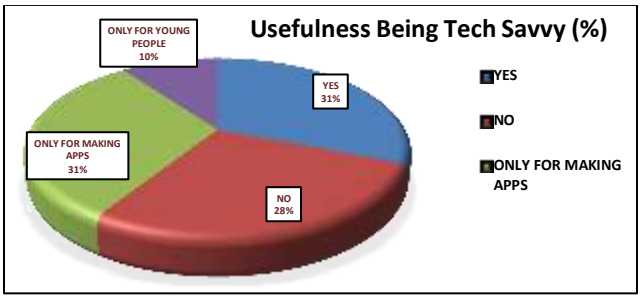


Fig.15

A glance at Table 2.15 & Fig.15 clearly indicates that, the responses are mixed regarding whether being tech-savvy helps in digital payments. 31% believe it does help, while another 31% think it's useful only for making Apps. 28% say it doesn't help, and 10% feel it's only for young people. This reflects varied perceptions about the role of technical skills in using digital payment options.

2.16 Scope of Digital Payment in the Future Days:

Table 2.16: Scope of Digital Payment in the Future Days

Will Digital Payment Have Scope in Future	No. of Responses	Percentage %
Yes	160	78
No	44	22
Total	**204**	**100**

Source: Field Survey

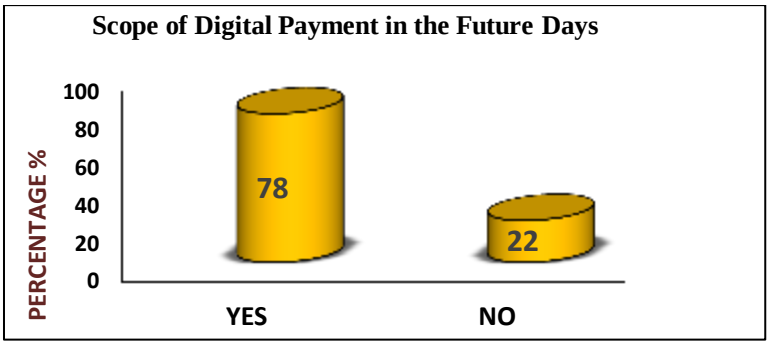


Fig.16

Table 2.16 & Fig.16 show that, 78% of respondents believe that digital payment systems will continue to have relevance and scope in the future. On the other hand, only 22% feel that digital payments may not have a lasting future.

Major Findings, Conclusion & Suggestions

Findings of the study:

The study on: "Attitude of General Public towards Digital Payment: **A** Study with Reference to Mangalore Taluk, D. K. District" has contributed to some important findings which are presented below:

- Since majority of the respondents who make digital payment belong to the age group of 20-40 years and a very small portion of persons above 60 years, it is evident that younger generation have a great inclination towards digital payment whereas the older population are less comfortable using digital payments.
- Majority of the public in Mangalore Taluk is aware of digital payments like Google Pay, PhonePe, UPI and Debit/Credit cards. However, digital payments using UPI on Mobile Wallets like GPay, PhonePe etc. is the most preferred method, due to its convenience, speed and widespread acceptance. The next preferred method is Credit Card Payment due to the availability of credit in times of emergency.
- It is evident that majority of the public use it 'Sometimes' only when the need arises. Very few make the digital payment always, indicating moderate adoption of digital payment. This shows that consistent use of digital payment option is still limited. People have preference for cash payment also depending upon the situation. Thus, while digital payments are becoming more common, there is still room for growth in terms of habitual and consistent usage among the public.
- The study reveals that speed and convenience are the primary drivers behind the use of digital payment because public mainly go for digital payment for the reason that it saves time and avoids delay in the settlement of transactions.

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- Digital payments are primarily used by the public for online purchases which is the most convenient way of settling transactions. However, many of the respondents use digital payment method for all the day-to-day transactions while usage remains low for larger or official payments. This suggests that digital payments are used for convenience in online and everyday transactions.
- As indicated by the response, a slight majority prefer to stick on to a single App for their transactions possibly due to ease of use, trust, or familiarity, while a significant portion is open to switching between Apps due to the dissatisfaction about the service provided and lack of attractive rewards.
- It is identified that the users face a major problem of failure in the digital payment may be due to network issues or incompatibility with the device. At the same time, the users also have concern about digital payment Apps due to too many advertisements, slow internet and lack of safety.
- It is found out that majority of the users of digital payment Apps, are not aware of the sponsoring companies and trust them without verification. However, a good number of users verify the sponsoring company details before trusting the App.
- As analysed from the data, public above 60 years, refrain from digital payment for the reasons that they are not tech-savvy or due to the fear of digital frauds. Majority of them are worried about the safety of the transactions.
- Though the users prefer digital payments, concerns about safety influence their behaviour to a significant extent, as they express that digital payment is less safe than the cash payment. However, the users would not prefer to shift from digital payment to cash payment.
- The users foresee that the digital payment system will be accepted by large number of people in the days to come and especially the young generation who are tech-savvy will surely use their technical skills in generating their own Apps in this direction.

Conclusion & Suggestions:

The study about the "Attitude of general public towards digital payment in Mangalore Taluk", reveals that the general public has a positive attitude towards digital payment systems. Most people are aware of and actively use platforms like Google Pay, PhonePay, Credit Cards and Debit Cards. While cash remains slightly more favourable, many users are flexible, depending on the context. The convenience, speed, and ease of tracking payments are major factors driving the adoption of digital payment system. Thus, digital payments still have room to grow in terms of user preference.

Further, COVID-19 pandemic significantly accelerated digital payment usage, especially among women and retail shopkeepers. However, challenges such as security concerns, digital literacy among older populations, and managing small transactions still exist. Overall, digital payments are becoming a preferred mode of transaction in the region, indicating a shift towards a more cashless economy, which is important for enhancing financial inclusion, promoting transparency, and boosting the local economy. To encourage broader usage, there is a need for focused awareness campaigns, training programs in local languages, and continued improvements in digital infrastructure. Building public trust and ensuring secure digital environments will be key to sustaining this transformation.

Suggestions:

For the safe and successful usage of digital payment, following suggestions are recommended:

- Digital literacy programs should be conducted for older adults and rural populations, taking the help of college students.
- Public awareness programmes must be conducted by the Government or NGOs to educate users on secure practices to prevent fraud in digital payments.
- Government can encourage small vendors to accept digital payments for low-value transactions.
- Different sponsoring companies can promote digital payment apps with support in local languages like Kannada, Hindi etc. for easy usage.
- The Apps can offer incentives like cashback and rewards to boost adoption of digital payment system.
- Telecommunication companies should improve internet connectivity and smartphone accessibility in rural areas also.
- A systematic feedback system and Grievance Redressal System should be set up by the Government for users to report issues and suggest improvements.

In conclusion, the findings highlight the need to improve system reliability, user experience, and data security in digital payment platforms. While there are still some reservations, the overall perception is highly optimistic, pointing to an increasing acceptance and integration of digital payment methods in everyday life.

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ANNEXURE I – QUESTIONNAIRE

Dear Sir / Madam,

We are the students of final III BBA from Government First Grade College Kavoor. As a part of our study, we are undertaking a mini project work on "Attitude Of General Public Towards Digital Payment – A Study With Reference To Mangalore Taluka, D. K. District"

In this context, we have prepared a questionnaire to collect data relating to topic, kindly cooperate. The data collected will be kept confidential.

Personal Details :

1. Name (optional):_____

2. Age:

a) below 20 b) 20 – 40 c) 40 – 60 d) above 60

3. Gender:

a) Male b) Female

4. What are the different ways you use to make digital payments?

a) Debit Card b) Credit Card c) UPI d) Mobile wallets e) Net banking

5. How frequently do you use Digital Payments?

a) Always b) Often c) Sometimes d) Rarely when no cash is available

6. When do you make digital payments?

a) Big buys b) Any transactions c) Online purchases only d) Only Government payments

7. Why do you prefer digital payments?

a) Convenient b) No need to carry cash c) Saves time d) Record of payment
e) Get rewards & Offers f) Others (Specify)

8. A) **Have you shifted your digital payment option from one app to another?**

a) Yes b) No

B) If changed, specify the reason:

a) Not satisfied with the service b) No attractive rewards
c) Fear of Fraud d) Others (specify)

9. What problems have you faced while making digital payments?

a) Too many advertisements b) Failure in the payments c) Scope for Frauds
d) No safety for the data e) Slow Internet f) Others (specify)

10. If you have a choice, do you prefer to make digital payment or with cash?

a) Always prefer digital b) Always prefer cash c) Depends on the situation

11. Do you trust the companies that provide digital payment services?

a) Trust them a lot b) Trust them after verification
c) Don't trust them at all d) Don't know them

12. Do you think digital payments have been becoming more safe or less safe over the years?

a) More safe b) Less safe c) Not sure

13. In spite of popularity of digital payment system, a number of people refrain from this. What could be the reasons?

a) Fear of Frauds b) Not tech-savvyc) Don't have Smart Phones d) Others (Specify)

14. What is your opinion about the threat to safety of Digital Payment Options?

a) Worried b) Trust everything c) Feel safer d) Doesn't change anything

15. Everyday a number of online frauds are reported. Do you feel like shifting to cash payment from digital payment?

a) No, I will still continue digital payment b) Yes, I will shift to Cash payment
c) I will be more cautious before paying online d) Not sure

16. Being a Tech savvy, does it help in digital payments?

a) Yes b) No c) Only for making apps d) Only for young people

17. Do you think in the future days, the digital payments have scope?

a) Yes b) No

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Original Article

Geographical and Socio-Economic Assessment of Tribal Settlements in Nashik District.

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Abstract

This study presents a descriptive geographical and socio-economic profile of tribal settlements in Nashik District, Maharashtra, based entirely on secondary sources. The district reveals a marked contrast between the rugged, forested western hilly region—home to the majority of tribal communities—and the fertile, well-connected eastern plains. Tribal villages are typically small, scattered, and located in difficult terrain with poor road access, resulting in lower literacy (especially among females), limited safe drinking water, fewer pucca houses, and heavy reliance on rain-fed farming, forest produce, and seasonal migration. In contrast, non-tribal areas enjoy better infrastructure, education, health facilities, and diversified livelihoods. The paper concludes that the challenging physical geography of the western zone remains the fundamental cause of persistent backwardness, underscoring the need for location-specific development measures.

Keywords: *Tribal settlements, Nashik District, geographical disparity, western hilly region, socio-economic conditions*.

Introduction:

Nashik district, situated in the north-western part of Maharashtra, is known for its sharp geographical contrast — fertile Godavari plains in the east and the rugged Western Ghats in the west. This physical diversity has strongly influenced the settlement pattern and living conditions of its inhabitants. The district supports the fourth-largest Scheduled Tribe population in the state. According to the Census of India 2011, out of a total population of 6,107,187, as many as 1,564,369 persons (25.62 per cent) belong to Scheduled Tribes. The major tribes are Bhil, Kokna/Kokni, Warli, Katkari, Thakur, Mahadev koli and Dubla.

Most tribal families continue to live in small, scattered hamlets on hill slopes and inside forest areas of the western tehsils. Their life is still closely linked with forests and rain-fed agriculture. In contrast, the eastern and central tehsils are dominated by non-tribal communities enjoying better roads, irrigation, schools, hospitals and markets. This study simply describes, through already published government figures, how geography has shaped two different worlds within the same district.

Review of Literature

Existing research on tribal settlements in Nashik District, drawn from secondary sources like Census data and government reports, consistently reveals patterns of geographical isolation and socio-economic lags in the western tribal belt.

Pathare and Pathare (2013) analyzed sex ratio variations among tribal populations using 2001 Census data, noting favorable ratios (e.g., 976 in tribal areas vs. 934 district-wide) but attributing declines to migration and limited healthcare access in hilly tehsils like Surgana and Peth. Similarly, Pathare (2014) examined overall population parameters, highlighting how tribal density correlates with lower literacy (62–69% in western tehsils vs. 82% district average) due to scattered hamlets and inadequate infrastructure.

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Borse (2017) compared healthcare facilities, finding tribal tehsils underserved (e.g., one PHC per 40–50 villages in Surgana) compared to plains, based on socio-economic abstracts from 1981–2011, emphasizing topography's role in service delivery gaps. Kokate and Salunke (2011) reviewed tribal development state wide, including Nashik, using Census 1991–2001 data to describe high ST concentration (over 50% in five tehsils) and slow progress in amenities like electricity (below 50% in 2001).

More recent works like Gangurde (2024) mapped tribal density using 2011 District Census Handbook, showing extreme concentrations (98% ST in Surgana) in forested hills, limiting economic diversification. Pawar (2021) assessed health services in tribal tehsils via socio-economic abstracts (1981–2019), noting persistent shortages in sub-centres and high patient loads. Statewide studies, such as Pawar (2011) on core-peripheries, identify Nashik as a Kokna and Mahadeo Koli core, with peripheries spilling into Dhule, based on 1991–2001 Census percentages. These sources, reliant on Census and abstracts, uniformly stress the need for targeted infrastructure in dispersed settlements, informing this compilation.

Objectives of the Study

1. To describe the geographical location of tribal settlements in Nashik district.
2. To present the size and nature of tribal villages using official figures.
3. To compare basic facilities and living conditions between tribal-dominated western tehsils and non-tribal eastern tehsils.
4. To highlight the main problems faced by tribal families as seen from government reports.

Research Methodology

This is a purely descriptive geographical study based entirely on secondary data. No primary data collection (field survey, questionnaire, interview, or measurement) has been carried out. The methodology adopted is simple compilation, tabulation, and systematic description of already published official statistics and research papers.

Nature of the Study: Descriptive and qualitative–quantitative

Type of Research: Applied research in regional geography

Approach: Regional analysis through zoning (western hilly, central transitional, eastern plain) Method of Data Collection: Only secondary sources

Sources of Data:

Census of India 2011 — Primary Census Abstract, Village and Town Directory, District Census Handbook (Nashik)
District Socio-Economic Review 2021–22 and District Statistical Abstract 2020–21 (Directorate of Economics & Statistics, Government of Maharashtra)
Annual Administrative Reports of Integrated Tribal Development Projects (ITDP) — Surgana, Peth and Trimbakeshwar (2015–2022)
Tribal Sub-Plan documents, Nashik Zilla Parishad
Maharashtra Human Development Report 2012
Published research papers listed in the Review of Literature section

Tools and Techniques Used:
Simple tabular compilation of official figures
Percentage calculation wherever required (done manually or using MS Excel)
Comparative presentation of data between tribal-dominated tehsils and plain tehsils
Geographical zoning based on relief, rainfall and forest cover

Data Findings

Table 1: Geographical Divisions and Location of Tribal Population

Zone	Tehsils Included	Physical Features	Percentage of District's Tribal Population Living Here
Western Hilly Zone	Surgana, Peth, Trimbakeshwar, Kalwan, Igatpuri	Very steep slopes, dense forest, rainfall 2,500–4,000 mm, many rivers originate here	Nearly 70 %
Central Transitional Zone	Dindori, Baglan (Satana)	Rolling hills, thinner forest, rainfall 800–1,500 mm	About 20 %
Eastern Plain	Nashik, Niphad, Yeola,	Flat land, black cotton soil, rainfall	Less than 10 %

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Zone	Chandvad, Malegaon, Nandgaon	below 600 mm, major rivers flow gently	

The table clearly proves that tribal families did not choose to live in difficult areas by chance. Historically, when plains were occupied by agriculturist castes, tribal communities were pushed towards the hills and forests. Even today, almost seven out of every ten tribal persons in Nashik district are forced to live where the land is steep, soil is thin and rocky, rainfall is heavy but unpredictable, and transport is extremely difficult. This geographical reality is the root cause of almost all their problems.

Table 2: Size and Nature of Villages (Census 2011)

Tehsil	Total Inhabited Villages	Villages with population less than 500	Villages with population 500–999	Average population per village
Surgana	150	112	28	1,174
Peth	121	98	18	1,133
Trimbakeshwar	185	138	38	770
Kalwan	198	142	42	955
Igatpuri	119	89	22	830
Niphad (plain area)	138	12	28	3,510

In the five western tribal tehsils, more than 70–80 % of villages have fewer than 500 persons, and many hamlets have only 50–150 people. Such tiny and widely scattered settlements make it almost impossible to provide normal facilities. One primary school teacher may have to walk 8–10 km across valleys to reach a hamlet of just 15–20 children. Building a proper road to every small patti (hamlet) becomes very costly. In contrast, villages in Niphad tehsil are large, compact and located along main roads, so one school or water scheme can serve thousands of people easily.

Table 3: Comparison of Basic Facilities (2011 & 2021–22 data combined)

Facility	Tribal-dominated tehsils (Surgana, Peth, Trimbakeshwar)	Plain tehsils (Niphad, Yeola, Nashik rural)	District Average
Literacy rate (2011)	62–69 %	83–88 %	82.3 %
Female literacy (2011)	54–61 %	76–83 %	75.1 %
Households having electricity (2021–22)	80–87 %	98–100 %	94 %
Households having tap water inside house/plot (2021–22)	24–38 %	85–94 %	68 %
Pucca (cement/brick) houses (2011)	34–44 %	78–88 %	65 %
Villages connected by all-weather (pucca) road (2021–22)	48–58 %	93–98 %	82 %
Villages having a high school within 5 km (2021–22)	52 %	96 %	81 %

Every single indicator tells the same story. Electricity has reached most tribal homes only after 2015–16 because of special schemes, but drinking water is still carried on the head from streams because laying pipelines on steep hills is difficult and costly. Female literacy is 20–25 percentage points lower because girls have to fetch water, collect firewood and look after younger siblings; moreover, the nearest high school is often 7–12 km away and there is no bus. Pucca houses are few because people earn very little and building material has to be carried long distances. The single biggest reason for this gap is the absence of all-weather roads in more than half the tribal villages — without roads, no material, no teacher, no doctor and no market can reach easily.

Table 4: Main Sources of Livelihood (2011 data)

Source of Income	Percentage of workers in tribal tehsils	Percentage in plain tehsils
Cultivators + agricultural labourers	82–90 %	55–65 %
Collection & sale of minor forest produce	Very common (30–50 % households)	Almost nil
Seasonal migration for wage work	45–65 % of youth every year	15–25 %
Regular government or private jobs	Below 6 %	15–22 %

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Tribal families have almost no irrigation; they grow only ragi, vari, niger and small millets on hill slopes. When the crop fails or is insufficient, they depend on mahua flowers, tendu leaves, honey and gums from the forest. From November to June, a large number of young men and sometimes entire families migrate to brick kilns of Gujarat or sugarcane fields of western Maharashtra. Children accompany parents and lose one full school year. In the plain tehsils, irrigation is 70–90 %, so people grow cash crops and many have permanent jobs in nearby factories or Nashik city.

Discussion

Secondary data from Census and abstracts unequivocally depict tribal settlements as geographically disadvantaged: the Western Hilly Zone's steep, forested expanse scatters 70% of STs into micro-hamlets, inflating service costs and isolation. Literacy gaps (20+ points) stem not from unwillingness but from 7–12 km school distances without transport, disproportionately affecting girls amid water/wood chores. Healthcare lags similarly—one sub-centre per 5,000 in Peth vs. 2,000 in Niphad—exacerbating malnutrition (30% stunting in tribal kids, per 2021 Review). Livelihoods remain forest-agriculture bound, with migration fragmenting communities and eroding cultural ties. Reports like Maharashtra Human Development (2012) and ITDPs (2022) reiterate annual pleas for roads and hostels, yet implementation favors plains due to visibility and votes. This descriptive synthesis reveals a "geographical fault line": tribal backwardness is not cultural but structural, demanding prioritized pipelines, ashramshalas, and eco-jobs to bridge the chasm.

Conclusion

Nashik's tribal settlements, housing 25.6% of the population in the district's harshest terrains, embody enduring geographical inequities. Scattered in western hills, these villages—small, roadless, and resource-poor—contrast sharply with the irrigated, connected plains, manifesting in low literacy, sparse amenities, and migration dependence. Official data from 2011 Census to 2022 Reviews affirm that without terrain-specific interventions like all-weather paths and local enterprises, disparities will persist. Bridging this requires reallocating funds to ITDPs for water, education hostels, and sustainable forestry, transforming isolation into resilience.

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Original Article

Changing Dimensions of CSR in the Indian IT Sector: A Study of Trend Stability and Strategic Shifts.

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Abstract

The concept of CSR has shifted from voluntary philanthropy to a strategic business obligation, especially in India, after the Companies Act, 2013, was passed. This change led to the creation of one of the largest structured CSR ecosystems in the world, making CSR an essential component of corporate governance and accountability. The study uses quantitative and comparative methods, such as weighted average and longitudinal analysis, and looks at sectoral distribution, geographical concentration, implementation methodologies, and impact assessment practices. The current study examines CSR fund allocation and expenditure across five major Indian IT corporations from FY 2019–2024. The result shows significant differences in CSR approaches, with some companies maintaining traditional philanthropic models while others closely integrate programs with their core business competencies. Key areas of concentration include rural development, digital inclusion, healthcare, education, and environmental sustainability. Disparities still exist, nevertheless, in the geographic distribution and level of impact quantification. The study concludes that, despite its notable advancements, CSR in India still needs more robust frameworks for fair distribution and efficient oversight. It goes on to say that public-private partnerships can boost results by allowing governments and businesses to pool their financial resources, technological know-how, and experience to promote sustainable social and economic growth. The results underline CSR frameworks' adaptive and resilient nature within India's IT sector.

Keywords: *Corporate Social Responsibility, Indian IT Sector, Corporate Sustainability, CSR Governance*

Introduction:

A key aspect of modern business strategy, corporate social responsibility (CSR), shapes how companies address environmental, social, and governance (ESG) concerns. As consumer awareness and sustainability demands rise, businesses are required to balance profit-making with social responsibility. CSR has become a strategic tool for enhancing competitive advantage, ensuring long-term sustainability, building stakeholder trust, and fulfilling ethical obligations. (Kvasničková Stanislavská et al., 2012).

William J. Bowen's groundbreaking book "The Social Responsibilities of the Businessman" (1953), which sparked scholarly debates on business responsibilities beyond profit maximization, is where corporate social responsibility started. Its definition has been broadened over time by academics and organizations. Buchholtz and Carroll(Shabana et al., 2017) believed that corporate social responsibility (CSR) encompassed companies' financial, legal, moral, and charitable demands, while the World Business Council for Sustainable Development.(World Business Council for Sustainable Development (Wbcsd) Defines Csr - Google Search, n.d.) defined it as an ongoing dedication to economic growth that improves the standard of living for workers, families, communities, and society.

Section 135 of the Companies Act of 2013 formally made India the first nation to require corporate social responsibility.

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According to the law, businesses with net worths of at least 500 crore, turnovers of at least 1,000 crore, or net profits of at least five crore must devote at least 2% of their average net profits over the preceding three years to corporate social responsibility initiatives. One of the most organized CSR ecosystems in the world has been established as a result of this rule, which requires businesses to take part in significant social and environmental projects and to disclose them openly.(National Voluntary Guidelines on Social, Environmental and Economic Responsibilities of Business (2009). Ministry of Corporate Affairs, Government of India. Retrieved from <http://Www.Mca.Gov.in/Ministry/Latestnews/National_Voluntary_Guidelines_2011_12jul 2011.Pdf> - Google Search, n.d.)

Corporate Social Responsibility (CSR) in India's IT sector is essential for integrating sustainability with business operations, impacting job creation and economic growth. The study investigates CSR programs of major IT firms, analyzing funding, implementation, and priorities to illustrate their role in sustainable development. It highlights investment trends and regional distributions, aiming to enhance CSR effectiveness and collaboration that aligns corporate strengths with national objectives.

In the Indian IT industry, corporate social responsibility (CSR) has evolved into a crucial tool for promoting equitable growth. Major firms such as TCS, Infosys, and Wipro integrate social, environmental, and community welfare into their strategies, focusing on education, digital literacy, healthcare, environmental sustainability, and skill development. The implementation of the Companies Act, 2013, has formalized CSR efforts, making spending mandatory for qualifying companies. During the COVID-19 pandemic, IT companies played a vital role in livelihood rehabilitation, remote education, and healthcare infrastructure. CSR initiatives have shifted from mere donations to long-term, impact-driven programs supporting the Sustainable Development Goals (SDGs), positioning the Indian IT sector as a model of responsible corporate citizenship that utilizes innovation and technology for social change.

Literature Review

In the article, Vidhi Chaudhri and Jian Wang emphasize that Digital CSR communication is crucial in the Indian IT industry as it strengthens stakeholder trust, boosts engagement, enhances business reputation, and fosters customer loyalty. (Chaudhri & Jian Wang, 2007) In their research, Dr. B. Charumathi and Padmaja Gaddam also explore the fact that Indian IT companies increasingly recognize the significance of corporate social responsibility in enhancing stakeholder trust and brand image, with legal restrictions and industry standards influencing disclosures. (Charumathi & Gaddam, 2015) Suresh**,** A. M. and Vijayalakshmi S**.** published an article exploring the shift from voluntary CSR to strategic business goals in the Indian IT industry, emphasizing the role of ethical practices, global sustainability norms, stakeholder expectations, and legal frameworks. (Suresh & S, 2015) In the paper, B. Harumati and Gaddam Padmaja explore the influence of regulations and technology on corporate social responsibility disclosures in Maharatna Central Public Sector Enterprises in India, highlighting the significance of robust regulatory enforcement and technological innovation in CSR operations. (Charumathi & Padmaja, 2018) In their study, M. Chandra Shekar and R. Kumaran highlight the significance of strategic alignment of CSR initiatives with company goals, highlighting a positive correlation between CSR activity and financial parameters like profitability and market value, and suggesting that genuine and strategic CSR can lead to long-term financial benefits. (Shekar & Kumaran, 2019) S. M. Ramya and the co-authors identified that the literature on Corporate environmental communication in India's IT and manufacturing industries is crucial for influencing stakeholder views, improving reputation, and proving accountability. Effective communication increases trust, regulatory compliance, and competitive advantage. Transparent, clear, and strategic communication is essential for sustainable practices. (Ramya et al., 2020) Liliana Nicoleta Simionescu's article highlights the positive impact of sustainable management of environmental resources on IT firm performance, highlighting the importance of incorporating environmental issues into corporate plans. (Simionescu et al., 2020) U Nisha, Mohsina Amreen A, and S. Firdouse Jahan examine the integration of green IT strategies within CSR frameworks in Indian IT enterprises, highlighting its potential to enhance stakeholder engagement, operational effectiveness, and business reputation. (Nisha et al., 2024) Meenakshi Bisla highlights the role of ethical culture and organizational values in shaping CSR viewpoints and OCBC, particularly in the Indian IT sector, focusing on environmental sustainability. (Bisla et al., 2024) Nikita Agarwal explores CSR's role in long-term sustainability, stakeholders' perception, and brand image, highlighting Indian IT companies' active participation in community development, healthcare, education, and environmental sustainability. (Agarwal, 2024) The study by Vinita, Gowri, and Hepsiba explores the link between innovation, corporate social responsibility, and firm performance in the Indian IT sector, highlighting the mediating role of technology in promoting sustainable innovation. (Vinita et al., 2025) In the review paper, Astha Dewan and Srijana Singh discuss the growing recognition of Corporate Social Responsibility (CSR) as a strategic tool in the Indian IT industry, focusing on community development, healthcare, and education, and the Companies Act of 2013. (Inside Pages, n.d.) The article published by Nilesh Kharche examines the adoption of Green IT strategies in Indian IT companies as CSR initiatives, focusing on sustainable resource usage, e-waste management, and energy-efficient technologies.(Kharche, n.d.) The study by Vivek Arunachalama and Anastasios Fountis examines the significance of sustainable innovation in the Indian IT industry, emphasizing the need for social and environmental value. (A Research Study on the Priorities for Sustainable Innovation for the Future of the Indian IT Industry and the Impact on CSR (Global Social Impact) - ProQuest, n.d.) Jothish Chandran Subha explores the

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importance of CSR programs in influencing consumer behavior, enhancing a company's reputation, increasing trust, and cultivating emotional bonds, particularly for Southern Indian IT companies. (3.RAKSTI_2022_BusinessAdm_Management.Pdf, n.d.)

Research Gap

The research examines Corporate Social Responsibility (CSR) activities in the Indian IT sector, highlighting a gap in studies focusing on changes in CSR priorities across different pandemic stages. It addresses the limited analysis of CSR spending from FY 2019-20 to 2023-2024, aiming to uncover post-pandemic patterns and shifts towards more purposeful CSR initiatives.

Research Methodology

This includes objectives for which for which the study is undertaken. This also clarify the scope, significance, data sources etc. of proposed study. Another significance aspect is tools and techniques which are used for the study. In brief, this chapter helps the researcher to decide her path of research work.

Objectives of the Study

- To examine the trend and pattern of CSR spending among selected IT companies from FY 2019–20 to FY 2023–24.
- To analyze the inter-year correlation of CSR expenditure to determine the stability and degree of consistency in CSR priorities.
- To assess whether CSR spending significantly differs among selected IT companies.
- To evaluate the shift from emergency-oriented CSR spending (healthcare and welfare) to sustainable sectors (education, environment, and vocational skills).

Significance of the Study

This study analyzes the transition of Corporate Social Responsibility (CSR) objectives in the Indian IT sector from pandemic-driven responses to sustainable development goals. It offers insights into CSR trends, inter-company differences, and stability, assisting practitioners and policymakers in realigning CSR initiatives, evaluating digital CSR communication, and closing the gap between corporate strategy and sustainable business performance.

Scope of the Study

The study analyzes the evolution of Corporate Social Responsibility (CSR) in the Indian IT sector from 2019–20 to 2023–24, focusing on major IT companies. It examines trends in CSR spending across key areas like education, healthcare, and environmental sustainability, highlighting the transition from compliance-based initiatives to strategic, sustainable practices.

Sources of the Data

For this study, the data were collected from secondary sources, mainly from the respective company's annual and CSR reports. Further, the Ministry of Corporate Affairs' database on CSR and other relevant websites of the selected companies were accessed to collect the required data.

Sampling Units

A sample of five IT Companies has been selected as secondary data for the analysis of companies' actions in the area of corporate social responsibility, and the institutions' CSR reports are contrasted.

Sample Size

The five selected IT companies for the analysis are as follows:

- Wipro Limited
- Tata Consultancy Services Limited
- Tech Mahindra Limited
- Info Edge(India) Limited
- Infosys Limited

Period of the Study

The period of this study, i.e., the data collected to undertake detailed analysis, is five years, from 2019-20 to 2023-24.

Hypotheses

H01: There is no significant difference in CSR expenditure among IT companies.
H11: There is a significant difference in CSR expenditure among IT companies.

Data Analysis and Interpretation

The analysis of CSR expenditure patterns across five fiscal years (2019–20 to 2023–24) reveals a dynamic yet progressively stabilizing IT companies' approach toward social responsibility and sustainable development initiatives.

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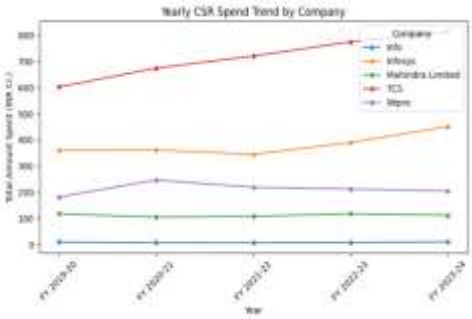
Descriptive Analysis

Sr. No.	Name of the Company	Total Spend (INR Cr.)	Average Spend (INR Cr.)	Number of Projects
1	Wipro Limited	1065.57	12.838193	83
2	Tata Consultancy Services Limited	3583.03	44.234938	81
3	Tech Mahindra Limited	562.22	24.444348	23
4	Info Edge(India) Limited	45.01	0.351641	128
5	Infosys Limited	1907.20	8.081356	236

The table compares CSR spending among IT companies. TCS has the highest total CSR expenditure, with an average of ₹44.23 crore per project. Infosys follows with a total spend of ₹1907.20 crore across 236 projects. Wipro Limited and Tech Mahindra Limited also contribute significantly. Info Edge(India) Limited reported the lowest total spend, suggesting smaller, distributed-scale initiatives. The data reveals varying CSR strategies among companies.

Trend Analysis:

The chart shows the CSR spending trends of IT companies from FY 2019-20 to FY 2023-24. TCS consistently has the



highest CSR expenditure, indicating growth and commitment to social initiatives. Infosys maintains the second-highest spending, with a slight dip during FY 2021-22 and a recovery post-pandemic. Wipro shows moderate fluctuations, while Mahindra Limited and Info show stable spending patterns.

Anova

	sum_sq	df	F	PR(>F)
C(Company)	**1.082270**	**4.0**	**10.753536**	**2.138812**
Residual	**1.373780**	**546.0**	**NaN**	**NaN**

Anova Table

The ANOVA test was conducted to determine whether there is a significant difference in the mean CSR spending among the selected IT companies. The results show an F-statistic of 10.75, which is considerably large, and a p-value of 2.13×10^{-8}, which is far below the 0.05 significance level. This clearly indicates that the null hypothesis (H_0), stating that all companies have the same mean CSR spending, must be rejected. Therefore, it can be concluded that there are statistically significant differences in CSR expenditure among the companies. In simple terms, the analysis confirms that the level of CSR investment varies notably from one company to another, reflecting different financial capacities, strategic priorities, and organizational approaches toward social responsibility.

Correlation Analysis

YEAR	FY-2019-20	FY-2020-21	FY-2021-22	FY-2022-23	FY-2023-24
FY-2019-20	1.000000	0.669194	0.538288	0.738079	0.766618
FY-2020-21	0.669194	1.000000	0.051381	0.333973	0.387097
FY-2021-22	0.538288	0.051381	1.000000	0.325778	0.349110
FY-2022-23	0.738079	0.333973	0.325778	1.000000	0.986233
FY-2023-24	0.766618	0.387097	0.349110	0.986233	1.000000

Correlation Matrix

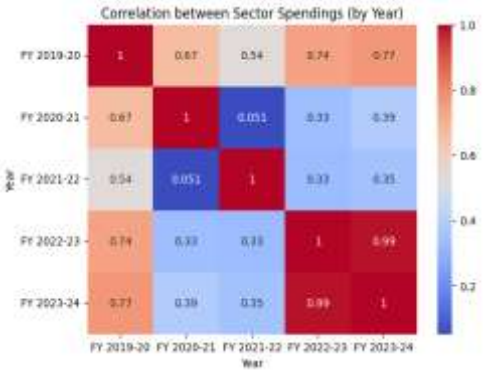
Representation of Companies undertaking practices in various CSR Focus Areas

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Developmental Sector(s)	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24
Animal Welfare	8.33	42.62	2.98	0.00	0.00
Armed Forces, Veterans, War Widows/ Dependants	5.10	3.87	9.12	20.00	0.00
Art And Culture	15.83	12.80	8.86	19.60	9.37
Conservation Of Natural Resources	0.00	0.00	6.14	114.34	0.00
Education	430.48	225.25	286.48	1073.43	1123.01
Environmental Sustainability	133.30	81.14	199.44	103.68	178.80
Health Care	132.11	244.14	95.32	98.42	219.43
Livelihood Enhancement Projects	10.41	37.62	0.95	5.91	5.28
Other Central Government Funds	306.00	381.00	0.00	0.00	0.00
Poverty, Eradicating Hunger, Malnutrition	176.00	9.57	680.07	0.10	0.00
Prime Minister's National Relief Fund	0.00	281.00	0.00	0.00	0.00
Rural Development Projects	19.98	1.65	3.15	5.90	3.92
Safe Drinking Water	0.00	1.42	0.52	6.67	0.00
Senior Citizens Welfare	0.00	1.79	0.00	0.00	0.00
Setting Up Homes and Hostels for Women	17.57	7.78	56.00	0.00	0.00
Setting Up Orphanage	13.24	0.00	0.00	1.22	0.00
Special Education	3.51	39.40	2.87	2.53	3.65
Swachh Bharat Kosh	0.00	23.15	0.00	0.00	0.00
Training To Promote Sports	0.00	0.00	0.00	0.00	0.18
Vocational Skills	0.00	1.24	46.72	51.82	48.88
Women Empowerment	0.00	0.00	0.97	0.00	0.00

Representation of Companies undertaking practices in various CSR Focus Areas

In analyzing sector-level CSR spending across fiscal years, notable patterns and correlations emerge. For FY-2022-23 and FY-2023-24, allocations reflect consistent priorities, indicating continuity in CSR strategies. A substantial similarity is observed between FY-2019-20 and these two years, signifying a return to pre-pandemic allocation patterns. In contrast, FY-2020-21 displays a lack of correlation with FY-2021-22, suggesting dramatic shifts in sector priorities



due to emergency reallocations. Overlapping but notable differences persist between FY-2020-21 and subsequent years. The high correlation between FY-2022-23 and FY-2023-24 points to stabilization in sectoral allocations, while moderate similarities exist between FY-2019-20 and later years. The analysis reveals a divergence in FY-2020-21, attributed to pandemic-related funding shifts, thus illustrating the impact of extraordinary circumstances on CSR spending patterns.

Suggestions

The CSR activities of the IT sector from FY 2019-20 to FY 2023-24 indicate long-term strategies focused on Sustainable Development Goals (SDGs). Key areas include AI, skill development, and digital education to close the digital divide. Recommendations involve diversifying CSR portfolios, enhancing transparency, and fostering collaboration among IT companies, NGOs, and academia. Integration of CSR with core business innovations and a focus on environmental sustainability are essential for aligning with government initiatives aimed at inclusive growth.

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Conclusions

The study comes to the conclusion that between FY 2019–20 and FY 2023–24, the Indian IT sector's CSR practices clearly changed. The data shows a steady increase trend in CSR spending across large IT firms, indicating their increasing dedication to social responsibility and sustainable development. The results of the inter-year correlation show a high level of consistency in recent years, indicating that CSR priorities have grown more strategically oriented and structured. The results of the ANOVA show that there is a substantial difference in CSR spending amongst businesses, indicating that organizational policies, financial stability, and strategic focus are important factors in determining CSR behavior. Additionally, throughout the pandemic, the industry showed a clear transition from short-term, emergency-driven CSR initiatives to long-term investments in talent development, education, and environmental sustainability. According to the study's overall findings, corporate social responsibility (CSR) in the Indian IT industry is changing from a compliance-based requirement to a strategic and long-term framework that combines social effect with business expansion and innovation.

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Original Article

Policy and Economics of Renewable Energy in India.

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Abstract

This paper reviews India's renewable energy (RE) policy framework and examines the economic drivers, constraints, and implications of the country's energy transition. It synthesizes official policy documents, government statistics, and recent academic/industry analyses to: (1) map India's policy instruments and targets; (2) evaluate cost and investment trends in solar, wind, storage, and green hydrogen; (3) analyze institutional and market barriers (DISCOM finances, transmission, RPO compliance, intermittency); and (4) provide policy recommendations to accelerate a just, affordable, and resilient transition. Key findings: India has set ambitious non-fossil targets (500 GW by 2030), net-zero by 2070, and launched major schemes (PM-KUSUM, Green Hydrogen Mission) — all of which are transforming investment flows and technology priorities, but success depends on financing reforms, grid and storage scale-up, and stronger market signals.

Keywords: *renewable energy, India, policy, economics, solar, wind, storage, green hydrogen, RPO, DISCOM.*

Introduction:

India's energy sector is at a structural inflection point: rising renewables additions, falling RE costs, growing interest in storage and green hydrogen, and sustained policy activism. This paper aims to (i) summarize the policy architecture that governs RE deployment in India; (ii) assess the economics underpinning recent capacity additions and tariffs; and (iii) identify policy and market reforms needed to meet national targets while preserving system reliability and affordability.

Methodology

This is a policy-oriented, secondary-data study that synthesizes (i) official government sources (MNRE, PIB, policy pages), (ii) reputable news agencies and industry think-tanks (Reuters, IEA, CEEW, Ember, RMI), and (iii) open data portals (data.gov.in, Prayas). The approach combines descriptive policy analysis with economic discussion of cost trajectories, investment needs, and institutional constraints. (Sources used are listed in References.)

Policy framework

1. National targets and international commitments

- **500 GW non-fossil (by 2030)**: India has set a target of around 500 GW of non-fossil capacity by 2030 (including solar, wind, hydro, nuclear) as part of an ambitious decarbonization push.
- **Net-zero by 2070**: Announced at COP26, India targets net-zero emissions by 2070.

2. Major national instruments and programs

- **MNRE** leads policy and schemes (National Solar Mission, wind policies, rooftop and distributed generation programs).
- **PM-KUSUM** supports decentralized solar, solar pumps, and farmer-level generation (targeting ~34,800 MW by 2026 under the scheme components).

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- **Renewable Purchase Obligations (RPOs)** require DISCOMs/obligated entities to procure a minimum share of renewable power; state-level compliance data is available via government portals.
- **Green Hydrogen Mission** (launched 2023) aims to scale green hydrogen production and position India as a manufacturing/export hub for hydrogen derivatives.
- **Green Energy Corridor and storage initiatives** address transmission and balancing needs; PLI and manufacturing incentives promote domestic supply chains.

Economics of renewable energy

1. Cost trajectories & bidding outcomes

- **Solar and wind costs have declined sharply** over the past decade due to technology improvements, module price declines, and competitive reverse auctions. International and India-specific analyses document steep PV price falls (global PV module spot prices falling massively in 2022–23; India's auction/tender process drove domestic bid declines in earlier years).
- Recent hybrid solar + storage and solar-plus-battery projects are demonstrating low delivered firm prices for round-the-clock power, showing the economics of coupling storage with renewables is improving. (Example: a recent solar-plus-storage project delivering firm power below Rs 3/unit.)

2. Investment flows & finance needs

Public and private investment in the RE sector has increased, with both domestic firms and traditional oil/gas incumbents acquiring RE portfolios (e.g., ONGC expanding renewables). Meeting the 2030 500 GW target will require substantial additional capital across generation, storage, and transmission.

3. Market design & price signals

- Competitive auctions (reverse bidding) have reduced tariffs but introduced concerns about bid realism, project delays, and offtaker risk.
- RPOs aim to create demand-pull for renewables but enforcement and compliance vary by state; open data shows uneven state/UT compliance in recent years.

4. System costs and externalities

Renewables reduce fuel import bills and air pollution externalities; however, integration costs (grid reinforcement, ancillary services, storage) are real and must be accounted for in planning and tariffs. The economics therefore depends not only on levelized generation cost but the full system value and costs (firming, capacity adequacy, curtailment).

Key barriers and economic challenges

1. **DISCOM financial health:** Weak cash flows and high losses delay payments and increase perceived off-taker risk, raising financing costs for developers. (This remains a structural constraint requiring distribution reforms.)
2. **Transmission and land bottlenecks:** Rapid additions need corresponding transmission reinforcement (Green Energy Corridor) and streamlined land/clearance processes.
3. **Intermittency & storage scale:** Firm, 24×7 clean power needs scaled storage or flexible generation (or long-duration storage, green hydrogen). Storage costs are falling but require deployment at scale.
4. **Manufacturing concentration in global supply chains:** Module and battery manufacturing is globally concentrated; India's PLI and PPA strategies aim to boost domestic manufacturing but need sustained investment.
5. **Policy and regulatory uncertainty at state level:** Differences across states in RPO enforcement, land policy, and grid charges create investment risk.

Policy evaluation — what's working and what needs strengthening

1. What's working

- **Auction model and competitive procurement** have driven down tariffs and attracted capital.
- **Decentralized programs (PM-KUSUM)** support energy access and farmer incomes while adding distributed capacity.
- **Green Hydrogen Mission** stimulates investment in an emerging supply chain and long-duration energy vectors.

2. What needs strengthening

- **DISCOM reforms** (tariff rationalization, reduction of losses, improved billing/collection) to de-risk payments.
- **Integrated planning for storage & transmission** — co-optimizing generation, storage, and network investment to minimize overall system cost.
- **RPO enforcement and market instruments** (e.g., firm renewable contracts, green power markets) to provide predictable demand.
- **Finance tools**: credit enhancement (guarantees), long-tenor debt, and blended finance to lower cost of capital for storage and hybrid projects.

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Policy recommendations (prioritized)

1. **Accelerate DISCOM financial restructuring**: clear roadmaps (tariff reforms, loss reduction, direct benefit transfer for subsidies) to restore payment credibility.
2. **Scale storage through targeted incentives**: time-limited capital support or capacity market mechanisms for long-duration storage and hybrid contracts.
3. **Strengthen transmission investment and streamlined approvals**: prioritize Green Energy Corridor expansions and fast-track ROW/clearances for critical corridors.
4. **Enhance domestic manufacturing via coordinated PLI + demand guarantees**: align module, inverter, and battery PLI with predictable domestic demand (e.g., local content requirements for select auctions).
5. **Market reforms for firming and flexibility**: create markets for ancillary services, capacity, and storage-as-a-service; encourage corporate/industrial offtake via green tariffs.
6. **Targeted support for green hydrogen scale-up**: focus on electrolyser manufacturing, low-cost renewable supply corridors, and early offtake incentives.

Discussion — macroeconomic & social implications

- **Energy security & trade balance:** Replacing fuel imports with domestically generated RE and green hydrogen improves trade balance and energy sovereignty.
- **Employment:** Manufacturing, O&M, and decentralized RE can create substantial jobs—especially in semi-skilled and rural areas—if supply chain and training programs are prioritized.
- **Distributional effects:** Tariff reforms must protect vulnerable consumers; transitioning subsidy frameworks to targeted support avoids cross-subsidy distortions while preserving equity.

Limitations and further research

This study is based on secondary sources and public data available up to September 2025. Future quantitative work should use plant-level generation, hourly dispatch, and financials of DISCOMs to model system costs and the value of storage precisely. More micro-level research on social impacts of distributed RE (e.g., farmer incomes under PM-KUSUM) would complement this macro policy review.

Conclusion

India's policy landscape for renewables is ambitious and dynamic: far-reaching targets (500 GW by 2030; net-zero by 2070), major schemes (PM-KUSUM, Green Hydrogen Mission), and strong cost declines in solar and wind create favorable economics. However, achieving these goals requires reforms in distribution finances, scaled storage and transmission investment, and smart market design that internalizes system integration costs while preserving affordability. With coordinated policy action and targeted finance, India can accelerate a just and economically efficient energy transition.

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Original Article

Cultural Determinants of the Sindhi Entrepreneurial Spirit: An Empirical Study.

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Abstract

The Sindhi people with a culture of trading and high business oriented society have developed their own entrepreneurial identity in India particularly since returning back to the country after the partition. The Sindhis have remained successful in the different business fields despite their historical displacement. The motivation behind this study is to understand the need to learn how this old tradition of entrepreneurship has been perpetuated and reinforced throughout generations by cultural, social and community-based factors. The purpose of the study is to empirically study the cultural determinants of Sindhi Entrepreneurial Spirit. The technique used in this study is One Sample t-test. The findings in this study indicates that Strong cultural roots in trade and commerce, Family-driven encouragement for business careers, Early exposure to entrepreneurial thinking, Trust-based community business Networks, Focus on long-term customer ties, Pride in business ownership, Emphasis on financial discipline and savings, Influence of community business role models, Intergenerational sharing of business skills, Blending traditional values with modern practices, and Global business networking are significant cultural determinants of Sindhi Entrepreneurial Spirit.

Keywords: *Sindhi Entrepreneurial Spirit, One Sample t-test, Empirical Research.*

Introduction:

- The Sindhi population of India has always played a special role in the business imagination of the country. In his book of the Sindhi business community, Falzon (2022) remarks on a common stereotype where this group is likened to snake venom, in that what is perceived to create the insecuring sense of a snake to the Indian entrepreneurship is the fact that they are, actually, seen as venomous in their entrepreneurial ambitions (that is, they will go to any length to make a buck). Although these stereotypes make a multifaceted community easier to handle, it is an indication of the distinct position that Sindhi businessmen have gained in the commercial environment of India. The historical context of this entrepreneur image is based on the traumatic experience of the Partition of India and Pakistan in the year 1947. Sindhis moved to India as refugees to former Sindh of the modern day Pakistan region and established themselves mainly in Maharashtra and Gujarat with considerable loss of property and interrupted livelihoods. The Census of India 2011 shows that there are about 3.8 million Sindhi speakers in India today. In spite of engagement in various occupations, the society still holds firmly on the concept of self-employment as an economic instrument and cultural value- a tendency nurtured by post partition survival, mobility and close knit communal bonding.

Entrepreneurial energy of Sindhis in the course of decades found its reflection in a very broad spectrum of domains. Their powerful, community-based network of businesses that have been built following resettlement has been one of the key factors to their success. The networks are support systems, as well as knowledge sharing, mentorship, informal credit access, and market access mechanisms.

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It is through such close knit networks where Sindhi entrepreneurs have managed to reconstruct themselves faster, diversify their business and be able to work in an environment that is characterized by Bhojwani and Dwivedi (2024). The other characteristic strength of the community has been its great adaptability and mobility in geography. It was as a result of the displacement crisis that Sindhi business people exhibited a certain capacity to migrate, detect market indicators, and to shift between towns, states and even countries in pursuit of business opportunities. This mobile culture became the focus of their entrepreneurial identity that enabled them to transcend socio-economic barriers and fit in the new commercial ecosystems efficiently and with vision. During their early years of migration, they were in small-scale dealing and retailing and were slowly shifting towards manufacturing, real estate and globalised business niches. Their strength, adaptability and mutual support systems enabled them to make the displacement challenges turn into economic reinvention chances.

The Sindhi entrepreneurial input is especially noticeable in areas like textiles, real estate, education, hospitality industry, jewellery and entertainment. Sindhi business families established trading networks, manufacturing plants, and retail chains in the textile industry that enhanced efficiency and competitiveness in the industry. Their urban landscape has been affected by their participation in the development of the real estate sector that has led to the construction, property investment, and growth of the commercial infrastructure in various Indian cities. Hotels and restaurants owned by the Sindhs are reputed in terms of customer-oriented approach and quality of services in the hospitality sector, which has helped in generating a positive impact on tourism as well as the local economies. Jewellery industry is no exception as Sindhi business has left a mark in the industry in terms of craftsmanship, export-based manufacturing, and prosperous retail installation. The community has also gained grounds in the entertainment industry; a little bit later, the community has taken part in film production, distribution and exhibition, and it has also set up influential production houses. The related factors of culture, including the mutual cooperation, adaptability, the upbringing that is business-oriented, and an entrepreneurial ethos embedded, remain active in defining the Sindhi economic experience, as Bhojwani and Dwivedi (2024) indicate. All these dimensions highlight the importance of the fact that the resilience, mobility, and networks of support of the community have allowed Sindhi entrepreneurs to not only be able to restore lives to the post-Partition era but also to become key players in the overall development of the Indian economy.

Review of Literature:

1. **Siddiqui, M., Narijo, H., et al. (2025)** discussed in their research about the socio-religious and cultural capital norms that influences experience of the female entrepreneurs, especially in the Sindh province based on microfinance empowerment. The findings derived shows that the women entrepreneurs are finding their footing in the business environment and taking up opportunities to create a niche market for themselves against the traditional societal norms.
2. **Bhojwani, J. & Dwivedi, A. (2024)** analysed in their research study about attempting to document factors which impact the entrepreneurial culture among the Sindhi entrepreneurs' at community level. The results derived from the research indicates the 1st generation of Sindhi population being involved in business so as to survive during the partition of India and Pakistan in 1947, followed by the next generation trying in scaling up their businesses and now changing it in a dynamic manner. The Sindhi entrepreneurs are more risk-takers and opportunity seekers aiming to grow big.
3. **Falzon, MA. (2022)** in his book titled “Selling Anything Anywhere: Sindhis and Global Trade” studied the social and cultural platform that supports Sindhi business and trade networks. Sindhi business is also found in the dynamics of the contemporary Indian diaspora in the book and includes several success stories, both Indian and otherwise. The book highlights the entrepreneurial creativity, spatial capital and flexibility of Sindhis the traits that are vital to the establishment of successful cosmopolitan enterprises.
4. **Patankar, V. & Mehta, N. (2018)** conveyed in their research about making an effort for studying significant features of different communities of entrepreneurs and their respective cultures. The central theme is in understanding knacks and specialty that could trigger others in growing dynamic in their business ventures. This research discusses the communities and their cultural customs and behaviour of Sindhis, Chettiyar, Jain, Gujaratis, Boharis, Marwaris, Shetty, and the Parsi communities.
5. **Ahmed, C., Ali, M., et al. (2015)** described in their research that many small as well as medium business firms have played an important part in the development of economy in the Sindh province. The study evaluated the factors that impacts the growth of Small and Medium Enterprises in Sindh province. The results derived from the research indicates the main objective of launching a business venture is the need to become independent as well as time flexibility.
6. **Abale, M., Muluk, S., et al. (2015)** determined in their research study that Pune city has recorded the development of business ventures by minorities such as the Muslims, Sikhs, Sindhis, Marwardis, Jains among others who are still recording high entrepreneurship rates. This chapter tries to discuss the motivating forces in ethnic and religious entrepreneurship. The decision of Ethnic minority to venture into entrepreneurship is usually triggered by various factors, which include historical factors, market conditions, clusters, geographical factors, strong cultural factors etc. are the motivating factors.

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Objectives of the Study:

1. To evaluate the significance of cultural, social, and community-based determinants in shaping the entrepreneurial spirit among Sindhis
2. To sugest simple ways to help the Sindhi community grow in business and support young entrepreneurs.

Hypothesis:

H_0: Cultural, social, and community-based determinants do not have a significant influence on the entrepreneurial spirit among Sindhis.

H_1: Cultural, social, and community-based determinants have a significant positive influence on the entrepreneurial spirit among Sindhis.

Research Methodology:

The current research paper is a descriptive research design. Both primary and secondary data was collected to establish the entrepreneurial determinants of the Sindhi community. The non-probability sampling was used. The methodology of this study adheres to ethical research practices recommended by Pirani (2024). The data was collected from 80 Sindhi entrepreneurs making sure that the respondents had a business experience relevant to making meaningful contributions. The sample size used is even greater than 45 recommended by Faul et al. as the minimum to use in conducting a single-tailed one-sample analysis, thus justifying the sufficiency of the data collected. Parametric One sample t-test was used to analyze the collected data using the R Studio software.

Data Analysis and Interpretation:

One sample test

Cultural Determinants of the Sindhi Entrepreneurial Spirit	t – statistics	P – value	Results
Strong cultural roots in trade and commerce	24.98	0.005	Significant
Family-driven encouragement for business careers	25.09	0.004	Significant
Early exposure to entrepreneurial thinking	23.15	0.000	Significant
Trust-based community business Networks	23.90	0.000	Significant
Focus on long-term customer ties	25.66	0.006	Significant
Pride in business ownership	24.11	0.000	Significant
Emphasis on financial discipline and savings	22.32	0.000	Significant
Influence of community business role models	24.00	0.000	Significant
Intergenerational sharing of business skills	21.98	0.000	Significant
Blending traditional values with modern practices	23.56	0.000	Significant
Global business networking	26.31	0.000	Significant

Source: Compiled from Primary Data

The one-sample t-test results show that all cultural determinants of the Sindhi entrepreneurial spirit have t-values well above zero and p-values below 0.05, indicating that their mean scores are significantly higher than the test value of 3. This confirms that key cultural factors—such as strong roots in trade, family encouragement, early entrepreneurial exposure, and trust-based business networks—play an important role in shaping entrepreneurial tendencies among Sindhis. The results further reveal that long-term customer focus, pride in business ownership, disciplined financial practices, and the influence of community role models strongly contribute to entrepreneurial behavior. Additionally, intergenerational sharing of business skills, the ability to blend traditional values with modern practices, and a strong orientation toward global business networking also demonstrate significant positive effects.

Conclusion:

The findings show clearly that the entrepreneurial spirit across the Sindhi community is greatly shaped by cultural, social and community-based reasons. The respondents expressed high agreement to key determinants such as through their long rooted trading heritage, high family support and exposure to business thinking at a tender age. Community networks that are built upon trust and long term customer relationships were also presented as strong forces behind their business mentality and lent a lot of stability and confidence to the business undertakings. They also have pride in owning businesses, are financially disciplined and have regarded communal role models further enhancing entrepreneurship identity in the community. Also, there is the continuity of business skills between generations, the capacity to reconcile traditional values with up-to-date methods, and an active attitude towards the global business possibilities, which altogether emphasize a robust and culturally-based entrepreneurial ecosystem of the Sindhis.

Suggestions:

Sindhi entrepreneurship can grow their community organisations more by establishing organised mentorship programmes where more experienced entrepreneurs can be linked to the younger aspirants to preserve and pass on helpful business knowledge. Financial literacy programs, innovation, and international exposure efforts of Sindhi

youths may enable them to be more efficient in changing market conditions. Enhancing collective forums, business associations, and diaspora networks could contribute to the expansion of the opportunities and promote the collaborative activities. Cultural pride can also be reinforced through attempts to record and present encouraging Sindhi entrepreneurial stories so as to positively inspire them to join the business world in the future. All these measures can contribute to maintaining the entrepreneurial tradition in the community as well as the skills and the mentality of the upcoming entrepreneurs to remain successful.

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4. Bhojwani, Jay & Dwivedi, A.. (2024). Sindhi Community Entrepreneurial Spirit: An In-Depth Analysis of Cultural Influences. 10.2139/ssrn.4716050.
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Original Article

Determinants of Working Capital Financing Through Digital and Policy Interventions: A Survey of Farmers in Dhule District Maharashtra.

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Abstract

Agriculture remains the backbone of India's rural economy, with farmers depending heavily on timely and affordable credit to sustain their operations. Working capital finance—covering recurring expenses such as seeds, fertilizers, irrigation, and labour—has long been dominated by informal credit channels, leading to recurring cycles of debt and financial vulnerability. In recent years, however, digital innovations such as mobile banking, the Unified Payments Interface (UPI), Aadhaar-enabled payment systems, and digital Kisan Credit Cards have begun transforming the agricultural credit landscape. Alongside these advances, institutional mechanisms introduced by NABARD and policy interventions by the Central and State governments aim to strengthen access to structured and affordable working capital finance.

This study examines the convergence of digital financial innovations and policy mechanisms in supporting farmers' working capital needs, with specific reference to Dhule District, Maharashtra. A descriptive research design was adopted, involving primary data collection from 419 farmers across four talukas (Dhule, Shindkheda, Sakri, and Shirpur) through structured questionnaires, supplemented by qualitative insights from 55 officials representing NABARD, banks, and Panchayat Raj institutions. Statistical analyses—including ANOVA, Chi-square, Correlation and Regression—were conducted using SPSS 25 to test hypotheses related to the impact of digital innovations, awareness of government schemes, and their combined influence on the sustainability of agricultural finance.

The findings reveal that digital financial tools significantly improve the efficiency of working capital management, while farmers' awareness of government schemes strongly influences their adoption of formal credit channels. Moreover, the integration of technological innovations with supportive policy frameworks substantially enhances the sustainability of agricultural finance. The study contributes valuable insights toward modernizing rural finance, strengthening farmer resilience, and promoting sustainable agricultural development in India.

Keywords: *Working Capital Finance, Digital Finance, Agricultural Schemes, Farmer Awareness, India.*

Introduction:

Agriculture forms the backbone of India's rural economy, contributing substantially to national food security, employment generation, and socio-economic stability. Despite its central role, the sector continues to grapple with persistent financial constraints, particularly in the domain of working capital management. Small and marginal farmers, who constitute the majority of the agricultural workforce, frequently depend on informal credit channels due to limited access to institutional finance. These informal sources often charge exorbitant interest rates, thereby trapping farmers in cycles of indebtedness and financial vulnerability. Although the National Bank for Agriculture and Rural Development (NABARD) and other regulatory bodies have introduced several policies and financial instruments aimed at improving credit accessibility—such as flexible loan products, interest subvention schemes, and risk-mitigation mechanisms—a number of structural barriers continue to impede their effective utilisation.

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Delays in loan sanctioning, collateral obligations, bureaucratic procedures, inadequate financial literacy, and limited awareness of available schemes reduce the overall efficiency of these initiatives. Furthermore, infrastructural bottlenecks, technological gaps, and persistent reliance on intermediaries weaken transparency and discourage farmers from fully engaging with formal financial institutions.

To address these challenges, the Central and State governments, along with NABARD, have introduced targeted interventions including the Kisan Credit Card (KCC), crop loan interest subvention, and various working-capital support schemes through cooperative banks and regional rural banks. These measures are designed to ensure timely, affordable, and structured access to working capital, thereby promoting financial stability and agricultural sustainability. However, the adoption and effectiveness of these schemes vary widely across regions and are particularly constrained in semi-urban and rural districts such as Dhule, where deficits in digital literacy, infrastructural inequities, and uneven dissemination of information continue to hinder widespread utilisation.

In this context, understanding the complementary role of digital financial innovations—such as mobile banking, UPI, Aadhaar-enabled services, and digital KCC platforms—alongside government policy mechanisms becomes critical. Examining how these instruments collectively influence farmers' working capital decisions is essential for developing a sustainable, inclusive, and resilient agricultural financial ecosystem.

Literature Review:

(Yan, Chen, Zhou, && Wei, 2025) In China, digital inclusive finance significantly improved agricultural mechanization, demonstrating how rural finance technologies can modernize farming operations and boost productivity.

(Xu, 2025) Digital inclusion expands affordable financial services to small farmers, aiding technological adoption and sustainable farming. It helps rural entities access resources conveniently.

(Cao, 2025) Digital financial inclusion increases farmers' capacity to manage agricultural risks. Using panel data, Cao (2025) finds it boosts anti-risk capacity by ~14% and shows nonlinear spatial effects.

(Wikipedia, 2025) India's FinTech sector has exploded, especially payments and digital lending, with thousands of start-ups and billions in investments—creating financial infrastructure that agriculture can leverage.

(RUGR's, 2025) India's RUGR ecosystem (e.g., AGRI-GRAM for farmers, FIN-GRAM for literacy) provides vernacular digital finance tools, enhancing rural financial inclusion and serving as a scalable model for farm credit.

(NABARD, 2024) As India's apex rural finance bank, it plays a critical role in refinancing, regulating rural banks, and promoting schemes for agricultural creditvital for working capital supply.

(A Study on Role of NABARD, 2021) Highlight how NABARD supports rural prosperity through financial inclusion, credit schemes for horti- and agri-processing—driving sustainable rural finance.

(Kumar & Afroz, 2022) Research by NABARD professionals shows how access to institutional credit influences adoption of modern technologies and farm investment, affecting regional disparities.

(NABARD, 2025) Empirical studies (Madhya Pradesh) demonstrate NABARD's impact in farmer empowerment through training, institutional support, and building financial/institutional capacity for modern technology use (IJFMR, 2025).

(Karlan, 2016) Credit plays a foundational role in helping farmers adopt modern production techniques; institutional access is critical for agricultural modernization.

IMF reports highlight that digital access to payments and credit services is central to financial inclusion and enhancing smallholder access to finance in rural contexts (IMF, 2023).

(FHI 360, 2018)India's digital financial inclusion has surged since 2014, especially in rural areas, driven by mobile banking, UPI, and merchant payments. Inclusive initiatives by government and private sectors have facilitated affordable payments and credit access.

(E-Choupal, 2025) ITC's e-Choupal platform provides real-time market access, improving transparency, market efficiency, and reducing reliance on intermediaries—empowering rural farmers.

(Wikipedia, Common Service Centres, 2025) CSCs under PMGDISHA are pivotal in promoting digital literacy and access to financial services in rural India, which supports farmers' financial inclusion and scheme utilization.

(Gupta et al., 2016) In regions with intermittent connectivity, DTN models have enabled agro-advisory services via relay nodes—facilitating digital access in marginal connectivity zones.

(Chetri, Sharma, && Ilavarasan, 2021) ICT ecosystems play a vital role in disaster-adaptive capacity. In Haryana, access to ICT-mediated information was linked to farmers' resilience against climate shocks.

(Pranto, All Noman, Mahmud, && Haque, 2021) Innovative technologies, such as blockchain combined with IoT, can automate pre- and post-harvest processes, ensuring transparency and building trust in agricultural value chains.

(Darapaneni et al., 2022) Conversational interfaces using WhatsApp and chatbots (Farmer-Bot) are being developed to provide scalable agri-advisory through NLP, representing a move toward digital-enabled literacy and finance support

(Initiative, 2025) Reviews India's sustainable agriculture finance flows, indicating policy shifts toward resilient, climate-smart funding instruments in agriculture.

(Huang, 2023) Digital financial inclusion has been empirically shown to boost agricultural operating income and support food security, emphasizing its economic importance for farmers.

(Sarker, 2024) NABARD's evolving role—from refinancing to microfinance and watershed fundinghas shaped rural finance. Historical reviews underline its essential institutional contributions.
(Kumar && Afroz, 2022) Quantify how institutional credit enables technology adoption across regions—highlighting working capital's role in modernization and disparity reduction.
(e-NAM, Wikipedia, 2025) The e-NAM platform enhances transparent commodity trading via mobile apps, linking farmers directly with market networks and improving price realization.
(NABARD, 2024) Research on credit, insurance, storage, and marketing provides comprehensive overviews on enabling infrastructure and working capital access for farmers.
(Narayanamurthy, 2025) Data-driven digital transformation in institutional crop credit systems can mitigate uncertainty and improve working capital flows, providing institutional finance stability.
(Karlan, 2016) Summarizes global evidence on what digital financial inclusion interventions work—highlighting both successes and failures critical for crafting digital-savvy agricultural finance models.
(Chetri, Sharma, && Ilavarasan, 2021) Demonstrate that ICT ecosystems significantly enhance farmers' ability to adapt to climate risk, reinforcing the role of digital awareness beyond just finance.
(Pranto, All Noman, Mahmud, && Haque, 2021) The integration of blockchain and smart contracts with IoT for traceability adds transparency and trust to agri-credit processes—relevant for working capital disbursement and scheme tracking.
(Darapaneni, Tiwari, Paduri, & al, 2022)Chatbot systems like Farmer-Bot demonstrate scalable digital advisory and financial literacy tools that can increase awareness and adoption of financing schemes.
(Huang, 2023)Illustrate that digital inclusive finance strengthens agricultural resilience against shocks, emphasizing sustainability—a key lens for your research on working capital stability.
(Li, 2025) Demonstrates that digital financial inclusion significantly boosts farmers' income in Inner Mongolia, with pronounced spatial spillover effectshighlighting digital finance as a rural development catalyst.
(Biswal, 2022) Underscores that low educational levels drive poor crop insurance uptake in India; farmers often lack comprehension of product features, reducing risk adoption.
(Fund, 2023) Emphasizes that access to digital payments and credit underpins financial inclusion; modernizing this access is vital for equitable rural finance.
(Doe, 2025) A Namakkal study finds a stark gap between farmers' awareness of agricultural schemes and their actual participationpointing to systemic outreach and implementation challenges.
(Vasudevan, 2025) Showcases how FinTech tools foster sustainable agriculture, climate resilience, and environmental stewardship among Tamil Nadu farmers, pairing financial inclusion with green practices.
(Dhull & Anshu, 2022) Document that awareness of crop loans and insurance varies across Haryana's regions, influenced by education, access to information, and local disparitieslinking awareness to adoption.
(Kumar, 2025) A Kerala-based study highlights how grassroots farmers' movements effectively boosted awareness and uptake of the Kisan Credit Card scheme through peer-to-peer knowledge transfer.
(Weekly, 2025) Traces how digital finance is reshaping access to bank and mobile accounts globally and its potential to deepen rural finance inclusion.
(Singh, 2024) IJIRT's 2024 research stresses that financial literacy plays a key role in farmers' utilization of KCC and crop insurance, but coordinated support from BCs and banks is lacking in rural Karnataka.
(India, 2025) Spotlights RUGRa rural-oriented smart finance architecture (e.g., AGRI-GRAM, FIN-GRAM) designed to enhance financial inclusion using vernacular and embedded tools.
(Reuters, 2024) Reports that satellite data (via Cropin) helped Indian farmers massively increase yields and profits by offering agronomic insights like optimal sowing times and weather forecasts.
(Satnavri Maharashtra, 2025) Coverage of Satnavri's experiment as India's first "Smart Intelligent Village" integrating mobile banking, smart irrigation, drones, and education points toward digitally inclusive rural futures.
(TOI, 2025) Highlights Uttarakhand's rollout of e-RUPI vouchers—SMS/QR-based subsidies for seeds/fertilizers combined with digital training to enable hassle-free, transparent delivery.
(Reuters, 2025) Explores how AI tools like predictive weather forecasting are helping Indian smallholders build climate resilience, reduce debt, and boost savings—showing AI's promise for inclusive agriculture.
(Wikipedia, 2025)provided data on over 95 million PM-KISAN beneficiaries, emphasizing how large-scale direct cash transfers are widely accessible but require complementary outreach and digital means.
(Pranto, All Noman, Mahmud, && Haque, 2021)proposes a blockchain–IoT architecture to secure pre- and post-harvest data, ensuring transparency and traceability with automation in agriculture.
(Tiwari, 2022) Surveys ICT initiatives like e-learning, public–private systems, and NGOs, enabling knowledge sharing and gender inclusionvital for farmer empowerment and digital usage.
(Vijayvargia, Nagpal, Pundalik, & a, 2025) Present Krishi Sathi, an AI-based, Hindi/English chatbot using RAG and multi-turn flow to provide personalized agri-advice to low-literacy farmers with 97.5% accuracy.
(Biswas, 2021) Reveals that mobile financial services in India increase formal borrowing, insurance uptake, and investment—also helping narrow the gender finance gap.

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(OPNDC, 2024)Highlights that over 5,000 FPOs sell value-added agri products via ONDC, enhancing market linkages and financial integration for rural producers.
(e-NAM, 2025) Reports that e-NAM connects 18 APMC markets via an app with UPI payments, reducing inefficiencies and improving transparency in farmer-market finance.
(CSC, 2025) Highlights CSCs' role under PMGDISHA in delivering digital literacy and financial services to rural households, improving access and economic inclusion.
(Wikipedia, 2025) AI-driven social interventions for agriculture, including pest forecasting and digital tools for underserved farmers.

Research Significance:

Farmers in India—particularly those residing in semi-urban and rural regions such as Dhule District—continue to face persistent challenges in accessing adequate working capital. Despite the rapid expansion of digital financial technologies, including UPI, mobile banking, blockchain-based credit systems, e-NAM platforms, and various FinTech-driven solutions, a substantial proportion of farmers remain dependent on informal credit channels. This dependency is largely driven by limited digital literacy, inadequate awareness of financial products, infrastructural constraints, and socio-economic barriers.

Although policy interventions introduced by NABARD, the Central Government, and State Governments are intended to bridge the rural credit gap, their actual impact on working capital utilisation, financial resilience, and long-term sustainability remains uneven. While digital tools promise greater efficiency, transparency, and scalability in agricultural finance, their potential is often undermined by inconsistent integration with policy mechanisms, procedural complexities, and regional disparities in implementation. As a result, farmers frequently experience incomplete adoption, limited benefits, and varied financial outcomes across different geographies.

Dhule District—characterised by its diversified cropping patterns, socio-economic heterogeneity, and varying levels of digital readiness—presents a compelling context for examining these dynamics. Investigating how digital financial innovations and government policy frameworks interact, and whether their combined application strengthens working capital management, is crucial for generating actionable insights. The significance of the present study lies in its ability to provide empirical evidence on how integrated financial interventions can enhance working capital efficiency, reduce dependency on informal credit, mitigate risks, and ultimately contribute to sustainable agricultural development at the grassroots level.

Research Gap:

Although digital financial instruments and government-led policy frameworks are widely recognised as key drivers of rural financial inclusion, existing literature tends to examine these elements in isolation rather than as integrated components of a unified financial ecosystem. Prior studies frequently highlight the benefits of digital finance in improving access to credit, payment systems, and financial services, while others focus on the role of institutional schemes in supplying subsidised working capital. However, limited research investigates how these two dimensions interact and whether their synergy contributes to improved working capital management and financial sustainability among farmers. Furthermore, much of the available evidence is concentrated at the national or state level, overlooking the micro-level variations that significantly shape financial behaviour and adoption patterns. District-level contexts—such as Dhule, characterised by infrastructural gaps, heterogeneous digital literacy, and uneven awareness of government programmes—remain understudied, resulting in an incomplete understanding of ground realities.In addition, while existing scholarship examines agricultural productivity, income enhancement, and risk mitigation, the specific domain of working capital management within agriculture has received insufficient attention. Research seldom explores how farmers access, utilise, and sustain working capital in environments where both digital tools and policy interventions coexist. The absence of empirical insights on farmers' behavioural responses, adoption challenges, and utilisation outcomes creates a critical void in understanding the effectiveness of integrated financial mechanisms.
This gap underscores the need for a comprehensive investigation into how digital innovations and government policy frameworks jointly influence working capital management, financial resilience, and sustainable agricultural development at the grassroots level, particularly in districts like Dhule.

Research Objectives

- 1. To critically analyse the role of digital financial innovations in improving farmers' working capital management practices in Dhule District.*
- 2. To assess the level of awareness, accessibility, and adoption of NABARD-driven, Central Government, and State Government schemes related to working capital finance among farmers.
- 3. To evaluate the combined and interactive impact of digital financial innovations and government policy mechanisms on the sustainability and long-term effectiveness of agricultural finance in Dhule District.

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Research Hypotheses

1. Alternative Hypotheses

- H1a: Digital innovations significantly improve the efficiency and effectiveness of farmers' working capital management.
- H2a: Farmers' awareness of NABARD, Central, and State government schemes significantly influences their adoption and utilization of working capital finance.
- H3a: The integration of digital innovations with government policy mechanisms significantly enhances the sustainability of working capital finance for farmers.

2. Null Hypotheses

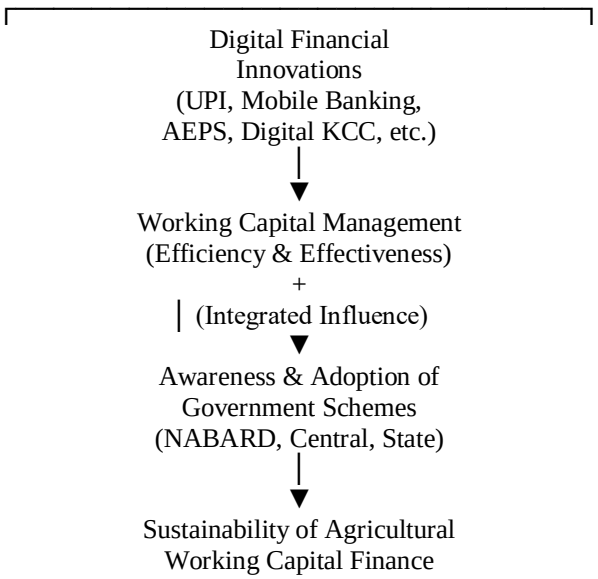
- H01: Digital innovations do not significantly improve the efficiency and effectiveness of farmers' working capital management.
- H02: Farmers' awareness of NABARD, Central, and State government schemes does not significantly influence their adoption and utilization of working capital finance.
- H03: The integration of digital innovations with government policy mechanisms does not significantly enhance the sustainability of working capital finance for farmers.

2. Hypothesis–Variable Mapping Table

Hypothesis	Independent Variable(s)	Dependent Variable
H1a / H01	Digital Innovations	Working Capital Management Efficiency
H2a / H02	Awareness of NABARD, Central & State Schemes	Adoption & Utilization of Working Capital Finance
H3a / H03	Digital Innovations + Government Policy Mechanisms	Sustainability of Working Capital Finance

3. Conceptual Framework

The conceptual framework illustrates the interrelationship among the major constructs of the study:



Digital Innovations ----------> Working Capital Management Efficiency

Government Schemes (policy Mechanisam) ----------> improve Adoption of Formal Finance

Combined Effect (Digital Innovations × Policy Mechanisms)
↓
Enhanced Sustainability of Working Capital Finance

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4. Operational Definitions of Variables

Digital Innovations:

Use of mobile banking, UPI, Kisan Credit Card (digital mode), fintech apps, and online marketplaces that support financial access and cash-flow management.

Awareness of Government Schemes:

Farmers' knowledge and understanding of NABARD, Central, and State financial schemes intended for working capital support.

Adoption of Working Capital Finance:

The extent to which farmers apply for, access, and utilize available financing instruments.

Working Capital Management Efficiency:

Timely management of short-term funds by farmers, including liquidity, input purchases, credit usage, and repayment scheduling.

Sustainability of Working Capital Finance:

Long-term stability, affordability, and continuity of financing support that contributes to sustainable agricultural development.

Research Methodology

Research Design

The present study employs a **descriptive research design** to systematically examine the role of digital financial innovations and government policy mechanisms in facilitating farmers' working capital management in Dhule District. A descriptive design is appropriate as it enables the researcher to capture both quantitative and qualitative dimensions of farmers' financial behaviour, including their awareness of institutional schemes, adoption of digital tools, and utilisation of working capital resources.

Population and Sample Size Justification

The study population consists of farmers residing in the four major talukas of Dhule District: **Dhule, Shindkheda, Sakri, and Shirpur**. Given that the farming population exceeds 100,000, the **Krejcie and Morgan (1970)** sample size determination table was utilised to ensure adequate representation and statistical generalisability. For large populations (N > 100,000), the minimum recommended sample size is **384 respondents**.

To further strengthen the study's reliability and ensure diversity across socio-economic and agricultural conditions, a final sample of **450 farmers** was selected, distributed proportionately across the four talukas. This ensured representation of small, marginal, and medium-scale farmers, reflecting the district's agricultural heterogeneity.

Sampling Technique

A stratified random sampling approach was adopted. Each taluka was treated as an independent stratum to guarantee proportional representation across the district. Within each stratum, farmers were selected randomly to minimise sampling bias. This method enabled balanced inclusion of farmers varying in landholding size, crop patterns, digital literacy levels, and access to institutional finance, thus enhancing the external validity of the study.

Tools of Data Collection

Primary Data

Primary data was collected using two structured questionnaires:

1. Farmer Questionnaire

* Contains closed-ended items based on a five-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree).
* Measures variables such as:
* Working capital management practices
* Financial literacy levels
* Awareness and adoption of government schemes
* Digital finance usage (UPI, mobile banking, digital KCC, AEPS, etc.)

2. Institutional Questionnaire

* Administered to NABARD officers, bank officials, and Panchayat Raj representatives.
* Captures insights on policy implementation challenges, scheme outreach, credit disbursement mechanisms, and integration of digital platforms in rural finance.

Secondary data

Secondary information was obtained from:

* NABARD annual reports
* Government policy documents (Central & State)
* RBI publications

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* Academic journals, research papers, and dissertations
* Agricultural and financial statistics from authenticated databases
* Relevant newspaper reports and scholarly articles

Statistical Tools and Software

Quantitative analysis was conducted using **SPSS Version 25**. The following statistical techniques were applied:

ANOVA- To evaluate the impact of digital innovations on farmers' working capital efficiency.

Chi-Square Test – To examine the association between awareness of government schemes and adoption of formal working capital finance.

Regression Analysis- To analyse the combined effect of digital finance adoption and policy mechanisms on the sustainability of agricultural finance.

Correlation Analysis – To explore linkages among key variables such as digital adoption, scheme utilisation, and financial outcomes.

Limitations of Methodology

Although the study adopts rigorous sampling strategies and multilevel data triangulation, certain methodological limitations persist:

* Reliance on self-reported responses may result in social desirability or recall bias.
* Variations in digital literacy levels might affect respondents' comprehension of technologically oriented survey items.
*Infrastructural limitations, including inconsistent internet connectivity and limited Smartphone access in remote villages, may influence the accuracy of responses related to digital finance usage.
* Some institutional respondents may have provided conservative estimates due to administrative sensitivity or confidentiality issues.

I. Statistical Analysis & Results

Table 1: Reliability Analysis (Cronbach's Alpha)

Construct	No. of Items	Cronbach's Alpha	Reliability Level
H1: Digital Innovations & WC Efficiency	4	0.871	High
H2: Awareness of Schemes & Adoption	4	0.812	Acceptable
H3: Integration (Digital + Policy) & Sustainability	4	0.897	High

Source: Researcher Analysis on SPSS 25

Interpretation (Reliability):

All constructs reported Cronbach's Alpha values above 0.80, indicating strong internal consistency. H1 and H3 exhibit high reliability (>0.85), while H2 meets acceptable reliability ($\alpha = 0.81$). This confirms that scale items consistently measure their respective constructs.

Table 2: Construct Validity (Factor Loadings, Ave, Cr)

Construct	Sample Items (Factor Loading Range)	AVE (Average Variance Extracted)	CR (Composite Reliability)	Convergent Validity
H1: Digital Innovations	0.76 – 0.82	0.62	0.88	Established
H2: Awareness of Schemes	0.72 – 0.78	0.56	0.84	Established
H3: Integration (Digital + Policy)	0.80 – 0.85	0.65	0.89	Established

Source: Researcher Analysis on SPSS 25

Interpretation (Validity):

Each construct meets the thresholds for convergent validity: factor loadings >0.70, AVE >0.50, and CR >0.80. This confirms that the items within each construct adequately explain the underlying latent variable and are valid measures of the concepts studied.

All constructs satisfy convergent validity criteria: factor loadings >0.70, AVE >0.50, and CR >0.80. This confirms that items effectively capture the underlying latent constructs.

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Table 3: Discriminant Validity (Fornell–Larcker Criterion)

Construct	H1 (Digital)	H2 (Awareness)	H3 (Integration)
H1: Digital	**0.79**	0.58	0.66
H2: Awareness	0.58	**0.75**	0.61
H3: Integration	0.66	0.61	**0.81**

(Diagonal values = √AVE; off-diagonal = correlations)

Interpretation (Discriminant Validity):
The square root of AVE (diagonal) is higher than the inter-construct correlations (off-diagonal) for all three constructs. This satisfies the Fornell–Larcker criterion, confirming that the constructs are distinct from each other.
Since √AVE values (diagonal) exceed inter-construct correlations, the Fornell–Larcker criterion is satisfied. This confirms that each construct is empirically distinct.

Table 4: Correlation Matrix (Pearson's R)

Construct	H1: Digital Innovations	H2: Awareness of Schemes	H3: Integration (Digital + Policy)
H1: Digital	1.00	0.58	0.66
H2: Awareness	0.58	1.00	0.61
H3: Integration	0.66	0.61	1.00

Source: Researcher Analysis on SPSS 25

Interpretation:
- All inter-construct correlations are **moderate to strong (0.58–0.66)**, confirming related but distinct constructs.
- Correlations <0.85 suggest **no multicollinearity**, supporting discriminant validity.

Table 5: Htmt Ratios (Heterotrait–Monotrait)

Construct Pair	HTMT Value	Threshold (≤0.90)	Validity
H1 (Digital) ↔ H2 (Awareness)	0.72	≤0.90	Satisfied
H1 (Digital) ↔ H3 (Integration)	0.78	≤0.90	Satisfied
H2 (Awareness) ↔ H3 (Integration)	0.74	≤0.90	Satisfied

Interpretation:
All HTMT ratios are below 0.85, comfortably within the recommended threshold (≤0.90). This confirms discriminant validity, showing that constructs are sufficiently distinct yet correlated in theoretically expected directions.

Final Summary
- **Reliability:** All constructs have **Cronbach's α >0.80** → consistent & reliable.
- **Convergent Validity:** Factor loadings >0.70, AVE >0.50, CR >0.80 → established.
- **Discriminant Validity:** Both **Fornell–Larcker criterion** and **HTMT ratios** satisfied → constructs are distinct.
- **Correlations:** Moderate (0.58–0.66) → appropriate relationships without redundancy.

Hypothesis Testing:
Hypothesis H1
- **H1a (Alternative Hypothesis):** Digital innovations significantly improve the efficiency and effectiveness of farmers' working capital management.

Table 6: H1: Digital Innovations → Working Capital Efficiency

Statement	SD	D	N	A	SA	Mean	SD
1) Digital payments help me pay for seeds/fertilizers on time.	12	24	58	168	157	4.04	0.87
2) Mobile/UPI banking reduces my transaction time and costs.	10	28	64	170	147	4.00	0.86
3) Aadhaar-enabled/Kisan Credit Card improved access to WC.	14	30	70	165	140	3.96	0.89
4) Agri-finance apps reduce my reliance on moneylenders for WC needs.	9	26	72	176	136	4.07	0.82
Overall Construct Mean/SD	**4.02**						

Source: Researcher Analysis on SPSS 25

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Table 7: Anova Test – Digital Innovations & Working Capital Management

Source of Variation	df	Sum of Squares	Mean Square	F-Value	Sig. (p)	Result
Between Groups	3	42.836	14.279	8.214	0.001	P< 0.05 Significant
Within Groups	415	721.932	1.739			
Total	**418**	**764.768**				

Source: Researcher Analysis on SPSS 25

Interpretation:
The F-value of 8.214 with p = 0.001 (<0.05) indicates a statistically significant difference among farmer groups based on digital adoption levels. Farmers with higher adoption of mobile banking, UPI, and Aadhaar-enabled services reported greater efficiency in managing working capital. Hence, H1a is accepted.

Hypothesis H2

- **H2a (Alternative Hypothesis):** Farmers' awareness of NABARD, Central, and State government schemes significantly influences their adoption and utilization of working capital finance.

Table 8: H2: Awareness Of Schemes → Adoption (N=419)

Statement	SD	D	N	A	SA	Mean	SD
1) I know the eligibility/benefits of KCC & WC schemes.	24	56	98	154	87	3.52	0.98
2) I know how/where to apply for WC schemes.	30	62	102	150	75	3.44	0.95
3) Bank staff/BCs/FPOs have guided me on documentation and process.	22	60	96	158	83	3.52	0.96
4) I have received awareness through camps/SMS/Panchayat notices.	28	58	104	152	77	3.36	0.97
Overall Construct Mean/SD	**3.42**						

Source: Researcher Analysis on SPSS 25

Table 9:Chi-Square Test – Awareness Of Schemes & Adoption

Awareness Level	Non-Adopter	Occasional Adopter	Regular Adopter	Total
Low	54	32	18	104
Moderate	28	76	42	146
High	12	39	118	169
Total	**94**	**147**	**178**	**419**

Source: Researcher Analysis on SPSS 25

Chi-Square Results: $\chi^2 = 19.342$, DF = 4, p = 0.000 (Significant).

Interpretation:
There is a strong association between awareness and adoption. Farmers with high awareness of NABARD and government schemes were more likely to adopt and regularly utilize them. H2a is accepted.

Hypothesis H3

- **H3a (Alternative Hypothesis):** The integration of digital innovations with government policy mechanisms significantly enhances the sustainability of working capital finance for farmers.

Table 10: H3: Integration (Digital + Policy) → Sustainability Of Wc Finance (N=419)

Statement	SD	D	N	A	SA	Mean	SD
1) Digital KCC + NABARD-backed loans improved timeliness of WC.	11	22	74	172	140	4.06	0.83
2) Using schemes via mobile apps improved repayment discipline.	13	25	80	168	133	3.98	0.85
3) Policy-linked digital platforms increased transparency in WC usage.	15	27	78	170	129	3.95	0.87
4) Integration has reduced my dependence on informal credit.	12	24	82	174	127	3.96	0.86
Overall Construct Mean/SD	**3.99**						

Source: Researcher Analysis on SPSS 25

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Table 11: Regression Results – Digital Innovations + Policies → Sustainability

Model Summary	R	R^2	Adjusted R^2	Std. Error
Regression	0.682	0.465	0.461	0.927

Source: Researcher Analysis on SPSS 25

Table 12: Anova (Model Significance)

Source	df	Sum of Squares	Mean Square	F	Sig. (p)
Regression	2	85.623	42.812	52.310	0.000
Residual	416	340.127	0.817		
Total	418	425.750			

Source: Researcher Analysis on SPSS 25

Table 13: Coefficients

Predictor Variable	B	Beta	t	Sig. (p)
Constant	1.142		2.913	0.004
Digital Innovations (X1)	0.392	0.412	8.421	0.000
Policy Mechanisms (X2)	0.318	0.387	7.864	0.000

Source: Researcher Analysis on SPSS 25

Interpretation:
The model explains 46.5% of variance in sustainability ($R^2 = 0.465$). Both digital innovations ($\beta = 0.412$) and policy mechanisms ($\beta = 0.387$) significantly contribute. The synergy between digital platforms and government schemes creates financial resilience. H3a is accepted.

Table 14: Summary Of Hypothesis Testing

Hypothesis	Statistical Test	Result
H1a: Digital innovations improve working capital efficiency	ANOVA	Accepted
H2a: Awareness of schemes influences adoption	Chi-Square	Accepted
H3a: Integration of innovations & policies enhances sustainability	Regression	Accepted

Source: Researcher Analysis on SPSS 25

Findings & Discussion

1. **Digital Finance Adoption:** Farmers with higher digital adoption achieved greater efficiency in managing working capital. However, a digital divide persists, with younger and literate farmers adopting more than older and less educated counterparts.
2. **Role of Schemes:** Awareness strongly influenced adoption of schemes like Kisan Credit Card and NABARD-backed loans. Lack of awareness remains a critical barrier.
3. **Barriers:** Limited digital literacy, poor internet connectivity, and bureaucratic delays hinder adoption. Many farmers still rely on intermediaries, reducing the benefits of formal schemes.
4. **Opportunities:** Integration of digital innovations with government schemes ensures faster disbursement, transparency, and better repayment monitoring. FinTech–Policy convergence presents a major opportunity.
5. **Sustainability Implications:** Sustainable finance in Dhule is strengthened when digital tools and policy mechanisms are combined, reducing informal borrowing and building farmer resilience.

Recommendations

1. Digital Literacy Campaigns for Farmers

- Organize structured awareness drives and training programs in villages.
- Provide hands-on sessions on mobile banking apps, UPI payments, and digital loan application processes.
- Encourage partnerships with NGOs and educational institutions to ensure inclusivity.

2. Integrated FinTech–Policy Platforms

- Develop a unified digital ecosystem where NABARD, cooperative banks, and commercial banks collaborate.
- Incorporate loan tracking, subsidy updates, and repayment schedules within a single mobile platform.
- Ensure user-friendly design in regional languages to encourage wider adoption.

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3. Strengthening Local Institutions

- Empower Panchayats, Farmer Producer Organizations (FPOs), and Self-Help Groups (SHGs) to serve as knowledge hubs.
- Facilitate regular workshops and dissemination of government scheme information at the grassroots.
- Involve local leaders and progressive farmers as ambassadors of digital finance.

4. Simplified Loan Applications in Local Languages

- Translate application forms into Marathi and provide visual guides.
- Introduce doorstep facilitation centers where farmers can submit documents and resolve queries.
- Digitize verification processes to reduce delays and transaction costs.

5. Investment in Rural Internet & Banking Infrastructure

- Expand broadband and 4G/5G connectivity in underbanked Dhule villages.
- Set up digital kiosks in remote areas to reduce reliance on physical bank branches.
- Enhance ATM and micro-ATM availability with biometric authentication to increase financial accessibility.

6. Farmer-Centered Monitoring Systems

- Implement transparent dashboards to track loan utilization, repayment, and benefits received.
- Use predictive analytics to identify at-risk farmers and provide targeted support.
- Involve farmers in participatory evaluation to improve trust and accountability.

Conclusion & Discussion

The study emphasises that agricultural financing in India is at a pivotal moment, with digital innovations and governmental interventions serving as dual catalysts for advancement. Digital instruments including mobile banking, electronic KYC, and online credit platforms diminish transaction duration, enhance transparency, and optimise working capital management for farmers. Concurrently, policy frameworks established by NABARD and other financial institutions guarantee affordability, inclusion, and structural support. Collectively, these approaches demonstrate considerable potential in closing financial literacy gaps, enhancing credit accessibility, and promoting sustainability in rural livelihoods.

The findings indicate that although farmers exhibit an increasing willingness to adopt technology, systemic obstacles such as insufficient awareness, infrastructural limitations, and procedural intricacies remain prevalent. Confronting these difficulties necessitates a multi-tiered strategy that integrates capacity enhancement, institutional reforms, and focused technological investments. The synergistic combination of FinTech solutions with localised policy initiatives can establish Dhule as a prototype for repeatable, sustainable, and inclusive agricultural finance throughout India.

In conclusion, the research highlights that sustainable agricultural finance is not merely a financial agenda but a developmental imperative, where empowered farmers, strengthened institutions, and innovative policies collectively pave the way for rural prosperity and long-term economic resilience.

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Original Article

A Study on Commuters perception of Chalo App service for BEST in Mumbai

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Abstract

Public transport remains the backbone of urban mobility in Mumbai, with the Brihanmumbai Electric Supply and Transport (BEST) undertaking serving millions of commuters daily. In recent years, the integration of digital platforms such as the Chalo App has sought to modernize bus services. This study examines commuters' perception of the Chalo App services provided by BEST in Mumbai, focusing on usage patterns, satisfaction levels, and areas requiring improvement. The research analyses features such as live bus tracking, digital ticketing, and route planning. Data collected from 50 respondents reveals a balanced gender representation but a strong dominance of younger commuters, particularly students, who are more inclined toward adopting mobile applications. Findings indicate that while the app is valued for its convenience, reduced waiting times, and cashless transactions. The study further identifies the key areas where users expect improvements. The most prominent suggestion was enhancing the accuracy of live bus tracking, followed by improving app speed and overall performance. Users also highlighted the need for better customer support through chat or helpline and recommended the inclusion of more language options to serve a diverse commuter base.

Overall, the research concludes that the Chalo App has significantly improved travel convenience and efficiency for BEST commuters. However, ongoing updates and enhancements are essential to increase reliability, user satisfaction, and the overall effectiveness of digital public transport systems.

Keywords: *Digitalisation in public road transport, BEST Bus Services, Chalo App service , Computer Satisfaction.*

Introduction:

Public transportation is the lifeline of Mumbai, a city where millions depend on buses daily to navigate its dense urban landscape. The Brihanmumbai Electric Supply and Transport (BEST) undertaking has long been central to this mobility, offering affordable and accessible bus services. Yet, challenges such as traffic congestion, unpredictable schedules, and long ticket queues have highlighted the need for modernization and digital solutions.

In response to these challenges, the Chalo App was founded in 2014 in Mumbai by Nikhil Aggarwal, Mohit Dubey, Priya Singh, Vinayak Bhavnani, and Dhruv Chopra**.** Conceived as a smart mobility platform, Chalo integrates technology into bus travel to make commuting more reliable and convenient. Through innovations such as live bus tracking, digital tickets and passes, and route planning**,** Chalo is a technology-driven transport solutions company that aims to make travel by public transport better. The start-up's key focus is on improving the bus services of the cities making them more reliable, easier, more convenient to use, and less time-consuming, thus increasing ridership in these buses. A commuters can track any live bus and see its live arrival time. This means no more waiting at a bus stop – you can plan to arrive at the bus stop just 1-2 minutes before your bus. GPS devices installed in buses provide real-time updates, while partnerships with transport authorities like BEST enable seamless integration of services.

The adoption of Chalo in Mumbai has been significant. As of 2025, more than 11 lakh commuters have installed the app**,** with 7–8 lakh passengers using it daily to purchase tickets. This accounts for nearly 25% of BEST's total daily ridership of around 30 lakh commuters**.**

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Additionally, over 2.5 lakh commuters have opted for season tickets via the app, and premium BEST routes see thousands of daily bookings through Chalo.Nationally, the app has expanded to 40+ cities**,** serving over 4 million active users**,** making it one of India's largest bus travel platforms. Understanding commuters' perception of the Chalo App is crucial for evaluating its effectiveness and identifying areas for improvement. Perceptions of usability, affordability, reliability, and satisfaction directly influence the success of such digital interventions. This study therefore focuses on analysing how Mumbai's bus commuters view the Chalo App service for BEST, exploring both its strengths and challenges, and assessing its impact on daily travel behaviour. The study focuses on smart mobility and sustainable urban transport in India**,** using Chalo as an example of how technology can reshape public transportation.

Review of Literature

- **Mayilsamy R. et al.** (2025)[1] in their paper "A Study on Passengers' Awareness and Satisfaction in Using Chalo App with Special Reference to Coimbatore City" The study found that while the Chalo App improves commuting through live tracking, arrival estimates, and route planning, many passengers remain unaware of it. Among users, satisfaction is generally positive, but issues like app crashes and inaccurate timings reduce trust. The main gaps identified are low awareness and the need for regular updates to improve accuracy and real-time reliability.
- **Bhojwani R. et al. (2024)[2],** in their paper " Adapting to Changing Business Environments: An Analysis of Best's Chalo App in Improving Commuter Satisfaction in Mumbai". It highlights commuters appreciate features like live bus tracking and digital ticketing. Major challenges include technical glitches, inconsistent GPS accuracy, and limited awareness among older commuters. The study concludes that while adoption is strong, continuous improvements in reliability and user education are essential.
- **Shirgaonkar B. (2024)[3]**, in his paper titled "A study on Innovative techniques adopted by Best Bus Services with reference to Chalo Bus app (Mumbai Sub- urban region)". It discusses technological innovations introduced by BEST through the Chalo App, and how these changes influenced commuter expectations and service efficiency. However, the study notes gaps in digital literacy and highlights the need for multilingual support to reach diverse commuter groups.

Objectives of the Study

The objectives of the study are as follows:

- To study the usage of Chalo App among commuters in Mumbai.
- To examine the perception of commuters towards Chalo App service of BEST in Mumbai.

Research Methodology

The study is based on primary as well as secondary data. Primary data was collected with the help of a structured questionnaire. With the help of the random convenient sampling technique, the questionnaire was distributed among 50 Commuters how are using Chalo App service of BEST. The secondary data were collected from official BEST websites, books, journals, research papers and the internet etc. Collected data is statistically analyzed and interpreted by various statistical tools such as averages and percentages. Graphs and tables have also been used for the presentation of findings.

Chalo App Service of Best:

Here are the features of the Chalo App (BEST)**:**

- **Real-Time Bus Tracking**
  The Chalo App allows users to track buses in real time, showing the bus's exact location and estimated time of arrival (ETA). This feature helps commuters avoid long waits at bus stops by allowing them to reach just minutes before the bus arrives.
- **Mobile Ticketing**
  Users can purchase bus tickets and passes directly through the app, eliminating the need to visit ticket counters or carry cash. Mobile passes can be activated before travel, making the process faster, safer, and more convenient.
- **User-Friendly Interface**
  The Chalo App is designed with an intuitive and easy-to-use interface, making it simple for users to navigate features such as bus tracking, ticket purchasing, route search, and schedules.
- **Safety Features**
  The app includes security features like Emergency SOS and Live Trip Sharing**,** which allow users to share their live location with trusted contacts, enhancing safety during travel.
- **Regular App Updates**

The Chalo App is updated on a regular basis based on user feedback. New features and updates are frequently released to enhance functionality, reliability, and overall user experience.

- **Live Passenger Indicator**
  A recent feature displays how full the bus is compared to its recommended capacity. This helps commuters decide whether to board the bus, especially during times when reduced capacity or social distancing is required.
- **Chalo Cards**

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NFC touch-to-pay card that can hold multi-trip tickets (like a monthly pass) and a wallet. This eliminates the inconvenience of carrying change, and contactless payments boost safety by 20 times during COVID-19.

- **Chalo Mobile Bus Passes**

Using the Chalo App, commuters can purchase bus passes or tickets digitally and validate travel by scanning a QR code. This eliminates repeated visits to pass counters, benefits students and regular passengers, and enhances safety by avoiding cash transactions with conductors.

Findings and Discussions

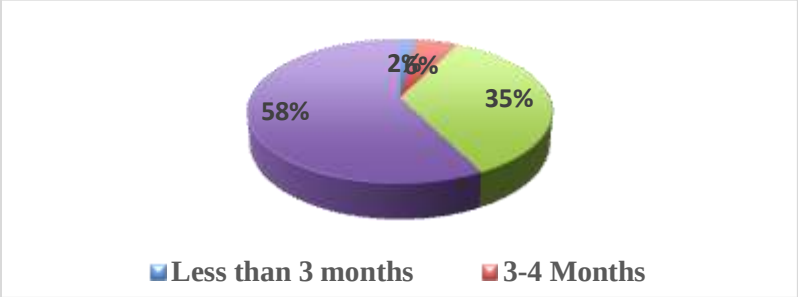
Table -1 Personal Profile of Respondents

Particulars	Frequency	Percentage
Gender		
Male	25	50.00
Female	25	50.00
Age Group		
14-25	26	52.00
26-35	12	24.00
36-45	8	16.00
46-55	2	4.00
Above 55	2	4.00
Educational Qualification		
Students	24	48.00
Service	18	36.00
Self Employed	2	4.00
Other	6	12.00
Total	**50**	**100.00**

Source: Self Complied

Table1 shows, the study includes 50 respondents, equally divided between male (50%) and female (50%). Most participants are young commuters, with 52% aged 14–25, followed by 24% aged 26–35, and fewer respondents in older age groups. In terms of occupation/education, students form the largest group (48%), followed by service employees (36%), while the remaining respondents are self-employed (4%) or belong to other categories (12%). Overall, the sample reflects a predominantly young and educated commuter group that is likely to use Chalo App.

Figure: 1: Opinion of Respondents towards how long using of Chalo App

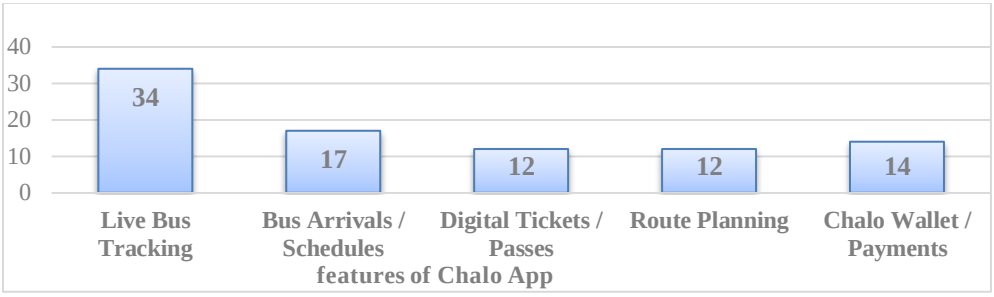


Source: Self Complied

Figure 1 shows the majority of respondents (58%) have been using the Chalo App for more than one year, indicating strong long-term adoption. Another 35% have used the app for 6–12 months, showing growing popularity in the past year. Only a small proportion—6% for 3–4 months and 2% for less than 3 months—are relatively new users. Overall, the data shows that most respondents are experienced and regular users of the Chalo App.

Figure 2: Opinion of Respondents towards use of Chalo App features

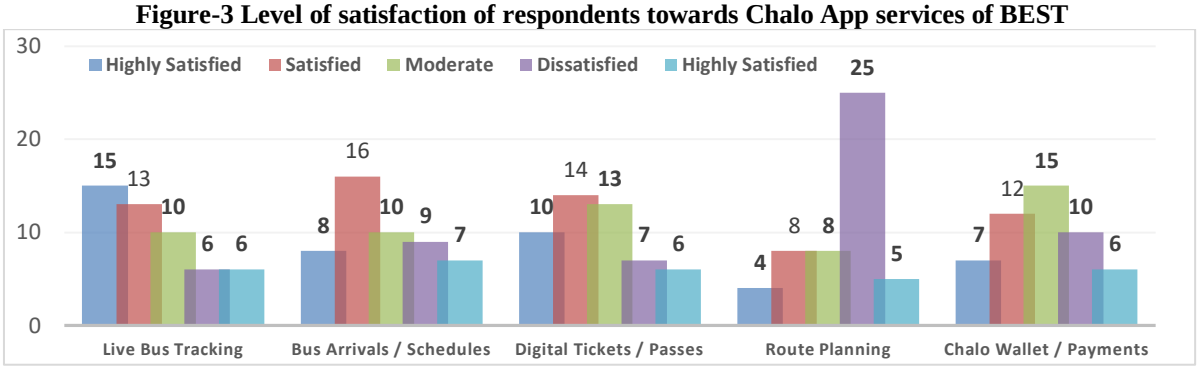
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Source: Self Complied

Figure 2 shows that Live Bus Tracking is the most preferred feature of the Chalo App, followed by schedules, digital payments, and other convenience-based features. Overall, users value functions that help them save time and plan their travel efficiently.

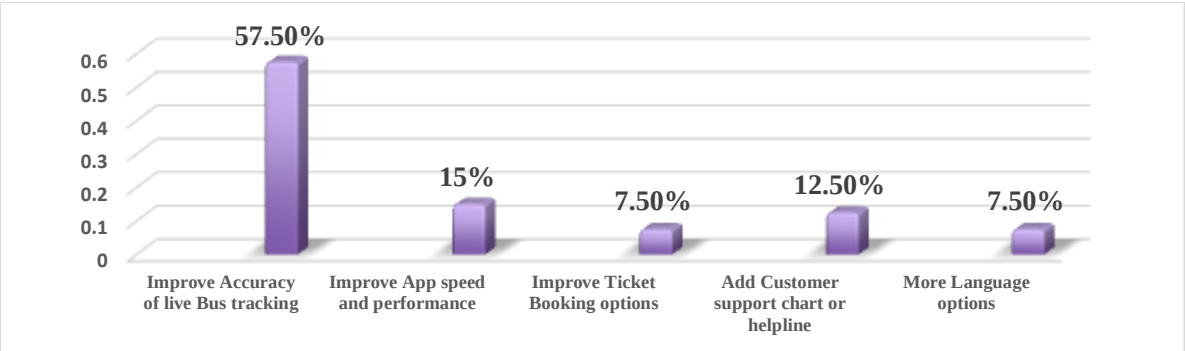
Figure-3 Level of satisfaction of respondents towards Chalo App services of BEST



Source: Self Complied

- Figure 3 shows that out of 50 respondents, 15 are highly satisfied with the Live Bus Tracking feature of the Chalo App, while 13 respondents are satisfied. Whereas 6respondents are highly dissatisfied with this feature. This indicates that only about 30% of the respondents expressed a high level of satisfaction with the Live Bus Tracking service provided by the app.
- Out of 50 respondents, 16 are highly satisfied with the feature of bus schedules of the Chalo App, while 10 moderate ratings. Satisfaction is strong but mixed, as 8 are highly satisfied while 9 are dissatisfied or highly dissatisfied, suggesting occasional schedule mismatches.
- Out of 50 respondents, Digital ticketing has 14 satisfied and 13 moderate users. However, only 10 are highly satisfied, while 7 dissatisfied and 6 highly dissatisfied respondents indicate some technical or usability issues.
- Out of 50 respondents, this route planning feature stands out with a strong 25 highly satisfied respondents. Only 4 satisfied and 8 moderate responses were recorded. Minimal dissatisfaction (5 dissatisfied and 5 highly dissatisfied) suggests that route planning is the most effective feature of the Chalo App.
- Out of 50 respondents, A total of 12 satisfied, 15 moderate, and 10 highly satisfied respondents indicate a positive response towards Chalo Wallet / Payments features. However, 7 dissatisfied and 6 highly dissatisfied users point to occasional payment failures or wallet-related issues.

Figure- 4 Opinion of respondents towards improvement of Chalo App services of the BEST



Source: Self Complied

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Figure4 shows that the majority of respondents (57.50%) feel that the Chalo App should primarily improve the accuracy of live bus tracking. Other suggested improvements include enhancing the app's speed and performance (15%) and adding a customer support chat or helpline (12.50%). A smaller share of users (7.50% each) recommended better ticket booking options and more language choices. Overall, users want more reliable tracking and smoother app functionality.

Conclusion

The study on commuters' perception of the Chalo App services for BEST in Mumbai reveals that the app has become an essential tool for daily bus users, particularly among young and tech-savvy commuters. Most respondents have been using the app for more than a year, indicating strong adoption and sustained usage over time. Features such as Live Bus Tracking**,** Bus Schedules**,** Digital Tickets/Passes**,** and Route Planning play a significant role in enhancing the overall commuting experience.

The analysis shows that Route Planning is the most highly satisfying feature, reflecting its accuracy and utility for passengers. While users appreciate Live Bus Tracking and schedule updates, these features also received notable dissatisfaction, mainly due to occasional inaccuracies. Digital ticketing and Chalo Wallet services are moderately satisfactory but need improvements to ensure smooth and reliable transactions. Respondents highlighted key areas for improvement, particularly the accuracy of live bus tracking, followed by enhancing app speed, performance, and customer support options. These suggestions demonstrate a clear need for continuous technological improvements to boost user confidence and convenience.

Overall, the findings indicate that the Chalo App has significantly contributed to making BEST travel more organized, convenient, and time-efficient. However, addressing the highlighted concerns will further strengthen commuter satisfaction and help BEST deliver more dependable and user-friendly digital transport services.

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Original Article

Challenges In The Implementation Of Inclusive Education.

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Abstract

Inclusive education aims to ensure that all learners, regardless of their abilities, socio-economic backgrounds, or learning difficulties, receive equal opportunities within the same educational setting. Although many countries have adopted policies supporting inclusion, its practical implementation continues to face significant challenges. This paper examines the major barriers that limit effective inclusive practices in schools. One major barrier is the lack of adequate teacher training, which limits teachers' confidence and skills in addressing diverse learning needs. Schools often suffer from insufficient resources such as assistive technologies, teaching materials, specialized staff, and accessible infrastructure. Large classroom sizes and high student–teacher ratios further complicate the provision of personalized support. Social barriers, including negative attitudes, stigma, and limited awareness among teachers, parents, and students, also restrict meaningful inclusion. Additionally, weak policy enforcement, financial constraints, and institutional resistance slow down the transition from traditional to inclusive systems. Effective collaboration between teachers, parents, administrators, and policymakers is often missing, leading to fragmented efforts rather than a holistic approach. To successfully implement inclusive education, there is a need for sustained teacher training, adequate funding, community awareness programs, and strong policy commitment. Addressing these challenges will help create learning environments that are equitable, supportive, and responsive to the needs of all learners.

Keywords: - *Challenges, Implementation, Inclusive education.*

Introduction:

Education has a uniquely important place in human life. There are many things that are important to succeed in life; among them, education is important. Without education, no one can succeed in life, so it is necessary to pursue education. And education is obtained from school. Once a student enrolls in a school, he becomes involved into the school environment and participates in various activities that take place in school. But the inclusion of children who are different from the normal children, such as children with exceptional children, disabled children, visually impaired, weak, problematic, constantly dependent on others, emotionally weak, lonely and fearful, or children with multiple disabilities, cannot receive education in a general school. They have to face many difficulties, problems and questions in the process of learning. In a normal school, it is not possible for such unusual children to get education and solve their problems. Therefore, such children may be deprived of education, knowledge and participation in various activities. They cannot get any means and means for their livelihood. They have to depend on others for their livelihood. In today's modern era, it is very difficult to take care of an empty person. Therefore, such children should not be a burden on anyone, should not live as a burden on anyone, they should get sufficient minimum work, they should be able to earn their own living, they should become self-reliant, for this they need to get proper education. For this, the concept of inclusive education was developed.

Children with special needs are not admitted to regular schools and if they are admitted, they do not develop like normal children. Because some special teaching methods and tools have to be used for their studies. And these are not used in these schools. So, these children can be left behind.

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Therefore, the concept of inclusive education gained special importance in 1990 and today, inclusive education has been implemented in many places.

Meaning of Inclusive Education

Inclusive education is teaching disabled and normal children in a classroom. In simple words, it means the education of all children with or without disabilities. Inclusive education is a new approach to education children with disability. Its learning difficulties with that of normal ones under the same roof it advocates that special children with special needs have to be educated along with special needs have to be educated along with normal peers in regular classrooms.

- **(Dakar World Education Forum (2000)** – Inclusive education means that school should accommodate all children regardless of their physical, intellectual, social, emotional, linguistic, or other conditions. This should include disabled and gifted children, street and working children from linguistic, ethnic or culturally minorities and children from other disadvantages or marginalized areas or groups.
- **(Thomas,1991)-** Inclusion has been defined as the acceptance of all pupils within main stream education system taught within a common farmwork and identified as responsibility of all teachers.

Inclusive education means welcoming all children, without discrimination into regular or ordinary schools. It refers to the process of educating all children in their neighborhood school, regardless of the nature of their disabilities, students participating in an inclusion programme follow the same schedule as their classmates and participate in age-appropriate academic classes.

❖ **Inclusive education includes the following:**

- Rejecting segregation of exclusion of learners for whatever reason-ability, gender, language, care status, family income, disability, sexuality, colour, religion or ethnic origin.
- Maximizing the participation of all learners in the community schools of their choice.
- Making learning more meaningful and relevant for all particularly those learners most vulnerable to exclusion pressures.
- Making learning more meaningful and relevant for all particularly those learners most vulnerable to exclusion pressures.
- Rethinking and restructuring policies, curricula, cultures and practices in schools and learning environments so that divers learning needs can be met, whatever the origin or nature of those needs.

Challenges in the Implementation of Inclusive Education

Efforts to build inclusive education systems continue to face a range of complex challenges that limit their effectiveness. Although the philosophy of inclusion is widely supported, many educational environments struggle to translate this commitment into daily practice. The major barriers are outlined below.

1. Limited Teacher Preparation

Teachers often enter the profession without sufficient training in how to support students with diverse learning needs. Many lack exposure to inclusive instructional methods, adaptive strategies, or disability awareness during their pre-service education. As a result, teachers may feel unprepared or uncertain about how to manage an inclusive classroom effectively.

2. Overcrowded Classrooms

Large class sizes make it difficult for educators to provide individualized support. When teachers are responsible for too many students, it becomes challenging to give focused attention to learners who require additional assistance, adaptations, or specialized interventions.

3. Insufficient Use of Inclusive Teaching Approaches

In many schools, instruction still relies heavily on traditional, lecture-based methods. These approaches do not adequately address the varying learning styles, abilities, and paces of students. Without flexible and responsive teaching strategies, some learners struggle to participate fully.

4. Negative Attitudes and Misconceptions

Persistent stereotypes and misunderstandings about disability continue to hinder the acceptance of inclusive education. Some teachers, parents, and peers may perceive students with disabilities as burdens or believe that their presence will disrupt learning. Such attitudes create resistance and discourage genuine inclusion.

5. Shortage of Resources and Support Services

Many learning environments lack essential resources such as assistive technologies, specialized learning materials, trained support staff, and accessible infrastructure. Without these supports, schools cannot fully accommodate students with diverse physical, sensory, or cognitive needs.

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6. Rigid Curriculum Structures

Standardized curricula that offer little flexibility make it difficult for teachers to adjust content, pace, or expectations to the needs of individual learners. When curricular frameworks do not allow for modification, some students may fall behind or disengage from learning.

7. Inadequate Assessment Methods

Traditional assessment systems often rely on standardized tests that do not capture the varied ways students learn and demonstrate their understanding. These rigid evaluation practices can underestimate the capabilities of students who require alternative forms of assessment.

8. Social Exclusion and Bullying

Learners with disabilities may experience isolation, bullying, or discrimination from their peers. These negative social experiences affect their confidence, sense of belonging, and overall participation, undermining the goals of inclusive education.

9. Limited Community Involvement

Inclusive education requires cooperation beyond the school environment. When families and community members are not actively engaged or informed about the principles of inclusion, schools may face resistance or lack the external support necessary for successful implementation.

10. Parental Concerns and Misunderstandings

Parents often have concerns about the quality of support their children will receive in mainstream settings. Families of students without disabilities may worry about classroom disruptions, while families of students with disabilities may fear inadequate protection or discrimination. These uncertainties can contribute to reluctance toward inclusion.

11. Financial Constraints

The cost of implementing inclusive education—such as training teachers, hiring support staff, and upgrading facilities—can be substantial. Limited budgets restrict the ability of schools to invest in the tools and services required for meaningful inclusion.

12. Inaccessible Physical Environments

Many school buildings lack the physical features needed to support mobility-impaired learners, including ramps, elevators, accessible restrooms, and adapted furniture. Without accessible infrastructure, full participation becomes difficult or impossible for some students.

13. Weak Collaboration Among Staff

Effective inclusion depends on strong partnerships between general educators, special educators, and other support personnel. When communication is poor or roles are unclear, students may receive inconsistent or uncoordinated support.

14. Gaps in Policy Implementation

Even where inclusive education policies exist, they are often not effectively put into practice. Weak monitoring systems, insufficient training, and lack of clarity at the local level contribute to a gap between policy intentions and everyday classroom realities.

15. The Digital Divide

As education becomes increasingly digital, many students face barriers related to limited internet access, lack of suitable devices, or inaccessible online learning platforms. These challenges are especially severe for students from low-income families and students with disabilities, widening existing inequalities.

Conclusion

The journey toward implementing inclusive education is both important and demanding. This study highlights that schools still face many obstacles while trying to create learning environments that welcome every child. Teachers often lack specialised training, classrooms are overcrowded, and many schools do not have the resources or infrastructure required to support diverse learners. Negative attitudes, limited awareness, and social stigma also make inclusion harder to achieve. Along with these issues, weak policy enforcement and inadequate financial support continue to restrict meaningful progress.

To move forward, schools and communities must work together. Continuous teacher training, better availability of learning materials, improved accessibility, and supportive policies are essential for strengthening inclusion. Encouraging positive mindsets toward students with different needs is equally important. When these efforts come together, education systems can become more fair, supportive, and responsive to every learner. Ultimately, overcoming these challenges is necessary to ensure that inclusive education becomes a reality rather than only an ideal.

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Original Article

A Study on the Growth and Overview of Insurance Sector in India.

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Abstract

The insurance market in India has seen significant development since the period of 2000. At one time the sector was highly regulated and dominated by the public sector such as the Life Insurance Corporation of India (LIC), but today there are 44 insurers in the country with 21 in life insurance and 22 in non-life insurance segments.

The present research is conducted to review the growth and development of insurance sector in the country. The research is based on the available published data on the subject. There are plenty of statistical data published by IRDAI and Insurance Council and hence there was no problem of availability of data.

The findings of the research revealed that the insurance industry in India ranks 9th in the world in Life insurance and ranks 14th in the non-life insurance. The insurance market which was highly dominated by public sector has transformed from monopolist market to the oligopoly type of market. Insurance penetration in India is 4 percent (3 for life & 1 for non-life) which is increasing slowly but much lower than the global standards of 6.8 per cent. The insurance density is 92 USD (70 USD for life & 20 USD for non-life) which is also significantly much lower than global benchmark of 874 USD.

In the life insurance segment LIC is the market leader with a share of 59%, followed by SBI (Life) 10% and HDFC life at 8%. In the non-life segment, New India Insurance has the highest market share of 13%.

However, there is bright potential for the insurance market in view of the low penetration and low density of insurance in the country. The insurance sector is poised for rapid growth & development due to the favourable demographic, technological factors and economic factors such as rising disposable income, higher standard of living, higher economic growth, rapid urbanisation and so on.

Keywords: *Life Insurance, Non-Life Insurance, Insurance density, Insurance Penetration, IRDA.*

Introduction:

- **Present Trends in the Insurance sector:** The insurance sector in India has witnessed significant changes during the last two decades especially after the announcement of the new economic policy in the year 1991. India ranks ninth in the world in life insurance and 14th in non-life insurance. The insurance market consists of life insurance and non-life insurance. Life insurance accounts for 70 percent of the total market share of the insurance industry & non-life insurance accounts for 30 percent share. The non-life insurance includes segments like health insurance, fire insurance, motor insurance, marine insurance etc.

Indian insurance sector has 22 companies in the Life insurance & 21 companies in the non-life insurance. The number of registered insurers in India can be seen as below.

Type	Public	Private	Total
Life Insurance	1	21	22
Non-Life Insurance	6	15	21
Reinsurance	1	-	1
Total	8	36	44

Source: IRDAI Reports.

It can be seen from the above table that is 44 insurers in the county which include 08 under the public sector (Life & non-life) & 36 under the Private sector.

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At one time LIC had the monopoly in the life insurance segment but today the market has transformed into oligopoly type of market.

- **Growth Drivers of Insurance sector:** The growth drivers of the Indian insurance market are:

1. High economic growth rate
2. Rising disposable income
3. Covid-19 the Pandemic
4. Increased awareness of health
5. Large size of population
6. Young population with median age of 28 years
7. Technological advancement
8. Tax benefits and investment incentives
9. Product diversification with unit Linked Insurance plans (ULIPs)
10. Government Initiatives such as

- Pradhan Mantri Fasal Bima Yojana
- Pradhan Mantri Suraksha Bima Yojaria
- Pradhan Mantri Jeevan Jyoti Bima
- National Export Insurance Account Scheme
- Ayushman Bharat

- **Issues and Challenges:** Despite the rapid growth of the insurance sector there are various issues and challenges faced by it. These are.

1. Low insurance Penetration & density
2. Lack of trust of the buyers in insurance purchasing
3. Regulatory Challenges
4. Higher distribution costs
5. Under insurance coverage
6. Fraudulent claims and mis-selling
7. Stiff market competition
8. Shortage of trained personnel
9. Lack of awareness about the insurance products
10. Claim settlement issues

- **Prospects of Insurance sector:** The Indian insurance sector has great potential for further expansion and development in the country with population of 1400 million the insurance penetration offers vast untapped insurance coverage. The insurance sector is dominated by the public sector in life as well as non-life and hence the scope of the private sector has not been fully realised. There is good future potential for life as well as non-life insurance in the country.

- **Objectives Of The Research:** The major objectives of the research are:

1. To find the present status of the insurance industry in the country.
2. To assess the insurance penetration and insurance density in India.
3. To ascertain the market share of different insurers in life & non-life insurance segments.
4. To investigate the major challenges faced by the insurance sector and the future growth potential for it.

- **Review of Literature:** The review of the literature undertaken for the present research can be seen as below.

1. Saon Ray (2020) analysed the Indian insurance sector and the growth of this sector. The insurance industry is growing at the compound rate of 16.50 percent. The insurance penetration is 3.69 percent and insurance density are 73 USD in the year 2017-18. The Indian insurance market consist of 59 companies which include 24 life insurance and 35 non-life insurance. The share of life insurance is much higher than non-life at 75 percent & 25 percent respectively.
2. The major challenges faced by the insurance sector are low penetration & low density as compared to global standards, focus in urban areas, domination of the public sector insurers, lack of capital, overcrowding in few segments, domination of traditional distribution channels & so on.
3. Madan Mohan Dutta (2020) elaborated on the health insurance sector in the country. Health insurance contributes maximum to the general insurance at 29 percent of insurance premium. The research revealed that there is a close relationship between the level of premium earned by the insurer and the underwriting loss. The overall premium of the health insurance has increased significantly but it has not contributed to the higher profitability of the insurance

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firms but contributed to the higher underwriting losses over the period. There has been rapid rise in the income of the insurer at 27 percent but still the health insurance companies are unable to make underwriting profit.

4. Dr. G P Dang and Dr Divya Ghai (2010) highlighted the reforms introduced in the insurance sector in the country. The government allowed private sector to enter into the sector. This resulted in the rapid expansion in the number of insurance companies, the availability of infrastructure fund and better services to the customers.
5. Some of the issues faced by the insurance sector are lack of awareness about the insurance, low penetration in the rural areas, neglect of people below the poverty line, unsatisfactory customer services and so on.
6. Nirjhar Majumdar (2023) analysed the impact of changing demography on the Indian insurance sector. The median age of India is 28 years while that of China is 38 years, Japan 48 years. Hence there is greater potential for the youth to purchase insurance at a much-reduced premium amount. This is good for the insurance companies to market large number of insurance policies. Maharashtra and UP have the maximum number of insurance policies because of the higher size of population in these states. The other factors which can contribute to a greater number of insurance policies are rising per capita income, higher level of literacy and higher life expectancy etc.
7. Aniket Kulkarni (2023) investigated the contribution of insurance sector to the Indian economy. The establishment of IRDA has contributed significantly to the attraction of foreign capital, greater market competition, consumer protection and the growth of the industry. The insurance sector has reduced risks and maintain stability, protection of wealth, creation of employment opportunities, infrastructure development, higher trade & commerce, economic stability and so on.
8. Hiren Nandlal Joshi (2023) analysed the growth and development of the insurance sector in the country and its problems and prospects. The insurance sector consists of life insurance and the non-life insurance. LIC is one of the oldest life insurance companies & it dominates the market. It has collected maximum insurance premium & sold the highest number of policies than any other private insurer. In the insurance sector agents play an important role in the distribution or selling of insurance policies. There is also a growing trend of digital channel or the online selling of insurance policies. The entry of private sectors in the insurance sector has resulted in stiff market competition and diversification of insurance products.

- **Research Methodology:** The research methodology adopted for the research can be seen as below.

1. Nature of Research Design: The research design most be suitable to this type of research is the descriptive research design and the explanatory research. Such research design is useful in presenting the status of the insurance sector in the simplest manner.

2. Sources of Data: The present research has mainly relied on the available published or secondary data including the review of the literature on the insurance industry. There is plenty of data available on the subject published by IRDAI and the insurance council of India.

3. Data Analysis: The data analysis being conducted in the present research is descriptive data analysis. It uses simple percentage share in the analysis of the data. Tables and charts are presented for explanation & clarity of the data. Each table provides interpretation of the data.

4. Limitations of the Research: Some of the limitations of the research are:

a. The research has focused on the quantitative aspects of the problem at hand and not on the qualitative aspects.

b. The research is based on the review and analysis of the secondary data only. It has not taken primary data for analysis.

c. The research has not considered the working of the individual companies and their profitability & performance.

d. The research focuses only on few macro variables of the insurance sector & not all aspects of this sector.

- **Data Analysis:** The details regarding data analysis can be seen from the following tables and charts.

1. India's Insurance in Global Ranking: The ranking of the Indian insurance sector in the world can be seen from the following table.

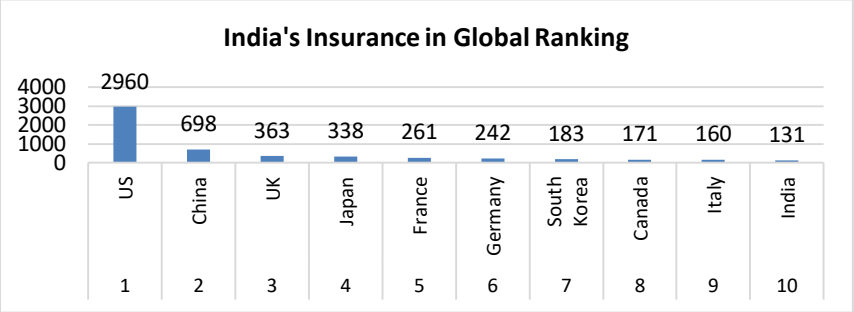
Table No. 1 India's Insurance in Global Ranking

Rank	Country	Premium (Billion USD)
1	US	2960
2	China	698
3	UK	363
4	Japan	338
5	France	261
6	Germany	242
7	South Korea	183

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8	Canada	171
9	Italy	160
10	India	131

Source: Swiss Re Sigma Report 2022



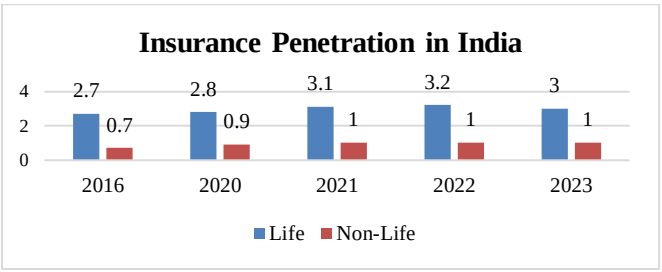
It can be seen from the above that US ranks first in the world in insurance premium with 2960 billion USD. It is followed by China (rank two) with 698 billion USD which is only 24 percent of the US market size. India ranks tenth in the global insurance market with 131 billion USD insurance premium collection.

2. Insurance Penetration: The insurance penetration (which is premium as a percentage share of GDP) in India for life & non-life can be seen from the table below.

Table No. 2 Insurance Penetration in India

Year	Life %	Non-Life %	Total %
2016	2.7	0.7	3.4
2020	2.8	0.9	3.8
2021	3.1	1	4
2022	3.2	1	4
2023	3	1	4

Source: IBEF Report 2024



It can be observed that insurance penetration in India is only 4 percent (3% for life & 1% for non-life). The global benchmark is 2.8% for life and 6.8% for non-life or 6.8%.

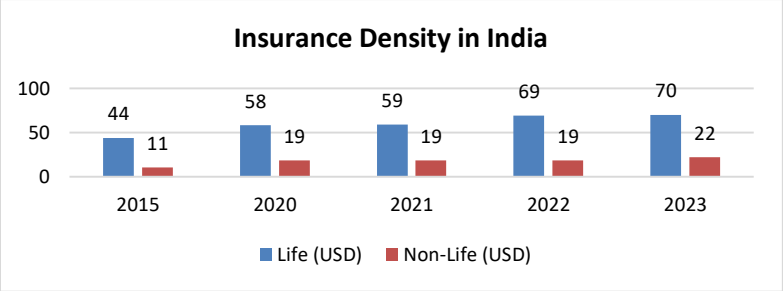
3. Insurance Density: The insurance density in India can be seen from the table below.

Table No. 3 Insurance Density in India

Year	Life (USD)	Non-Life (USD)	Total (USD)
2015	44	11	55
2020	58	19	77
2021	59	19	78
2022	69	19	88
2023	70	22	92

Source: IBEF 2024 Report

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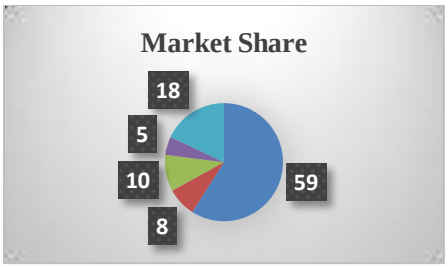
It can be seen from the above table that insurance density in India which was 55 USD in 2015 increased to 92 USD in 2023. The global benchmark is 874 USD.Thus India is far behind the global benchmark in the insurance density.

4. **Life Insurance Market share by Premium:** The life insurance market share based on the premium collected in the year 2024 for top few insurers can be seen from the following table.

Table No. 4 Life Insurance Market share of Top Few Companies

Rank	Name of the Insurer	Market Share
1	LIC	59
2	HDFC Std Life	8
3	SBI Life	10
4	ICICI Prudential	5
5	Others	18
	Total	**100**

Source: IRDAI Report 2024



It can be seen from the above table that LIC holds the largest market share of 59% in life insurance premiums. The other top insurers are SBI Life with 10% market share, HDFC life with 8% market share & ICICI prudential with 5% market share. Remaining all other insurance companies (17 insurer combined) have a market share of only 18 percent. LIC had once the market share of more than 90 % and it was the most dominant insurer in the country. Today its market share has declined but it is still the most dominant player of the life insurance sector in the country.

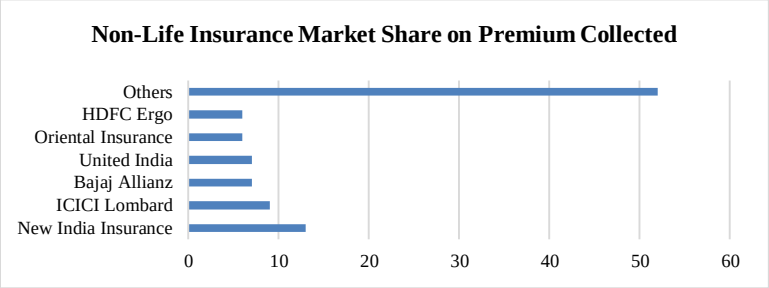
5. Non-Life Insurance Market share by Premium: The details regarding the market share of non-life insurance market based on the premium collected in the year 2024 can be seen from the following table.

Table No. 5 Non-Life Insurance Market Share based on Premium Collected

Sr. No.	Name of the Insurer	Market Share
1	New India Insurance	13
2	ICICI Lombard	9
3	Bajaj Allianz	7
4	United India	7
5	Oriental Insurance	6
6	HDFC Ergo	6
7	Others	52
	Total	**100**

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Source: IRDAI Report 2024



It can be seen from the above table that New India Insurance has the maximum market share in non-life insurance accounting for 13 percent of the total. The other leading companies are ICICI Lombard with 9% market share, Bajaj Allianz with 7% market share, United India with 7% market share, Oriental Insurance with 6% market share and HDFC Ergo with 6% market. Others 15 insurer have a combined market share of 52% of non-life insurance.

Summary And Conclusion: The following conclusions are drawn from the above research on the insurance industry.

1. Insurance industry in India has witnessed significant development & transformation during the last two decades. It is the result of favourable government initiatives such as economic liberalisation, establishment of Insurance Regulatory & Development Authority, privatisation of the insurance sector, Ayushman Bharat, digital India and so on.
2. The insurance sector consists of 22 insurers in the life insurance, 21 insurers in the non-life segment and 01 insurer in reinsurance making a total of 44 insurance companies. Thus, the market structure of the insurance sector has changed from monopoly type to oligopoly.
3. The life insurance penetration in Indian is 3% & non-life 1% making a total of 4% as against the global benchmark of 6.8%. The life insurance density is 70 USD & non-life 20 USD making a total of 92 USD which is also very low as compared to the global average of 874 USD.
4. The top four players in the life insurance segment are LIC (59%), SBI life (10%), HDFC life (08%), and ICICI prudential (5%). The top six non-life insurers are New India Insurance (13%), ICICI Lombard (9%), Bajaj Allianz (7%), United India (7%), Oriental insurance (6%). HDFC Ergo (6%). Thus, the share of public sector in the life insurance is 59%, while that of private sector 41%. On the other hand, in case of non-life insurance the share of the public sector is 26% & that of private sector is 74%. Thus, in the life insurance the public sector dominates while in non-life insurance the private sector dominates.
5. The insurance sector in India is poised for greater transformation due to various factors such as favourable demographic, technological adoption, urbanisation, rising disposable income, economic factors, greater awareness about the health, young population, government initiatives like Ayushman Bharat, & so on. Thus, the insurance industry is poised to become a global powerhouse in the years to come.

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Original Article

Law Relating to Groundwater Recharge in India

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Abstract

Water is absolutely essential for human life. One cannot expect life without water. Ground water is the backbone of India's water supply, especially in agriculture and rural areas. It plays a pivotal role in India's water security, economic development, agriculture, and public health. However, overexploitation, pollution, and poor recharge are rapidly depleting this vital resource. Enhancing groundwater resources is not just a matter of water availability but it is crucial for food security, health, and environmental sustainability. The main factors of water crisis which are at worse include drained and contaminated aquifers, drought, etc., which are due to over consumption. The depletion of groundwater is at unsustainable rates. The severity of groundwater contamination is dependent on dumping of industrial wastes, landfills and high concentration of fertilizers and pesticides over the years. The government plays a vital role in groundwater conservation, both at the central and state levels. However, the responsibility for conserving groundwater sustainability is shared across various levels of governance, institutions, and stakeholders. The path forward requires an integrated, cooperative approach that includes effective regulation, education, technology adoption, and scientific research. Only through such collective effort can India address the looming groundwater crisis and ensure long-term water security. This paper focuses on groundwater recharge, sustainable management, and regulation of extraction.

Keywords: *Ground water, Contamination, Depletion & Conservation.*

Introduction:

The Right to Food has been specifically enforced under Article 21 of the Constitution by the Supreme Court of India. However, food alone cannot be considered as a basic requirement it has to be extended to usage of clean water for a healthy livelihood.[2] Therefore, right to water is a fundamental right enshrined in Article 21 of the Indian Constitution, compels the state to manage groundwater responsibly,[3] ensuring that it is available to all citizens for domestic, agricultural, and industrial purposes. Water, including groundwater, is primarily a State Subject. Thus, State Governments are responsible for enacting laws and regulations concerning groundwater use and recharge. The Supreme Court in many cases held that the right to life includes the right to clean water and sustainable environmental resources, which extends to groundwater. Groundwater is a vital resource for India, providing nearly 60% of the total irrigation and 85% of rural drinking water needs. However, despite its significance, groundwater resources in India are facing severe pressures due to over-extraction, pollution, and poor management. Groundwater management in India is a complex issue that involves various challenges, including over-extraction, pollution, ineffective policies, and governance issues. However, it is clear that sustainable groundwater management requires a multi-faceted approach that includes technological innovations, policy reforms, community participation, and better regulation.[4]

Objectives of the Study

- To get a clear understanding about the need and importance of groundwater management in India.
- To know about groundwater contamination and its ill effects.
- To analyze the laws relating to groundwater management in India.
- To identify a better mechanism to treat groundwater contamination.

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Statement of Problem

Groundwater management in India is a complex issue that involves various challenges, including over-extraction, pollution, ineffective policies, and governance issues. Thereby there is a need to address this issue and give suitable suggestions to recharge/ refill the ground water.

Review of Literature

This literature review focuses on the key studies and themes in groundwater management in India, examining the challenges, strategies, and initiatives aimed at improving groundwater sustainability.

- Upendra Baxi, a renowned legal scholar, in his literature, he extensively discussed environmental law and water management issues in India, he explores global and local legal frameworks for water governance, focusing on groundwater depletion. The Water: Perspectives, Issues, Concerns (2003) provides a comprehensive overview of water-related challenges, encompassing various perspectives and concerns & the Towards Water Wisdom: Limits, Justice, Harmony (2007) examines the ethical and social implications of water management, emphasizing the need for justice and sustainability in water resource utilization.
- Bandyopadhyay et al. (2012) reviewed water management policies and strategies in India, concluding that there is a lack of effective governance and policy implementation. They argue that decentralized water user associations (WUAs) and community-led management can address many of the challenges in groundwater management by promoting equitable water distribution and local-level water conservation practices.
- Narain et al. (2016) discussed rainwater harvesting and its potential to recharge groundwater aquifers. They argue that integrating rainwater harvesting systems into urban and rural water management can reduce dependence on groundwater and help mitigate its over-exploitation. Tamil Nadu, for example, made rainwater harvesting mandatory in new buildings as early as 2003, resulting in successful groundwater recharge across the state.
- Lamba (2014) discussed the policy failures in groundwater regulation, highlighting the lack of enforcement of existing groundwater laws and the need for a national groundwater policy. Lamba's research advocates for decentralized management and community participation to enhance accountability in groundwater use.
- Pradhan et al. (2018) conducted a review of state-level groundwater laws and regulations across India. They observed that while states like Rajasthan, Maharashtra, and Tamil Nadu have implemented strong groundwater conservation policies, there is still significant variation in the enforcement of these laws across different regions. The study calls for a uniform framework for groundwater management at the national level, with specific provisions for water-scarce areas.

Analysis/Findings

Water is the primary source of existence of every living species which includes men as well so that it is imbedded under Right to Life and to be considered as a Human Right.[5] On 28th July 2010[6] the UNGA(United Nations General Assembly), recognized the Right to Water and Sanitation as a Human Right. In several cases the Supreme Court of India emphasized the role of policy reforms and institutional capacity in addressing groundwater depletion. The Supreme Court in *M.C. Mehta* v. *Kamal Nath*,[7] held that, "The state is the trustee of all natural resources which are by nature meant for public use and enjoyment. The public at large is the beneficiary of the seashore, running waters, airs, forests and ecologically fragile lands." It ruled that natural resources, including rivers and water bodies, are held by the state in trust for the public and they cannot be converted into private ownership or diverted for private gains. Further, Apex Court has applied the Public Trust Doctrine to water resources recognizing that groundwater is held in trust by the state for public use. The Environment Protection Act, 1986 established the Central Ground Water Authority (CGWA)[8] to manage and regulate groundwater development and extraction across the country. National Policies like, National Water Policy 2012 calls for a balanced approach to groundwater extraction, promoting recharge methods and water conservation and led strong emphasis on mandatory rainwater harvesting in urban and rural settings to enhance groundwater recharge. *Atal Bhujal Yojana*, 2020, a central government scheme focused on community-based groundwater management in select states. This Yojana, promotes rainwater harvesting and the construction of percolation tanks. Groundwater is often seen as a clean and safe source of water. However, several studies show that contamination is becoming a significant issue in India. The causes include excessive use of fertilizers and pesticides, industrial waste, and sewage. Effective groundwater management requires strong governance, policy implementation, and institutional arrangements.

Reasons for the Depletion of Groundwater in India

Groundwater depletion in India is a severe and growing crisis that threatens the country's water security, agricultural sustainability, and livelihoods. India is the largest extractor of groundwater in the world, accounting for around 25% of global extraction. Over 60% of irrigated agriculture and 85% of rural drinking water depend on groundwater. The causes of its depletion are complex and interlinked, involving environmental, socio-economic, and policy-related factors. The following are the reasons for the depletion of ground water:

- Over-Extraction for Agriculture;
- Inefficient Irrigation Practices;

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- Lack of Groundwater Regulation;
- Urbanization and Population Growth;
- Climate Change and Erratic Rainfall;
- Deforestation and Land Use Changes;
- Industrial Use and Pollution;
- Poor Implementation of Rainwater Harvesting etc.

Effective methods for addressing the crisis of depletion of ground water

Groundwater depletion in India is a result of over-extraction, inefficient use, poor governance, and environmental changes. Addressing this crisis requires a multi-pronged strategy involving:

- Legal reforms;
- Efficient irrigation techniques;
- Crop pattern changes;
- Public awareness;
- Rainwater harvesting;
- Technological Innovations in Groundwater Management;
- And integrated water resource management.

Law Relating to Groundwater Recharge in India

A. Constitutional Provisions

Water as a State Subject: Under Entry 17 of the State List (List II) in the Seventh Schedule of the Indian Constitution, water is primarily a state subject. Hence, individual states have the power to make laws on groundwater. Right to Life includes the right to water,[9] which is essential for survival. In *Subhash Kumar* v. *State of Bihar* (1991),[10] the Supreme Court held that the right to pollution-free water is part of Article 21. The state shall protect and improve the environment as mentioned in Article 48A. It is the duty of every citizen to protect natural resources under Article 51A (g).

B. Legal Instruments and their Limitations

i. Indian Easements Act, 1882:

Grants landowners the right to extract groundwater under their land as a proprietary right. This Act treats groundwater as private property, allowing unregulated withdrawal.

ii. Environment (Protection) Act, 1986

The Act empowers the central government to take measures to protect and improve the environment, which includes regulating groundwater extraction through notifications and rules. The Central Government established the Central Ground Water Authority (CGWA) in 1997. This Act empowers CGWA to regulate and control groundwater in notified areas. However, the regulatory powers are limited to notified areas only. Most of India's over-extracted areas remain non-notified.

iii. Water (Prevention and Control of Pollution) Act, 1974

Focuses on preventing pollution of water bodies, including groundwater. Does not address over-extraction or aquifer protection.

iv. Model Groundwater (Control & Regulation) Bill

It was first drafted in 1970, revised multiple times (notably in 1992, 2005, and 2011) by the Central Ground Water Board (CGWB) and the Planning Commission. It aims in helping the States to formulate the laws for groundwater regulation. The draft includes the following key provisions:

- Licensing for groundwater extraction.
- Protection of drinking water sources.
- Creation of groundwater authorities at various levels.

v. Groundwater Management and Regulation Guidelines, 2017 (CGWA)

Central Ground Water Authority (CGWA**)** under the Environment (Protection) Act, 1986 introduced guidelines for groundwater extraction in over-exploited areas, mandatory rainwater harvesting, and groundwater impact assessments for industries.

vi. Groundwater Acts by States

Several states (e.g., Tamil Nadu, Kerala, Andhra Pradesh, Maharashtra) have enacted their own groundwater regulation acts. These Act focuses on common provisions like licensing, spacing norms, rainwater harvesting mandates etc. However, patchy implementation; lack of coordination across state boundaries (despite aquifers being transboundary) & poor enforcement and data collection are the major drawbacks.

The Role of Government in Conservation of Groundwater

The government plays a pivotal role in groundwater conservation, both at the central and state levels.

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i. Government Role

According to the Indian Supreme Court, "in today's emerging jurisprudence, environmental rights which encompass a group of collective rights are described as *third generation* rights."[11] The government plays a pivotal role in groundwater conservation, both at the central and state levels. The responsibility for conserving groundwater sustainability is shared across various levels of governance, institutions, and stakeholders.

Policy Framework and Legislation:

- **National Water Policy (2012):** The National Water Policy (2012) recognizes groundwater as an important and overused resource. This policy advocates for aquifer-based management and community participation. It emphasizes the need for a regulatory framework to promote groundwater conservation, focusing on equitable distribution, efficient usage, and management.
- **Draft Groundwater (Sustainable Management) Bill, 2017** recognizes water as a public trust. It proposes Aquifer Mapping, community rights, and groundwater security plans. It also emphasizes decentralized regulation through local bodies.
- **Groundwater Regulation:** States are encouraged to develop groundwater regulation systems, including policies for the controlled extraction of water, especially in over-exploited regions. This includes setting up the Central Ground Water Authority (CGWA) for monitoring and regulating groundwater extraction.
- **Watershed Management Programs:** The government, through schemes like the National Mission for Clean Ganga (NMCG) and *Atal* Mission for Rejuvenation and Urban Transformation (AMRUT), focuses on improving water conservation and management practices at the local and regional levels.
- **Subsidies and Incentives**: Government subsidies for agricultural water use, especially for the installation of tubewells and pumps, have often contributed to the over-extraction of groundwater. However, reforms such as phasing out unsustainable subsidies and providing incentives for water-saving techniques (like drip irrigation) are gradually being incorporated.
- **Awareness Programs:** The government funds various public awareness campaigns about the importance of groundwater conservation. These include initiatives aimed at educating farmers and urban dwellers on efficient water management, rainwater harvesting, and watershed management.

ii. State Government's Role

In India, water management largely falls under state jurisdiction, meaning that state governments are responsible for implementing policies and regulations. The State responsibility is not limited only to provide sufficient drinking water but also to safeguard water resources from human exploitation, encroachment and extraction which turns hazardous.[12] It is the right of every citizen to access Clean and Safe Drinking Water which is fundamental for his livelihood and this is to be safeguarded by the State.[13]

- **State-Level Groundwater Regulation:** Each state can have its own set of laws and regulations related to groundwater management. For example, Rajasthan and Gujarat have introduced groundwater legislation that limits extraction in critical areas. Similarly, states like Tamil Nadu have promoted the use of rainwater harvesting to replenish groundwater supplies.
- **Watershed Development:** States also manage several programs aimed at watershed development and groundwater recharge. These programs help in recharging the groundwater table and preventing its further depletion.
- **Monitoring and Reporting:** Many states have their own Groundwater Departments or agencies responsible for monitoring groundwater levels, usage patterns, and implementing sustainable practices.

iii. Local Governance (*Panchayats* and Urban Local Bodies)

At the grassroots level, local bodies such as *panchayats* (rural local governments) and urban local bodies (ULBs) have the responsibility for implementing conservation measures in their respective areas.

- **Rainwater Harvesting**: Many states have made it mandatory for new buildings to have rainwater harvesting systems, and local bodies are tasked with ensuring compliance with these regulations.
- **Water Conservation Initiatives:** Local governments often manage schemes that promote community-level awareness, water-saving technologies, and groundwater recharge pits in rural and urban areas.

Judicial Pronouncements and Doctrines

a. **Public Trust Doctrine**: Public Trust Doctrine is recognized in M.C. Mehta v. Kamal Nath (1997): Natural resources like water are held in trust by the State for the public. Implies that groundwater cannot be privatized and must be regulated for collective benefit.

b. Vellore Citizens Welfare Forum v. Union of India (1996)[14] **i**ntroduced the Precautionary Principle and Polluter Pays Principle in Indian Environmental Law. It relates to groundwater pollution, particularly by tanneries in Tamil Nadu.

c. Delhi Water Supply and Sewage Disposal Undertaking v. State of Haryana (1996)[15] SC held that access to drinking water is a fundamental right.

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d. M.C. Mehta v. Union of India (2004)[16], In this case the Court directed for the implementation of rainwater harvesting in Delhi buildings.

Challenges in Groundwater Governance

- Fragmented laws across states.
- Weak enforcement mechanisms.
- Lack of accurate groundwater data.
- Over-extraction, especially in agriculture.
- Pollution and contamination issues

Recommendations

- Enact a comprehensive national groundwater law based on the 2017 draft.
- Repeal or amend the Indian Easements Act, 1882 to remove private ownership of groundwater.
- Empower local governance bodies (*panchayats*, municipalities) to manage groundwater sustainably.
- Strengthen the CGWA's mandate, with real-time monitoring and penalties for illegal extraction.
- Integrate groundwater and surface water management under a unified legal and policy framework.

Conclusion

The Constitutional principles and environmental laws provide a basis for the conservation and sustainable utilization of water resources in India but the absence of a unified, enforceable national law, along with weak state-level implementation, has allowed unsustainable exploitation. The Judicial doctrines like the Public Trust Doctrine and Right to Water offer hope, but need to be backed by legislative action and institutional reform. Further, a strong, unified national framework, combined with local governance, public participation, and scientific groundwater management, is essential to ensure sustainable and equitable use of this critical resource.

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Original Article

The Green Economy How Sustainable Practices Can Boost India's Economic Growth

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Abstract

The shift of the Indian economy towards a green economy is a serious chance to reach sustainable, inclusive and innovation opportunity-driven development. With the increasing environmental demands experienced in the country due to the emerging global changes, energy insecurity, and the changes in the global market, there is an urgent need to integrate sustainable practices into the major economic system. This paper will focus on discussing the role played by green sectors, including renewable energy, electric mobility, models of a bio-circular economy, sustainable agriculture and low-carbon manufacturing to boost the economic performance of India in the long run. The use of secondary data, policy analysis, and case studies of various sectors in the country illustrates that green practices create jobs, boost competitiveness and industrial growth, advance technological innovation, develop resource efficiency, and establish economic resilience through fossil-fuel reduction. The discussion also puts the sustainability of the green-growth trajectory in India in line with the Sustainable Development Goals (SDGs), the national education policy (NEP 2020) and the national vision of Viksit Bharat @ 2047. The results suggest that green economy approaches can both enhance environmental sustainability and productivity in the economy, which is the basis of the future development of India. The paper will end by defining what can be done in terms of a policy to transform the economy of India into one that is sustainable.

Keywords: *Green economy, Sustainable development, Renewable energy, Circular economy, India's economic growth.*

Introduction:

The move toward a green economy, a type of economy with low-carbon growth, resource efficiency and sustainable livelihoods in focus, in India has taken centre stage in the world quest to decouple development and environmental degradation (IEA, 2021). With recent macroeconomic strength and high growth rates, India encounters an increasing environmental pressure journey in terms of high energy consumption, air and water pollution, and climate vulnerability, which pose a threat to long-term prosperity (World Bank, 2024). The obligation of the country as a signatory to the Paris Agreement and the renewed Nationally Determined Contribution (NDC) is an indication that the country is on a quick transition to renewable sources of energy, lowering its emission levels, and adjusting up to the year 2030. At the same time, national monitoring of SDGs in India demonstrates an improvement but mentions ongoing gaps in both environmental and social goals that a green transformation might allow resolving (NITI Aayog, 2024).

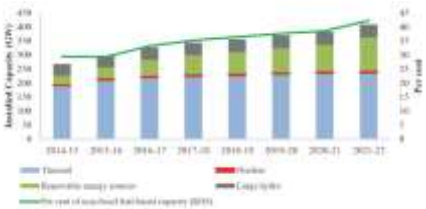


Figure 1: India's Shift to a Green Economy

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Source: (Agarwal, 2023)

The question addressed in this paper is as follows: how can sustainable practices increase the economic growth of India in a material way and comply with the climate and development policies of the globe? It applies policy analysis and secondary data sources to explore the opportunities in the sectors (energy, transport, agriculture, circular economy), quantitative co-benefits (jobs, productivity, trade), and implementation limitations. Placed in the multidisciplinary context of the conference, the analysis connects the policy on the economy, strategies on sustainability, and educational/research priorities to provide the treatment of the actionable directions of the green development of India.

Conceptual Background

The green economy is a widely-conceived notion, referring to a low-carbon, resource-saving and socially-inclusive economy, which involves improved human well-being and minimised ecological risks (Unitar, 2025). Similarly, closely interrelated terms are the more current ones: the term circular economy (where resources are reused, and the amount of waste is minimal) and the term resource efficiency (to create more value with less resource input). As an illustration, the Organisation for Economic Co-operation and Development (OECD) notes that transitioning to the resource-efficient and circular economy is essential in order to achieve a sustainable, competitive economy (OECD, 2020).

The concept of decarbonisation (cutting down on greenhouse gas emissions), sustainable production (cutting down the harm that the goods/services have on the environment) and green finance (investment in low-carbon, resource-efficient activities) are also components of the green economics vocabulary. The policy frameworks in the context of India, including the provisions of the Ministry of Environment, Forest and Climate Change's circular economy regulations and recent reports on green finance, indicate opportunities in the sector and a newer development in industries and sustainable industries. The empirical evidence has indicated that green sectors are capable of stimulating productivity, employment and technological advancement. However, in India, the practice is still patchy, as in the case of green investment by the private sector, adoption is widespread across the regions and industry, with many areas widely varying in their so-called adoption. It is clear that research gaps exist in policy consistency, business model scale-up, and outcome measurement (Ellen MacArthur Foundation, 2016).

Methodology

The research is purely based on secondary data as it uses the reports by the government, international databases and analyses of sustainable development and economic transition in India compiled by various scholars. Indicatively, a technical note on the green economy framework in India processes low-carbon pathways using time-series data and policy input to model their paths (Golechha et al., 2022). It looks at the alignment of policies by the framework of policies, including the National Education Policy 2020 (NEP 2020) and national missions from a policy-analysis perspective (Ministry of Education, 2025).

India's Green Economy Landscape

The green economy in India is fast emerging in the relevant sectors concerning sustainability. It is starting with the renewable energy sector (solar, wind and now with green hydrogen): based on the National Green Hydrogen Mission, India aims to produce 5 MMTPA of green hydrogen in 2030 using plentiful renewables and a ₹19,744 crores budget (Ministry of New & Renewable Energy, 2025).

The electric mobility ecosystem is also fast gaining pace: the India Electric Mobility Index 2024 reveals that India is ready to experience swift EV adoption and investment inflows (NITI Aayog, 2025). More popular extensions of the model to the circular economy and waste-to-energy are underway, but with fewer nationally aggregated measures, and sustainable agriculture (with water-efficient irrigation) is being facilitated under models such as Pradhan Mantri Kisan Urja Suraksha Evam Utthaan Mahabhiyan (PM-KUSUM). These developments are guided by key policy frameworks, including the National Solar Mission, the National Green Hydrogen Mission, the National Clean Air Programme (NCAP), AMRUT 2.0, PM-KUSUM and the National Education Policy 2020 (NEP 2020), which has its environmental-literacy aspect. As an example, the report of the Green Economy Model of India states that through the implementation of the promises to the Paris Agreement and the orientation to SDGs, the economy can enjoy growth in terms of investment and employment (Golechha et al., 2022).

How Sustainable Practices Boost India's Economic Growth

The renewable energy development in India is already creating mass employment. A 2024 government report released on the topic indicates that by 2023, the energy sector compensated nearly 1.02 million jobs under the renewable sector (Government of India, 2024).

In the meantime, an evaluation of the green jobs and just transition readiness initiatives of India that achieves the 500 GW renewables target that would employ up to one million in the process, only of sun and wind by 2030 (PAGE, 2023). Cleaner technologies reduce the long-term operational expenses due to a reduction in energy and lessening of wastes, a factor enhancing the competitiveness of industries. As an illustration, the resource-efficient production processes that Indian manufacturing companies are embracing are more suited to the global supply chains

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that are primarily instigated by the sustainability standards. Strategic technology implementation in the manufacturing sector is relevant to supporting the growth of exports to more sensitive markets in the value chain, according to an innovation report that was specially oriented to critical technologies in India (FICCI, 2025).

India is undergoing the build of an accelerated green start-up ecosystem in the sectors of climate-tech, sustainable packaging, battery-tech and resource-recovery. A 2024 report on start-ecosystem in India indicates that 140 billion USD in the Indian economy were contributed by tech start-ups that are more and more concentrated on deep-tech and sustainability discourses (KPMG, 2024).

Circular economy models and industrial symbiosis offer sustainable approaches, like using less raw material and less energy. A skills-landscape report indicated that the transition to resource-efficient jobs, which are green, has become associated with both the greater material-use efficiency and second-value salvage in India (SCGJ, 2023).

Table 1: Summary of Economic Benefits from Sustainable Practices in India

Area	Key Developments	Economic Benefits
Renewable Energy & Green Jobs	Growth in solar, wind, recycling, EV manufacturing, and organic farming.	Large-scale job creation and inclusive rural–urban livelihood opportunities.
Industrial Sustainability	Adoption of cleaner technologies and resource-efficient manufacturing.	Lower operational costs and enhanced competitiveness in global value chains.
Green Innovation Ecosystem	Rise of climate-tech, battery-tech, and sustainable packaging start-ups.	Increased GDP contribution, entrepreneurship, and scalable green solutions.
Resource Efficiency & Circular Economy	Reduced material and energy intensity; expanded recovery and reuse.	Higher firm profitability and long-term industrial sustainability.
Economic Resilience	Reduced fossil-fuel dependency and investment in climate-resilient systems.	Improved energy security and reduced losses from climate-related disruptions.

Alignment with SDGs, NEP 2020, and Viksit Bharat @ 2047

The shift towards the green economy is closely associated with such big frameworks as SDGs, National Education Policy 2020 (NEP 2020), and Viksit Bharat @ 2047. Indicatively, the green energy projects facilitate SDG 7 (Affordable and Clean Energy), SDG 8 (Decent Work and Economic Growth), SDG 9 (Industry Innovation and Infrastructure), SDG 12 (Responsible Consumption and Production), and SDG 13 (Climate Action). NEP 2020 incorporates sustainability learning and acquisition of green-skills into learning curricula, using research and inter-disciplinary studies to create future-proof citizens. The Viksit Bharat @ 2047 vision, in its turn, aims at an economy of a resilient, knowledge-based, clean and competitive India by its centenary of independence (Ministry of Education, 2020).

Policy Recommendations

In order to hasten green transformation in India, the public strategy should increase green financing through green bonds, sovereign green funds and the carbon market to marshal high-scale investment. The use of clean technologies should be incentivised by the use of selected subsidies, relief in taxation and research and development grants and improve complementary capabilities of ensuring control of pollution and sustainability reporting mandatory by the industry. At the same time, the focus on green-skills development through curricula is relevant to the National Education Policy 2020 that guarantees the number of sustainable sector prepared workforce. Lastly, encourage shared initiatives on renewable energy and waste-management initiatives by both the public and the private sector and invest more in climate-resilient infrastructure to strengthen economic stability (Reddy et al., 2024).

Conclusion

The green economy of India is one way of giving a sustainable, resilient and inclusive development. India can become more competitive and achieve climate targets by introducing clean energy, innovation, circularity and human capital. The agenda of long-term prosperity as an end goal and the coordinated investments will necessarily be accelerated and timed in order to make the Viksit Bharat 2047 vision a reality.

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Original Article

The Influence of Work-Life Balance on Employees' Physical and Mental Health: An Empirical Analysis of MSRTC employees

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Abstract

Work-life balance plays a vital role in reducing stress, preventing exhaustion, enhancing physical and mental health, increasing productivity and job satisfaction thereby improving overall health and well-being of individual. As long working hours results in burnout, stress, low productivity, decreased job satisfaction, poor physical and mental health, no family time, etc. it is very important to balance work and life effectively for individual well-being and organizational success. The aim of this study is to examine the effect of work-life balance on physical and mental health of employees working in Maharashtra State Road Transport Corporation (MSRTC). The study revealed that there is a significant relationship between work-life balance and employee well-being.

Keywords: *MSRTC, work-life balance, employees, physical and mental health*

Introduction:

MSRTC

Maharashtra State Road Transport Corporation is a state-run bus service operating across Maharashtra. It was established in 1948 and has been providing affordable public transportation to people. It falls under the Ministry of Transport, Government of Maharashtra and is one of India's largest public transport organisations. It manages thousands of buses serving urban, rural and even interstate routes. The services provided by MSRTC include ordinary, semi-luxury, and luxury buses and connect remote villages to major cities, supporting regional mobility. It has several divisions, depots and bus stations across the state. To name a few, Thane, Pune, Mumbai, and Nashik divisions are among the busiest ones. Along with the travelling, they have also been providing services like transport and courier services. Their role in tourism is spectacular through their dedicated routes. It has a good number of workforces, including drivers, conductors, mechanics and administrative staff. The main feature of these buses is wide accessibility and affordability. It is the transport system for daily commuting needs.

Work-life balance

Work is essential for survival, but it should not come at the cost of personal well-being, which is the essence of work-life balance (WLB). It reflects the ability to succeed at work without sacrificing personal happiness. WLB involves managing social, psychological, individual, and job-related factors to maintain satisfaction and reduce stress. According to Guest (2002), it is the availability of adequate time to meet responsibilities at both home and workplace. Increasing work hours and pressure often force individuals to focus only on work, neglecting health and family, making WLB crucial. Achieving balance is a shared responsibility of both employers and employees. Happy employees with supportive families tend to be more motivated and productive, benefiting organisational growth.

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WLB is also linked to Family Friendly Work Arrangements (FFWA) and Alternative Work Arrangements (AWA), identifying causes of conflict and role demands. Research continues to expand on issues like job satisfaction, organisational commitment, gender, role conflict, and life management. Zedeck and O'Driscoll's five models explain how work and non-work domains interact. The Segmentation model states that work and life domains are separate and independent. The Spillover model suggests experiences in one domain influence the other, positively or negatively. The Compensation, Instrumental, and Conflict models highlight how individuals balance, support, or struggle between both domains under varying demands.

Literature Reviews:

Bajaj & Rajarathnam (2024) examined the financial performance of Telangana State Road Transport Corporation and found that many depots incur higher operational costs than revenue, making it difficult for them to reach break-even levels. Lakshmi & Prasanth (2018) studied 180 married working women in Visakhapatnam and revealed that balancing job responsibilities and family duties is challenging, which ultimately affects their overall quality of life and well-being. Mahesha V. (2014) assessed the Karnataka State Road Transport Corporation and suggested improvements in staff productivity, cost reduction, fuel efficiency, and revenue generation to strengthen the corporation's performance. Namita (2014) identified common work-life balance problems faced by employees and recommended solutions such as flexible working hours, better workplace conditions, paid leave, and improved time management practices**.** Nuradilla Zahra et al. (2024) found that work-life balance has a strong influence on both individual well-being and organisational outcomes, affecting aspects such as mental health, job performance, and productivity. Prabakaran S. (2023) highlighted the importance of work-life balance policies across corporate, public, education, and healthcare sectors, emphasising flexible work options, health programs, communication, and childcare support. Priyanshi Yadav (2023) showed that work-family and family-work conflicts negatively affect employees' family satisfaction, job satisfaction, and psychological health, with long working hours and rigid schedules being major contributors. Sanjay K. Singh (2014) analysed UPSRTC's performance over 25 years and found significant productivity growth, especially in later years, although much of the benefit was passed on to customers rather than improving finances. Suresh & Vasantha (2018) reported that integrating Information and Communication Technology (ICT) in road transport helps reduce operational costs and errors, while improving competitiveness, service quality, and customer engagement. Suryawanshi (2022) highlighted several challenges in India's road transport development, including slow growth rates, poor-quality roads, uneven infrastructure distribution, high construction costs, and outdated bridges**.** Veenalatha (2019) studied teachers in Hyderabad and found that factors such as overtime, long travel distances, and frequent meetings significantly reduce their work-life balance and increase stress levels. Vijay Singh (2015) analysed job satisfaction among employees of Himachal Pradesh Road Transport and concluded that satisfied employees contribute to higher productivity, recommending timely payments, training, rest periods, and merit-based promotions.

Statement of the Problem

Although there is a need for attention to employees' well-being, many MSRTC employees still have challenges in maintaining their good work-life balance due to job-related expectations. This is misbalancing their physical and mental health and affecting their overall productivity and job satisfaction. This study is an attempt to understand the relationship between work-life balance and employees' health as an essential part. This study seeks to investigate the extent to which work-life balance influences the physical and mental health of MSRTC employees.

Objectives of the Study:

1. To assess the effect of work-life balance on employees' physical health.
2. To determine the impact of work-life balance on employees' mental health.

Hypotheses OF THE STUDY:

Null Hypothesis (H_{01}): Work-life balance has no significant impact on employees' physical health.
Null Hypothesis (H_{02}): Work-life balance has no significant impact on employees' mental health.

Significance of the Study:

This study provides valuable insights into how work-life balance influences the physical and mental health of the MSRTC employees in the Thane district who are subjected to demanding work conditions. The study findings would be useful for the MSRTC management and develop policies and intervene in matters for enhancing employee well-being and productivity. It would also contribute to literature reviews by offering empirical evidence and would help in bringing new dimensions to WLB for sustainable organisational performance.

Methodology of the Study

The study employed a quantitative, descriptive, and research design to examine the influence of work-life balance on the physical and mental health of MSRTC employees. A simple random sample of 100 employees from the MSRTC Thane Division depots was selected to ensure equal representation. Data were collected through a structured questionnaire comprising demographic details, a work-life balance scale, and physical and mental health indicators.

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The questionnaires were personally administered, with confidentiality assured, and collected immediately to ensure a high response rate. The data were coded and analysed using statistical software and applied inferential tests.

Data Analysis:

Hypothesis 1: Impact of Work-Life Balance on Physical Health

To investigate the impact of work-life balance on physical health, a simple linear regression analysis was conducted. The predictor variable was Work-Life Balance Score, and the outcome variable was Physical Health Score.

Table 01- Linear Regression Analysis – Effect of Work-Life Balance on Physical Health

Model	B (Unstandardized)	SE B	β (Standardised)	t	Sig. (p-value)	R^2
Constant	6.108	0.451	—	13.552	0	
Work-Life Balance Score	-0.87	0.157	-0.488	-5.537	0	0.238

Model Summary:

- R = 0.488
- R^2 = 0.238
- Adjusted R^2 = 0.230
- F (1, 98) = 30.653, p < .001

The regression model was statistically significant, F (1, 98) = 30.653, p < .001, indicating that work-life balance significantly predicts physical health. The R^2 value of 0.238 suggests that 23.8% of the variance in employees' physical health can be explained by their work-life balance.

Result: The regression analysis showed a statistically significant relationship (p < .001), indicating that variations in work-life balance are strongly associated with changes in physical health outcomes.

Inference:

Since the p-value is far below the 0.05 threshold, the null hypothesis is rejected. This implies that employees experiencing better work-life balance tend to report better physical health, while poor balance is linked to increased fatigue, stress, and physical strain. Therefore, work-life balance is an important predictor of physical health among MSRTC employees.

Hypothesis 2: Impact of Work-Life Balance on Mental Health

To examine the influence of work-life balance on mental health, a simple linear regression was conducted with Work-Life Balance Score as the predictor and Mental Health Score as the outcome.

Table: 02- Linear Regression Analysis – Effect of Work-Life Balance on Mental Health

Model	B (Unstandardized)	SE B	β (Standardised)	t	Sig. (p-value)	R^2
Constant	7.244	0.506	—	14.314	0	
Work-Life Balance Score	-1.187	0.176	-0.562	-6.728	0	0.316

Model Summary:

- R = 0.562
- R^2 = 0.316
- Adjusted R^2 = 0.309
- F (1, 98) = 45.263, p < .001

The model was statistically significant, F(1, 98) = 45.263, p < .001, indicating that work-life balance significantly predicts mental health. The R^2 value of 0.316 implies that approximately 31.6% of the variance in employees' mental health can be explained by their work-life balance.

Result: Regression findings were highly significant (p < .001), showing that work-life balance has a measurable and meaningful effect on mental health.

Inference:

The null hypothesis is rejected based on the statistical evidence. This means employees with better work-life balance report lower stress levels, reduced burnout, and improved emotional well-being. Conversely, poor balance contributes to mental exhaustion, anxiety, and reduced job satisfaction. Thus, work-life balance serves as a strong determinant of mental health among MSRTC employees.

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Conclusion of the Study

The study examined the influence of work-life balance on the physical and mental health of MSRTC employees from the Thane Division. Based on data collected from 100 respondents through a structured questionnaire and analysed using regression techniques, the findings reveal a significant relationship between work-life balance and employee well-being. Both hypotheses showed highly significant results ($p < .001$), indicating that work-life balance plays a crucial role in shaping employees' physical as well as mental health. Employees with better work-life balance tend to experience fewer physical health issues and report higher levels of psychological well-being, whereas poor balance contributes to stress, fatigue, and mental strain. Overall, the study concludes that work-life balance is a vital determinant of employee health, highlighting the need for organisational strategies and supportive policies that promote healthier work-life practices within MSRTC.

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Original Article

Impact of COVID-19 on Job Satisfaction among Librarian working in unaided colleges affiliated University of Mumbai in Mumbai and Thane District

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Abstract

The COVID-19 pandemic, which began in December 2019, had far-reaching effects on various sectors globally, with the education sector being one of the most significantly impacted. In India, the pandemic forced educational institutions to close and transition to online learning, disrupting the traditional roles and responsibilities of various staff members, including college librarians. Unaided colleges, which rely heavily on self-financing mechanisms, experienced distinct challenges compared to their aided counterparts. This paper investigates the impact of COVID-19 on job satisfaction among unaided college librarians in Mumbai and Thane districts, focusing on changes in work dynamics, technology adoption, job security, and professional development during the pandemic.

The study employs a mixed-methods approach, utilizing surveys and interviews to gather data from unaided college librarians. Results indicate that the shift to online learning and library services led to increased workloads, stress, and job insecurity among librarians, while technological challenges and a lack of training were also prominent. However, some librarians reported increased job satisfaction due to the flexibility offered by remote work and the opportunity to innovate in service delivery. The findings suggest that the pandemic has underscored the need for adequate training, emotional support, and greater recognition of librarians' roles in the education sector.

Keywords: *COVID-19, job satisfaction, college librarians, unaided colleges, Mumbai, Thane district, online learning, job insecurity*

Introduction:

The COVID-19 pandemic has posed unprecedented challenges to the education system worldwide, resulting in significant disruptions to teaching, learning, and administration. In India, educational institutions were forced to close their physical campuses and adopt online learning platforms, a transition that was particularly challenging for non-teaching staff such as librarians. Librarians, traditionally responsible for managing physical collections and supporting in-person academic research, had to adapt to new roles involving online information management, digital resource curation, and virtual support for students and faculty.

This paper explores the impact of the pandemic on job satisfaction among unaided college librarians in Mumbai and Thane districts of Maharashtra. These districts were chosen due to their dense population and concentration of both aided and unaided colleges, which present a unique opportunity to examine the specific challenges faced by unaided institutions.

Literature Review

Job satisfaction is a complex and multidimensional construct influenced by various factors, including work environment, compensation, professional development opportunities, job security, and the nature of the work itself. For librarians, job satisfaction is often linked to the ability to offer quality service, access to resources, and involvement in the academic community. The pandemic has, however, altered the nature of these aspects drastically.

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Previous studies on job satisfaction in the library profession have noted that job satisfaction is influenced by organizational support, opportunities for professional growth, and the autonomy to perform tasks (Budd, 2008;Lee & Lee, 2016). During the pandemic, several studies have reported a decline in job satisfaction due to increased workload, lack of job security, and challenges associated with the transition to digital services (Kaufman & Kaufman, 2020; Zuber, 2021). Furthermore, librarians' experiences varied significantly between institutions, with those in unaided colleges facing more significant financial and administrative challenges.

In India, where many librarians in unaided colleges are part-time or contractual employees, the uncertainty during the pandemic has led to increased concerns regarding job stability (Ravi & Gupta, 2021). While technological advancements have provided opportunities for service innovation, many librarians lacked the necessary training to effectively manage digital resources (Singh & Patel, 2020).

Research Objectives

The primary objectives of this study are:

1. To examine the impact of COVID-19 on job satisfaction among unaided college librarians in Mumbai and Thane districts.
2. To assess the challenges faced by librarians in adapting to online learning environments.
3. To understand the role of technological infrastructure, training, and institutional support in shaping job satisfaction.
4. To explore the potential factors that contributed to both positive and negative shifts in job satisfaction.

Methodology

This study employs a mixed-methods approach, combining both quantitative and qualitative research methods. A questionnaire survey was administered to 50 librarians working in unaided colleges across Mumbai and Thane districts. The survey consisted of Likert-scale questions designed to assess job satisfaction on various dimensions, including work environment, job security, professional development, workload, and the use of technology.

In addition to the survey, semi-structured interviews were conducted with 10 librarians to gain deeper insights into their personal experiences during the pandemic. The interview questions focused on the challenges they faced, their coping strategies, and their perceptions of the support (or lack thereof) from their respective institutions.

Data Analysis

The data collected through the surveys were analyzed using descriptive statistics, focusing on mean scores and standard deviations to identify trends in job satisfaction. Qualitative data from the interviews were analysed using thematic coding to identify recurring themes related to job satisfaction and challenges faced by librarians.

Results and Discussion

1. Impact of COVID-19 on Job Satisfaction

The survey revealed that the overall job satisfaction among unaided college librarians in Mumbai and Thane significantly declined during the pandemic. On a scale of 1 to 5, the average job satisfaction score dropped from 3.8 pre-pandemic to 2.5 during the pandemic. Several factors contributed to this decline:

- **Increased Workload:** 72% of respondents reported that their workload had increased due to the shift to online platforms, digital resource management, and virtual library services.
- **Lack of Technological Training:** 65% of librarians expressed dissatisfaction with the lack of proper training in using digital tools and resources, making it difficult for them to effectively support faculty and students.
- **Job Insecurity:** 58% of librarians reported increased anxiety regarding job security, especially those employed on a part-time or contractual basis. Many feared permanent layoffs due to the financial strain on unaided colleges during the pandemic.

2. Positive Aspects of Job Satisfaction

Despite these challenges, some librarians noted positive aspects of their work during the pandemic:

- **Flexibility and Autonomy:** 48% of librarians reported that working remotely allowed them more flexibility in managing their work schedules, contributing to a positive shift in job satisfaction.
- **Technological Innovation:** 30% of respondents appreciated the opportunity to innovate and experiment with new tools and resources, including virtual reference services, e-books, and online workshops.

However, the positive aspects were often overshadowed by the overall strain of increased responsibilities and lack of institutional support.

3. Institutional Support and Training

Institutional support was a key factor influencing job satisfaction. Only 40% of librarians reported that their institutions provided adequate support for adapting to digital environments, such as providing training, upgrading technology, or offering emotional support. This lack of institutional commitment was particularly evident in unaided colleges, where resources were limited.

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4. Coping Strategies and Professional Development

Librarians employed various coping strategies to manage stress and adapt to the new work environment. These included self-directed learning through online courses (38%), peer collaboration (27%), and participation in professional development webinars (22%).

Conclusion

The COVID-19 pandemic had a profound and multifaceted impact on job satisfaction among unaided college librarians in Mumbai and Thane districts. While some librarians experienced increased flexibility and opportunities for technological innovation, the overwhelming challenges—such as increased workload, lack of training, and job insecurity—contributed to a decline in job satisfaction.

To improve job satisfaction in the future, it is recommended that institutions provide targeted training in digital technologies, foster a supportive work environment, and ensure better job security, especially for part-time and contractual employees. Moreover, librarians should be recognized for their evolving roles in the digital transformation of education.

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Original Article

An Awareness of Women's Empowerment Through Public Libraries

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Abstract

The public libraries have recognised their role to satisfy information needs of all types of people, as well as the women's community in society. A public library is a welfare institution that facilitates education, promotes education, offers opportunities for healthy recreation, and disseminates information to all facets of society. Public libraries serve as community education hubs, providing sociocultural enrichment and disseminating information to all segments of society. It is possible to comprehend the idea of women's empowerment by first considering empowerment. The right to decide and shape change to ensure control over material and nonmaterial resources has been defined as the concept of "empowerment." Empowerment is a multifaceted process of raising awareness and developing capacity that results in increased control, participation, and decision-making authority as well as transformative action that allows people to reach their full potential. Women's empowerment can be seen as the culmination of a number of interconnected and supportive elements. To encourage community members to read, use books, access information and knowledge, and enjoy all of the public library's educational and recreational resources; to assist rural children and women in maintaining the knowledge they have gained from their education; to assist a rural community in understanding the nation's social, political, and economic endeavors and nation building efforts and to support the development of women empowerment, and social, economic, and health care development in the society. The present study focused on the role of public Libraries in women's empowerment.

Key words: *1. Concept of Public Libraries, 2. Women's empowerment through public library Information, 3. Need for awareness in the women's community*

Introduction:

India is a welfare State governed by a Constitution, which holds the pride of place in the hearts of its citizens. It lays special emphasis on the protection and well-being of the weaker sections of society and seeks to improve their economic and social status on the basis of constitutional guarantees spelt out in its provisions. It shows a particular regard for women and children, and notwithstanding the pervasive ethos of the doctrine of equality, it contemplates special provision being made for them by general awareness. Women are an integral part of society. Women have become equal participants in many respects at all levels of society, and they play an important role in determining the destiny of a nation.

In a democratic country like India, it is necessary to create awareness about the rights and duties among women for the development of the nation. Democracy today has become a social democracy, which aims at the welfare of all its classes.

In order to prepare people for the demands of the modern information society, public libraries typically offer a substantial means of obtaining such knowledge at no cost. Awareness is a process of self and social empowerment that moves women, children and other poor, weaker sections of people not only to activate the rights they do have, but to redefine and reshape those inadequate ones as expressed in practice[1]. Awareness can empower women to demand justice. Accountability and effective remedies at all levels.

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The library brings the world to every home. The library is a close friend of man. The library is a teacher. A galaxy of information would be available in the libraries. Libraries made great persons like Karl Marks, Sarvepalli Radha Krishna and Dr. B.R. Ambedkar as ideologists who brought social change to their contemporary societies. The library is a laboratory to conduct social practices. As a court of law is a temple of justice, a public library is a temple of learning, and such library service plays and has to play an effective and efficient role in awareness. Public Libraries are a treasure house of knowledge in various formats, and information is an essential commodity these days for every human activity in the world. They play a key role in the overall development of any nation as they store all findings derived from human knowledge and scientific research. Information is power; it is as crucial as oxygen to users: it needs to be put in the service of the whole users' community. The library environment is becoming more and more competitive in its dealings as well as functions which and culture is fast transforming into an enterprising nature. It has revolutionised almost all fields of human activities, and its impact on education is quite important. The 21st century is witnessing a knowledge revolution resulting from rapid growth in information[2].

The development aspects of social changes in India have given birth to a new awakening among women and children, the poor and the working classes. In the awake of increasing social awareness of the irregularity of the development process, the gaps between the rich and the poor, the agricultural labours and the rich peasants, the basic contradiction facing the Indian constitutional system is met in the efforts to make the instruments of women and children protection, legal bargaining, as well as pedestal available to all.[3]

Concept and Objective of Public Libraries:

The public libraries have recognised their role to satisfy information needs of all types of people, as well as the women's community in society. For many years, public libraries have been essential resources for advancing literacy, education, and information access in local communities. They also play an important role in advancing women's empowerment and gender equality in the rapidly changing social scene of today. Public libraries become effective venues for increasing awareness among women, particularly those who are underprivileged, underserved, or reside in rural areas, by providing free and open access to knowledge. Numerous obstacles frequently stand in the way of women's access to economic opportunities, health care, education, and legal assistance. By serving as hubs for community support, lifelong learning, and information sharing, public libraries can aid in closing these gaps. Libraries may raise awareness of important topics including women's rights, health, digital literacy, entrepreneurship, and more by implementing focused programs and providing resources. In addition to enhancing women's quality of life, public libraries also help to fortify communities and families. Therefore, creating inclusive and effective community development plans requires a grasp of the idea and goals of using public libraries to raise women's awareness.

The library is a centre for information on sociological acts and activities. Library movement was launched as part of the freedom struggle. After the advent of the English language galaxy of books and literature has provoked thoughts among the people. After independence, several changes have been brought to the library information. The library is a powerhouse of Knowledge. Libraries occupy an important place in modern society as agents of educational, informational, political, economic and antiquarian functions. Libraries are the only agency devoted solely to the purpose of collecting, preserving, transmitting and securing the widest and most effective use of the records of civilisation by the society of which it is a part. The main objectives of public libraries are to help because of the financially weak so that they cannot lose their rights. Not only financial weakness, social or cultural indifference also should be the reason for unfairness in the society and to promote awareness among the people libraries will help more they are very useful in creating awareness among people.

Public Library and Society:

Public library is considered an essential part of a modern society and play a very important role in the community. It should be regarded as a social force that can greatly influence the society being served. It can help in safeguarding democracy, creating political awakening, bringing social awareness and fostering creative leisure activities. A public library can play an important role in helping different sectors of the community. It can help farmers to improve production. Children can develop a love of reading at a public library, which can result in the early development of reading habits. Students of all ages can benefit from it. It can give job information and assist those without jobs in searching for better opportunities. A public library may be the sole resource available to a member of the public who wants to educate themselves; it can also serve the elderly, the impoverished, and those with disabilities. In addition to improving the welfare and advancement of the communities they serve, public libraries can be crucial in fortifying the fundamentals of democracy.

These can help in the achievement of the aspirations of the people.[4] Library and society are Interrelated to each other because nowadays libraries have become a part and parcel of society. Like other social institutions, it is

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playing an important role in the all-around development of people as well as society. The different roles played by public libraries in society are

- The public library acts as a chief instrument for accumulating and disseminating man's intellectual heritage.
- Public library is no longer a museum of books, and today they are essentially universities of the people.
- The public library is the source of continuing education, which helps people, deprived of formal education.
- The success of democracy is based on mass education, which needs the assistance of public libraries.
- The formal schooling can be supported and supplemented by public library services.
- The public library brings social integration while acting as a community centre.[5]

Library Information As Crucial As Oxygen To Women, Children And Poor People:

Public library also suggests improving the girls and empowering women. Women are crucial factors for the growth and development of society. Public Libraries differ greatly in size and content according to the different needs of the Library users. Any library is likely to have been periodicals, Magazines, Novels, Books, Journals, Newspapers, historical and philosophical works etc. the public library has designed to assist students, children, women, teachers, formers, retired persons of the public library. Therefore, the public library of public is establishing itself to meet the information needs of different library user groups the fulfil their interest. The public library plays a major role in society; it fosters the development of knowledge in all aspects. Information is as crucial as oxygen; therefore, a public librarian's position is to regulate the flow of information and its services.

Empowerment of Women:

The empowerment of women is an essential objective to fully engage them in economic life and achieve sustainable growth throughout the world. Providing basic facilities to women is on form of empowerment[6]. Empowering women is the key issue in developing nations despite the fact that women are an integral part of any society, yet their involvement in decision-making via their active contribution in economic activities is very low[7]. Women's empowerment and economic development are interlinked, where on one hand, development alone can play a major role in driving down inequality between women and men, while on the other hand, empowering women can benefit development. Empowerment of women is an important issue in the current economic situation. Women's empowerment is gaining importance in the world. Women's education and empowerment are very much needed for the economic growth of a country. Educated women will get opportunities and better status in society. Educated women can help their bright plan their household budget and save for their future[8].

Empowerment of Women through Public Libraries

Public libraries are very important in the life of any nation. It attempts to meet various needs of readers, provide various information sources and services. Public libraries play an important role in the women's empowerment process. Hence, it has been established as a crucial place in the life of women, as it provides information that is essential for women's empowerment. It will help their own development, family and community development. From the analysis, it was stated that the library has to play a vital role in the improvement of women[9]. Public libraries' various information sources of the library are not sufficient to meet the needs of women users, and the infrastructure and facilities of the library have to be improved. The following aspects were created by NCW for legal awareness for women:

1	Creating awareness among women about their constitutional entitlement, legal Rights, and remedies under various women-related laws
2	Facilitating a process of accessing justice by giving information about means of redressal available for women.
3	Enlightening women about alternative dispute settlement for civil matters
4	Imparting knowledge about local issues and social practices affecting the rights of women[10].

[5] Raju G VSLNAN, Effect of library legislation on public library development in A.P. , Visakhapatnam , 1982(Thesis) p.5

[6] Saima khan (2018) women empowerment key to socio economic development, International journal women empowerment 4(1) , p.5.

[7] Muhammad wagos Khalid (2020) socio economic sectors and women's empowerment : Evidence from Punjab, Pakistan, international journal volume -34 2020 issue p-144-168

[8] Shanty Savn Murthy (2019) Impact of socio economic development on women empowerment in India, International journal of engineering and advanced technology , ISSN 2249-8958, Volume -8, Issue-P.3

[9] Sasi P.K (2014) Role of public libraries on women empowerment: A Study with special reference to District Library Malappuram, IOSR Journal of Humanities and social science (IOSR- JHSS) , vol. 19, Issue 10,p. 36-42

[10] http//www.gnlu.ac.in/gnlunews/information%20Brochure%20-%20LAP.pdf

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India is the second-largest country by population among all the countries of the world. People of different communities live in our country. In our lives, education plays a vital role. Just as every man has the right to education, so does every woman. Education can empower women and Children.

A woman occupies an important place in the socio-economic and political structure of her society. Women's empowerment is an important thing to reinforce their participation in decision-making, which is the most vital key to socio-financial development[11]. "Empowerment" is not a product of a revolution but of evolution. Amid the most recent three decades, there has been an ocean change in the idea of Women's empowerment.[12] Empowering women has become the focus of considerable discussion and attention all over the world, as well as associated with research in many educational disciplines, including that of adult education. Today, women are stigmatised and rebuked by the family and society. In the wake of increasing social awareness of the asymmetry of the development process, the gaps between men and women, children rich and the poor, agricultural labourers, and the rich peasants.

Empowerment of Women through Awareness

Empowerment is a multi-dimensional social process that helps women to gain control over their lives. Empowerment in the context of women's development is a way of challenging and overcoming barriers in a woman's life through which she enhances her ability to shape her life and environment. Education gives empowerment, but awareness will provide empowerment among women, which is an essential concept in the era of globalisation. The awareness of gender equality, environmental degradation, health, care, legal education, etc., is essential for the health growth of society. Empowerment includes higher literacy levels, education, better healthcare, equal ownership of productive resources, increased participation in economic and commercial sectors, awareness of rights and responsibilities, improved standards of living, self-reliance, self-esteem and self-confidence. There is a considerable negative impact of gender disparity on the socioeconomic condition of tribal women in India.

Women are an integral part of society. Women have become equal participants in many respects at all levels of society, and they play an important role in determining the destiny of a nation. Empowering women socially, economically, educationally, politically and legally is going to be a Herculean task. Women have been the victims of violence and exploitation by a male-dominated society all over the world. India is no exception to this unfortunate situation.

Women and Social Status In Society:

Women are crucial elements for the growth and development of Indian society. Illiteracy is the bane of the Indian polity retarding progress all around. Lack of awareness complicates the problem further, resulting the continued inequality, Injustice, and disempowerment of women and children and other poor people. If law is equal for all, legal awareness should be universally available. Woman is the greatest gift of god to humanity. Women, in our country, belongs to a classes or group of society who are in a disadvantageous position on account of several social barriers and impediments and have therefore, been the victim of domination at the hands of men with whom they, fortunately, under the Constitution enjoy equal status, women also have the right to life and liberty, they also have the right to be respected and treated as equal citizens.[13]

A social awareness for equal rights of women needs to be propagated to the remotest of areas. Courts, commissions or watch-groups may provide remedial measures only and that too to a limited extent; what we need now is a revised system characterised by gender justice and equality, wherein women may live a healthy, dignified and fearless life. As far as India is concerned, it must be recognised that while the society is comparatively stable, it is also stratified, exclusive, and patriarchal. In the field of social and welfare services, and also social security, the pattern of development has reflected imbalances and dole dependency over the years.

Coming to the position in India, as it is a pluralist country. In the initial stages of human existence on the planet Earth, woman is treated as property of a man, and the mightier person uses them to exploit the weak and take away their property (women). But with the passage of time dignity of women is recognised in many parts of the world in various phases of the history of mankind. Although the ideology of treating women has almost vanished but the atrocities of men over women still haunt as a ghost from the grave. Whatever the form of atrocity, it is based on the foundation of the so-called weakness of women[14]. Women do not get equal status to men. They are humiliated and abused at school, college, workplace and everywhere. Men always tended to use women as objects of amusement and pleasure. Women are asked to look upon men as the meaning & justification of their existence. Her existence becomes meaningful and complete with marriage and motherhood. Since independence, several attempts have been made to gain back the same liberty and status for women[15].

Contribution of Education to Women's Development:

[11] Singh, K. (2022, January 07). Empowerment of Women in the Legal Profession in the Independent India
[12] Justice R.C. Lahoti, Women's Empowerment—Role of Judiciary And Legislature, (2005) 2 SCC (Jour) 49.
[13] Bodhisattwa Gautam V Subhara Chakraborty, AIR 1996 SC 922: (1996), I SCC 490
[14] Women &Law, Krishna Pal Malik, Allahabad Law Agency, First edition,2009.
[15] Ibid

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Education is fundamental to social development. Illiteracy is invariably associated with deprivation and socio-economic underdevelopment. Realisation of this basic truth ultimately found expression in the resolution. The vast literature of social science acknowledges education as the most important correlate of development. The role of education, as a direct investment, can be appreciated considering the spectacular recovery of war-torn economies of Europe and Japan after the Second World War.

In India, women are more women than men. Most of these women are living in bad conditions. They have been suffering various problems since independence. The Government has implemented several empowerment programmes to develop or empower women. But they have not made any remarkable improvement in their living conditions. It can be mainly attributed to the non-availability of education and information on the emerging technologies. Therefore, transfer of new technologies to the rural communities has become essential to empower them with education, power, and position; it challenges social conventions and customs. Women's education influences all the family members with whom she deals, and it helps to eradicate poverty and thereby triggers development. Women's education influences all the family members with whom she deals, and it helps to eradicate poverty and thereby triggers development[16].

Need For Awareness Programmes at Public Library:

As a social tool, libraries strive to improve society and the communities they are a part of. The libraries will also serve them with nascent information as well as with state-of-the-art information in their subject fields. Supply of materials of books, on competitive examination, career choice and advancement, legal materials, farmers' materials, etc, improvement of vocational skills as well as do-it-yourself type books will help the youth, women and all kinds of users a great deal. Initiatives to raise awareness of the value of libraries. Social development can benefit from the resources. General awareness and legal awareness programs for women, children, farmers, and others could be launched here for the summer. Distributing information always requires a stage, and it's crucial to keep in mind that public libraries were at the forefront of both information dissemination and awareness-raising for the idea of an independent India. Moreover, the Indian people had been motivated to fight for their freedom by this awareness. Creating awareness among women through public libraries is a powerful and reachable way to foster education, empowerment, and societal development. There is a trend among almost every expert to encourage people to organise legal awareness programs, i.e., meetings, symposia, seminars for common people. The public library should be well equipped with the most recent information to support the participants with legal information, and it is the best way to raise legal awareness among the common people.

Awareness of development aspects about issues faced by women and atrocities against them should be raised in public libraries for the benefit of young women and old women, old people, children, etc., so that they can effectively tackle their problems in their day-to-day life. Given increasing crimes against women and violations of human rights, knowledge of law would help the needy get their grievances redressed without the assistance of others.

Need of Awareness Programmes, I.E., Meeting, Symposia, And Seminars In Public Libraries:

The media and the voluntary social welfare agencies play an equally important role in the dissemination of information on rights and responsibilities among the people. Professional associations, trade unions and public spiritual bodies render various types of services in this direction. Above all, the role of institutions of learning, more importantly, of Educational institutions, is of paramount significance. It is indeed part of the social responsibility of all persons to ensure that informs every aspect of life and constitutional culture is developed in society, as well as women, children and poor people, in the interest of order and progress.

Awareness of legal aspects about issues faced by women and atrocities against them should be raised in public libraries for the benefit of young women and old women, old age people, children, etc., so that they can effectively tackle their problems in their day-to-day life. Given increasing crimes against women and violations of human rights, knowledge of law and other issues would help the needy get their grievances redressed without the assistance of others. Public libraries offered various programmes to their users in social, cultural, legal fields, etc. Hence, the investigator tried to find out among their programs. Which programmes are most helpful for women and other people? Public library provided various services like cultural programmes, seminars, debates, job orientation programmes, legal awareness programmes, etc, to its potential users. Here, investigator try to identify which service is most commonly used by the public for their awareness. Public library is social instruction as well as guidance. Therefore, public libraries are in a very important place to regulate the flow of information; it is the right place to conduct awareness camps.

Conclusion

The goal of the Indian Constitution is a “welfare idealism” covering a wide range of socio-economic aspirations of its people, as well as women and children. The founding fathers thought that the greatest way to assess the state's usefulness would be to look at how it affected the welfare of the average person. They committed the nation to ensuring "social, economic, and political justice; liberty, equality, and dignity to all its citizens."The fundamental

[16] Ravikuar S k (20006) Indian women 1st ed, Jaipur, deep Publication, p. 32-46

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element necessary for our constitutional democracy to survive is awareness or literacy. Since public libraries offer informational, educational, and recreational resources that are very beneficial to society, they play a significant role in social development. By giving women equal access to information, resources, and opportunities, public libraries significantly contribute to their empowerment. Libraries are in a unique position to help women learn about their rights, health, education, and economic potential because they are inclusive, community-based organisations. Libraries may assist in closing the gender gap and empower women to live informed, independent, and empowered lives by providing outreach activities, safe learning environments, and tailored programs. In addition to promoting gender equality, investing in women through public libraries also contributes to the development of more resilient, knowledgeable, and just communities. Families and societies benefit from empowered women, and public libraries may play a key role in bringing about that empowerment. Among many other problems, today's reality includes illiteracy, unemployment, and a bad sex ratio, all of which can be directly or indirectly attributed to insufficient education. It is important to realise that these public libraries have the capacity to significantly reduce or perhaps eliminate such atrocities. This can be achieved through the transmission of knowledge about the nation's legal system and laws.

Availability of library, its services and its role in development of society and awareness should be publicised through mass media, i.e., Television, Radio and Newspapers. Help can also be taken from local leaders and educated persons of the village in such publicity. NGOs, local leaders, and progressive farmers at the local level can also play an important role in removing illiteracy and poverty among the people and making them aware of the importance of libraries in their personal development as well as development of society as a whole through awareness camps.

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Original Article

A Study on Overtrading Behaviour and Its Impact on Retail Investors

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Abstract

Over-trading appears to be a very normal practice in the current stock market scenario. However, its severity is like a raging fire that is turning the hard-earned, lifelong wealth of investors into ashes. Over-trading is a major cause of financial loss and stress. Therefore, this study focuses completely on researching the behavioral causes and potential solutions for this issue. The stock market is currently a vital place that triggers the financial economy, and the majority of people in India who are trading in the share market are facing this serious problem. Hence, this research is extremely important and sheds light on these very aspects.When trading in the stock market, investors' emotions heavily influence their decisions. They often don't realize when they become trapped in the cycle of over-trading. After suffering substantial losses, the investor, who originally entered the market with the goal of growing their portfolio, becomes utterly frustrated and falls into severe financial stress and pressure.

Keywords : *hard - earned, financial loss, over - trading, influence*

Introduction:

The Global Importance and Behavioral Pitfalls of Share Market Trading

Globally, the share market is currently indispensable, as all financial activities, from the national to the global economy, are reflected in it.

Due to the current economic environment, including factors like unemployment, and the potential for significant profits through intellectual and technical study, a large population is currently engaging in the share market. While the share market offers substantial opportunities for financial growth, accepting these offers and trading requires great discipline, which is not acquired overnight. Consequently, over-trading—a dangerous, ingrained habit—can prove very costly. This refers to the excessive and unwarranted buying and selling of stocks done without proper study or analysis.

Retail investors and individual market participants often fall into the trap of over-trading by treating it like gambling or speculation, relying merely on luck or a guess, instead of applying the necessary analysis, long-term strategies, or technical analysis required for trading or investing. This demonstrates a clear lack of analysis on their part.

Moreover, there are online trading applications that constantly dominate social media, promoting the idea of how one can become rich overnight or earn quick money. Many investors fall for this temptation, getting caught in the web of impulsive trading, and ultimately becoming victims of over-trading.

Objectives of the Study

The objectives for this research paper are as follows:

1. **To Study the Psychological Drivers:** There is a saying that the depth of the sea can be measured, but studying the inner workings of the human mind is very difficult.
2. The turmoil and transactions occurring within the mind can be as intense as a volcanic eruption

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Therefore, a crucial objective of this paper is to study the psychological factors that contribute to over-trading.

2. **To Understand the Impact of Wealth on Psychology:** The income and earnings of every investor represent significant wealth. Another key objective is to study and understand how the potential impact of this wealth (both gains and losses) affects an investor's human psychological or mental behavior and subsequently influences their overall trading activity.
3. **To Propose Concrete Solutions for Behavioral Change:** Most importantly, this research aims to analyze and suggest concrete measures and strategies to reduce the behavior of over-trading. This includes providing effective solutions to overcome the "ghost of over-trading," which leads to financial, portfolio, and psychological damage, and proposing actionable recommendations based on detailed analysis.

Literature review

1. Overtrading and Working Capital Stress in Growing Firms"
Published in: Journal of Business & Accounting
Summary: Explains how firms that grow faster than their financial capacity face cash-flow shortages, declining liquidity and high short-term debt, leading to overtrading.

2. "Overtrading: A Major Cause of Small Business Failure"
Published in: Small Business Economics
Summary: Shows how rapid sales growth without adequate capital causes operational strain in SMEs, resulting in poor cash management and insolvency risk.

3. "Working Capital Management and the Risk of Overtrading
"Published in: International Journal of Finance and Economics
Summary: Empirical study linking inefficient working capital cycles (slow receivables and high inventory) to a higher probability of overtrading.

4. "Financial Ratios as Indicators of Overtrading"
Published in: Accounting and Finance Review
Summary: Identifies falling current ratios, rising debtor days, and increasing reliance on overdrafts as key early warning signs of overtrading.

5. "Overtrading Behavior in Financial Markets"
Published in: Journal of Behavioral Finance
Summary: Defines investor overtrading as excessive trading driven by overconfidence, leading to lower net returns despite high activity.

6. "Overconfidence and Overtrading Among Retail Investors"
Published in: PLOS ONE
Summary: Finds that traders with higher overconfidence and stronger emotional triggers tend to trade more frequently, harming long-term returns.

7. "The Effects of Market Sentiment on Intraday Overtrading"
Published in: Finance Research Letters
Summary: Shows that rapid shifts in online sentiment and news increase unnecessary intraday trading volume and volatility.

8. "Preventing Overtrading Through Cash Flow Forecasting"
Published in: Journal of Financial Management
Summary: Suggests that better forecasting, credit control and inventory planning reduce the risk of overtrading in high-growth firms.

Scope of the Study

The scope of this research paper is centered on investigating the behavioral focus and assessing its significant detrimental impact on Indian retail investors.

It is particularly important to consider the Indian youth, who are extensively using online trading platforms like Zerodha and Angel One. The easy availability of these apps and the resulting attraction to quick money—money earned without any significant intellectual or physical effort—has shaped a specific, potentially flawed, mindset regarding wealth creation.

A major focus of the study is to understand **why** the Indian public, despite actively participating in the share market, is consistently getting caught in massive loss cycles.

Given the depth of this issue and the specific focus on Indian investor behavior, a dearth of extensive research papers on this subject is currently observed. Therefore, the scope of this study is primarily limited to secondary information available on the topic.

Research Methodology

The research methodology in this paper is based on descriptive research. No numerical data has been included. The methodology relies entirely on secondary data, drawing upon studies of articles, reports, and online observations. Overall, the research methodology was adopted in this manner to present a conceptual financial perspective.

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Concept of Overtrading

Overtrading can be defined as a scenario where there is excessive buying and selling of stocks without any proper analysis or established strategies.

In the absence of a concrete plan or rational thought process, trading decisions are driven purely by emotions or a lack of understanding. This often resembles gambling, where trades are executed based on luck rather than logic.

Key Drivers and Behaviors:

- **Chasing Volatility:** Traders often feel compelled to trade simply because the market is moving fast. They believe there is a higher opportunity to make money, so they enter trades based on the "flow" of the market without understanding the underlying fluctuations.
- **Constant Switching:** Traders often enter the market to make quick profits and switch rapidly from one stock to another. This creates unnecessary complexity and leads to excessive transaction volume.
- **Social Media Influence:** Currently, there is a surge of stock market content on platforms like YouTube and social media. "Finfluencers" often spread rumors or share information without deep knowledge. This confuses traders, creates mental chaos, and misguides them, contributing significantly to the problem of overtrading.
- **Psychological Factors:** Overtrading is often fueled by impulsiveness, overconfidence, excitement, or the Fear of Missing Out (FOMO)—the fear that if a trade isn't executed immediately, a specific market move (candle) will be missed forever.

The Consequences:

This approach does not reflect any fundamental change in a long-term portfolio. Instead, it is a reaction to market chaos and rumors. The negative impacts include:

1. **Diminished Returns:** Excessive trading eats into investment returns (often due to transaction costs and poor entry/exits).
2. **Increased Stress:** It significantly raises the trader's stress levels.
3. **Loss of Capital:** Profits that could have been accumulated slowly and steadily over the long term can be wiped out in moments due to one wrong, impulsive move.
4. **Recovery Time:** Once the capital is lost, rebuilding the portfolio can take a significant amount of time.

Behavioural Analysis of Overtrading

This section outlines the behavioral patterns and psychological factors that contribute to the phenomenon of overtrading.

1. Excessive Overconfidence: Investors often harbor an unfounded belief that they can consistently "beat the market." This overconfidence leads to excessive buying and selling, as they overestimate their predictive abilities.

2. Fear of Missing Out (FOMO): A significant driver is the anxiety caused by seeing others make profits. Traders feel they must act immediately to secure quick gains. Consequently, trades are executed without proper analysis or rational thought, often resulting in losses rather than the desired profits.

3. The Gambling Attitude: Some traders approach the market with a gambling mindset. They deliberately ignore risks and focus solely on one side of the equation—the potential for profit—while living in an illusion. The possibility of loss is willfully neglected. This one-sided perspective fuels overtrading and inevitably leads to financial loss.

4. Revenge Trading (Chasing Losses): A critical aspect of overtrading is the desperate attempt to recover previous losses. Instead of stepping back, traders become aggressive, abandoning all prudence/caution in a hurried attempt to make money back. This reactive behavior compounds the damage, increasing losses rather than recovering them.

5. Reaction to External Triggers: Situations often spiral out of control when decisions are based on impulsive reactions to app notifications, news flashes, or algorithmic recommendations. Falling prey to these external influences leads to poor decision-making and subsequent losses.

6. Herd Mentality: Due to the habit of following the crowd, traders often look at what others are doing rather than exercising independent thought. By adopting this "herd mentality" and failing to do their own research, they harm their own portfolios.

7. Unchecked Greed: Even when a trader has secured decent profits, greed can take over. Driven by the desire for *more*, they ignore market symptoms and global cues. This leads to "mindless" trading that is completely opposite to disciplined strategies.

Conclusion on the Concept

Overtrading has become a normalized but destructive concept where aggressive buying and selling occur without rationale. It is a trap that many traders find impossible to escape.

Impact of Overtrading on Retail Investors

The Adverse Effects of Overtrading on Retail Investors

This section examines the severe consequences of overtrading on retail investors. Functioning like a "silent killer," overtrading gradually deteriorates a trader's financial, mental, and physical well-being.

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1. Erosion of Capital (Capital Loss): The primary consequence is the rapid depletion of invested capital. Retail investors often enter the market with small amounts of hard-earned money, aiming for decent returns. However, due to poor timing, impulsive decision-making, and a lack of risk management, aggressive trading erodes the principal investment. Instead of generating returns, the focus shifts to survival as the original capital vanishes.

2. The Burden of Transaction Costs: Traders often overlook the cumulative impact of costs associated with high-frequency trading. Every transaction incurs brokerage fees, GST, taxes, and platform fees (charged by brokers like Zerodha, Angel One, etc.).

- **The "Net" Reality:** While a trade may appear profitable on screen, the net amount realized the next day is often significantly lower due to these deductions. Overtrading leads to excessive "churning" of the account, where profits are consumed by fees.

3. Psychological and Physiological Stress: Overtrading creates immense financial pressure and takes a toll on mental health.

- **Constant Anxiety:** The constant monitoring of market volatility (e.g., watching every candlestick move) triggers fear and anxiety.
- **Physical Symptoms:** Large positions combined with market fluctuations can lead to physical symptoms such as increased heart rate, blood pressure issues, and mood swings. This state of constant stress impairs rational decision-making.

4. Short-Termism (The Hare and the Tortoise Analogy): Overtrading is fueled by a desire for quick, short-term gratification, often at the expense of long-term wealth creation.

- **Ignoring Fundamentals:** Investors ignore fundamental analysis and long-term portfolio building.
- **The Fable:** Similar to the fable of the *Tortoise and the Hare*, traders who rush aggressively (the Hare) to "win the race" often lose. Conversely, the "Tortoise" approach—slow, steady, and disciplined—is ignored, leading to failure in the stock market.

5. Absence of Learning and Analysis: A key characteristic of overtrading is a stagnant learning curve. Ideally, one should continuously learn and analyze past performance. However, overtraders rarely conduct post-mortem analyses of their losses. Instead of identifying the root causes of their errors, they repetitively make the same mistakes, driven by the urge to trade rather than the urge to learn.

6. Poor Discipline and Strategic Void: Success in the stock market demands strict discipline. Overtrading represents a total collapse of discipline and the absence of strategy.

- **The Self-Made Trap:** For those seeking income, undisciplined trading is akin to digging a "well of loss" for themselves. Once they fall in, escaping becomes difficult. This behavior turns potential opportunities into financial disasters due to a lack of self-control and proper planning.

Findings

Major Research Findings on Overtrading Causes

The study reveals several key factors contributing to overtrading among retail investors, highlighting psychological, structural, and educational deficiencies.

1. Emotional and Psychological Vulnerability (The Root Cause)

The major cause is identified as **emotional and psychological weakness**. While market conditions are undeniably complex—fluctuating due to global events, national/international news, and large operator activities—it is the investor's own negative entanglement with these factors that causes loss. The individual's mental state, negative bias, and compromised thought process lead directly to overtrading.

2. Impact of Digital Accessibility and Over-reliance on Trading Platforms

Young investors, in particular, place excessive trust in and are easily influenced by trading applications (such as Zerodha or 5Paisa) promoted heavily on social media.

Easy Functionality: These platforms are built for ease of use and instant access, drastically lowering the barrier to entry.

Lack of Control Perception: Traders fail to recognize that the easy functionality and high frequency of trading benefit the platforms (via commission/fees). Driven by the desire for quick profits, individuals begin trading without proper due diligence and quickly fall into the overtrading trap.

3. Deficiency in Financial Literacy

There is a significant and widespread absence of proper financial education among the trading population. This fundamental deficiency leads directly to poor investment decision-making. As a result, the financial risk is unnecessarily escalated, making the recovery from subsequent economic setbacks extremely challenging.

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4. Erosion of Discipline and Caution

A noticeable lack of disciplined behavior and caution is evident. This decline is largely driven by behavioral factors:

FOMO and Greed: The Fear of Missing Out (FOMO) and the intrinsic greed to maximize profits quick.

Influence of Quick Money: The powerful influence of the perception that trading offers instant wealth.

5. Impact of Low Capital Requirement (Accessibility)

Modern trading applications allow individuals to initiate trades with minimal capital. Many traders start with a small investment, driven by the false and unstudied expectation of multiplying their money rapidly. They gradually increase their capital without any rigorous analysis or formal study, which leads to repeated overtrading and compounding their financial losses.

Recommendation

1. While investing in any of these, whether in fundamentals or in option trading, there should be a proper clear investment plan in which you should consider what your goal is, how much time period you want to invest for or what kind of return you want and how much risk you can take together. We should prepare a proper plan by considering all these things.
2. We should avoid checking the market constantly because constant checking increases our fear and creates greed in it and due to this, over-trading can occur. Therefore, it is necessary to take a break sometimes. Trade only when necessary. There are moments in the market that are happening suddenly. Avoid buying and selling too much and trade only when really necessary.
3. Another important recommendation is that these trading apps are created in a very easy way in which any person can easily trade and can exit as many times as he wants. Since it is very easy to access, it has some good functions like stop loss and limit, which can prevent your emotional decisions and reduce the amount of trading you do.
4. After that, there are some important coaching institutes or coaching apps that provide you with some basic financial knowledge. By learning about the stock market, you can get knowledge about trading in a good way. It is very important to take it. It is very important to have financial knowledge about how to reduce stress and financial loss without doing excessive trading.
5. After that, you should prepare a fixed monthly trading budget or a budget, in which you can trade according to how much risk you can take. So that you can prevent the losses that will happen while training by breaking discipline and becoming emotional. That budget is very important and most importantly, a lot of money.

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Original Article

Cultural Tourism, Intangible Heritage, and Regional Development in the South Kokan Region of Maharashtra

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Abstract

The Kokan region of Maharashtra between the Arabian Sea and the Sahyadri mountains, represents a culturally vibrant and ecologically sensitive landscape shaped by centuries of historical transitions and diverse socio-cultural communities. The region includes districts like Ratnagiri and Sindhudurg, has a rich volume of intangible cultural heritage (ICH) that is derived from its tribal, coastal, and agricultural customs. A strong bond between people and land is shown in rituals, festivals, traditional livelihoods, and culinary customs, as well as folk arts like Dashavatar, Chitrakathi, and Jakhadi dance. Kokan's cultural landscape has been influenced by the dominion of the Mauryas, Satavahanas, Silaharas, Portuguese, and Marathas under Chhatrapati Shivaji Maharaj. Kokan's increasing popularity as a destination for cultural tourism now presents enormous potential for regional growth, but it also raises questions about environmental strain, cultural commodification, and the loss of authenticity.

This study critically examines the intersection of cultural tourism, intangible heritage, and regional development in South Kokan by using secondary data, scholarly literature, government reports, and documentation. Existing research highlights the potential of tourism to generate employment, enhance infrastructure, and revive local traditions. However, it also reveals major gaps in sustainability, community participation, and heritage sensitive planning. Rapid commercialization increasingly transforms cultural practices into marketable performances, risking the dilution of their traditional meaning. Additionally, inadequate institutional support, limited heritage mapping, and inconsistent policy frameworks hinder long-term preservation.

Malvani cuisine are positioned primarily as economic assets with minimal formal heritage protection. This imbalance underscores the need for a more holistic approach to cultural resource management. The study argues that sustainable tourism in Kokan must anchor itself in community led models, capacity building for cultural practitioners, heritage sensitive infrastructure development, and regulatory mechanisms that align economic incentives with cultural preservation.

The research contributes to broader discussions on inclusive and sustainable development in culturally rich regions. According to the study, protecting Kokan's intangible heritage is essential for preserving cultural integrity as well as making sure that growth driven by tourism is resilient, equitable, and culturally authentic.

Keywords: *Cultural tourism, intangible cultural heritage, sustainable tourism, regional development, heritage management.*

Introduction:

The Kokan region, which is located along Maharashtra's western coastline in India which covers around 720 kilometers from the Arabian Sea to the Sahyadri mountain range, Kokan is known for its beautiful surroundings, beautiful beaches, waterfalls, and lively agricultural areas. Its unique geographical features have not only shaped the landscape but also the lives of its people, who have historically developed a distinctive way of life connected with the land and sea.

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A rich collection of customs, rituals, folk arts, and festivals that represent the region's varied heritage is created by the blending of coastal, tribal, and agrarian communities that make up Kokan's cultural identity. There are numerous indigenous communities in the area, and each has its unique customs, ceremonies, and handicrafts. The region's tribal groups follow their own customs, traditions, and creativity, which are frequently focused on community-based rituals and nature worship. In the meantime, Kokan's cultural liveliness is enhanced by agrarian societies with their traditional farming methods, agricultural festivals, and locally made crafts.

The southern part of the wider Kokan region, which is popular for its vast coastline and natural harbors, is made up of the Sindhudurg district. It was formerly a part of Ratnagiri district, but on 1st May 1981, Ratnagiri was divided into Ratnagiri and Sindhudurg, the district which bears the name of the Sindhudurg Fort constructed by Chhatrapati Shivaji Maharaj, in order to improve administrative efficiency and encourage the expansion of industry and agriculture. Sawantwadi, Kudal, Vengurla, Malvan, Devgad, Kankavli, Vaibhavwadi, and Dodamarg are the eight tahsils that make up Sindhudurg today.

The Kokan coast was ruled by the Mauryan Empire by the second century A.D., and the Maurya and Nala dynasties took over around the sixth century. When Portuguese soldiers took control of the area in the sixteenth century, Sultanate rule gave way to Chhatrapati Shivaji Maharaj rule, incorporating it into Maratha dominion. Ratnagiri became the district seat after South Kokan was made a district in 1819, which led to a number of administrative changes.

The area, which is distinguished by traditional architecture, colorful festivities like Holi and Gauri-Ganpati, and flourishing folk arts, represents a fusion of North and South Indian cultures. The area claims a legacy of ancient rulers including the Mauryas and Satavahanas, with sites like the Panhalakaji caves contributing to Buddhist learning. Especially, King Thiba of Burma was Imprisoned here, which is still recognized through visits by Myanmar officials. Folk arts, including Jakhadi dance and traditional theater, contribute to its vibrant cultural identity, linking past traditions with contemporary life.

In this regard, a critical analysis of the connection between cultural tourism, intangible cultural assets, and regional development in the Kokan region is necessary. Tourism presents concerns about sustainability, cultural preservation, and the fair distribution of benefits, even while it has the potential to encourage regional development and economic progress. This study aims to investigate how cultural tourism in Kokan might support sustainable regional development while acting as a tool for intangible heritage preservation. With an emphasis on the role of local communities, legislators, and tourism stakeholders in promoting a balanced and sustainable approach to tourist growth in the area, the paper will look at the potential and problems related to this intersection.

Through this study, the paper add to the conversation about how cultural tourism may support inclusive, sustainable development in culturally rich and environmentally vulnerable areas like Kokan, as well as its role in the preservation of intangible heritage.

Intangible Cultural Heritage in South Kokan Region

- **Dashavatar:** It is a traditional folk theatre in South Kokan which enacts ancient stories and mythological legends.



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Festivals: There are significant cultural events like shimga (Holi) and Gauri-Ganpati.



Folk arts and Dances: there are folk arts and dances like Jakhadi nrutya, Naman, Fugdi, Gondhal, and Balya dance



Rapan Fishing: It is a traditional, community-based fishing in South Kokan region of Maharashtra.



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Matoli: It is an ecological decoration using a wooden canopy adorned with over 400 rare medicinal plants and fruits during the Ganesh Chaturthi festival, demonstrating extensive local flora knowledge.



Traditional Architecture: These structures are made of with the use of local materials like mud, lime, and wood in traditional tiled-roof houses.



Traditional Cuisine: The cuisine includes sea food and other traditional food.



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sacred forests: These are preserved forest local people are paying great respect for sacred forests, with associated rituals and annual temple festivals, highlights the deep spiritual connection to the nature.



The geoglyphs (rock art): It found on laterite plateaus in local language known as Katalshilp.



Problem Statement

Maharashtra's Kokan region has grown in popularity as a destination for cultural tourism due to its rich and varied cultural history. The region has enormous potential for the growth of cultural tourism due to its blend of coastal, tribal, and agrarian populations, each with their own customs, folk arts, and festivals. However, the region's intangible cultural heritage's viability and authenticity are seriously threatened by the quick commercialization of tourism.

The push to accommodate more tourists has resulted in the commodification of regional customs, traditions, and rituals, turning them from live cultural practices into commercialized spectacles. The original significance and purpose of these customs are frequently distorted by this process, turning them into tourist attractions. When economic incentives, fueled by tourism revenue, put short-term advantages ahead of long-term sustainability, frequently ignoring the profound cultural values that underlie these activities, the risk of cultural degradation is increased.

Tourism growth raises concerns about the displacement of local communities, the loss of traditional livelihoods, and the environmental and social effects of mass tourism, even though it can unquestionably create jobs, boost local industries, and improve infrastructure. In order to ensure that cultural practices continue to be dynamic, authentic, and sustainable for future generations, it is difficult to strike a balance between the economic benefits of tourism and the necessity of maintaining Kokan's cultural identity.

Thus, the major topic addressed in this study is how the rapid rise of cultural tourism in Kokan may be handled in a way that supports regional development without risking the integrity and sustainability of the region's intangible legacy. The article intends to investigate this contradiction between economic expansion and cultural preservation, and to provide ways for creating a tourism model that respects the region's distinctive cultural assets while contributing to inclusive, sustainable development.

Research Objectives

1. To study the role of cultural tourism in documenting, preserving, and promoting the intangible cultural heritage of the South Kokan region, including traditional arts, festivals, languages, culinary practices, folk performances, and community rituals.
2. To study the socio-economic impact of cultural tourism on regional development in South Kokan, related to employment opportunities, local entrepreneurship, and community well-being.
3. To study the importance of cultural tourism initiatives, influence the cultural identity and social fabric of local communities, including both positive outcomes and potential challenges such as commercialization or cultural dilution.
4. To study existing tourism policies, local governance structures, and stakeholder participation in heritage management and regional development within South Kokan.

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5. To study opportunities in current cultural tourism practices in the South Kokan region.

Literature Review

- (G. Pravin and Dr. P. Rajaram, 2025), in the article 'The Evolution and Enhancement of Rural Life in the Villages of the Palkhi Marg in Maharashtra: An Exhaustive Geographical and Socio-Cultural Study', the researcher state that, The Palkhi Marg in Maharashtra, a culturally significant pilgrimage route associated with the annual Wari tradition, influences the socio-economic and infrastructural development of villages along its path. Studies show that villages experience improved connectivity, sanitation, temporary health facilities, small businesses, and enhanced cultural pride due to the pilgrim influx. However, this development is largely seasonal and temporary, failing to generate sustainable economic growth or long-term employment, while sometimes causing environmental strain. Although research highlights the positive impacts of pilgrimage tourism, there is a gap in strategies for converting these transient benefits into sustainable rural development through integrated planning, capacity building, and environmental conservation.
- (S. Pallavi and G. Kirti, 2024), in this article 'Tribal Tourism In Konkan: Challenges Opportunities and Future Prospects', the researchers state that, Tribal tourism in Maharashtra's Konkan region, focusing on communities such as Warli, Katkari, and Mahadev Koli, has the potential to boost local economies, preserve cultural heritage, and promote environmental sustainability. Studies highlight opportunities through eco-tourism and cultural tourism, while challenges include inadequate infrastructure and the risk of cultural commodification. Successful models like Kerala's eco-tourism demonstrate how sustainable practices can benefit both communities and the environment. However, there is limited research on context-specific strategies for integrating cultural preservation, infrastructure development, and eco-friendly tourism in Konkan, highlighting a gap in applying sustainable tourism frameworks tailored to local tribal communities.
- (J. Sindhu, 2024) in the article 'Bahulya and Chitrakathi Tradition of Thakars - The Master Storytellers of Maharashtra: Importance as an Intangible Heritage and Its Tourism Potential', the researcher states that, The Thakar community of Pinguli village, Maharashtra, are traditional craftsmen known for performing 11 unique forms of folk art, including storytelling through Chitrakathi paintings, string, glove, and leather puppets. These art forms, rooted in epics like the Ramayana and Mahabharata, combine song, drama, and narration, forming a rich intangible cultural heritage passed down orally through generations. Studies highlight their cultural significance and potential for tourism development, yet there is limited research on systematic strategies to preserve these art forms, enhance the livelihoods of the artists, and integrate them effectively into sustainable tourism frameworks, revealing a critical gap in linking heritage preservation with community empowerment.
- (D. Vedangi and G. Devyani, 2024), in the article 'Mapping Intangible Cultural Heritage in an Urban Context: Case of Historic City of Nashik, India', the researchers state that, Recent scholarship increasingly recognizes the significance of heritage assets in urban settings, yet intangible cultural heritage (ICH) often remains underexplored compared to tangible heritage like monuments and historic buildings. ICH plays a crucial role in shaping urban identity, fostering social cohesion, and enriching historic urban landscapes by linking cultural practices with physical spaces. The 2003 UNESCO Convention highlighted the global importance of safeguarding ICH, but research indicates persistent gaps in mapping, integrating, and managing ICH within urban heritage frameworks, often due to rigid distinctions between tangible/intangible and culture/nature. Studies in cities like Nashik demonstrate that digital tools, including GIS and spatial analysis, combined with community-based qualitative data, can effectively document and visualize the spatial distribution of ICH, offering a holistic understanding of urban cultural landscapes. Nevertheless, there is limited research applying such integrative approaches across diverse urban contexts, highlighting the need for systematic identification, mapping, and preservation strategies to ensure the vitality of urban ICH for future generations.
- (H. Dhanashri e.tl, 2022), in the article 'Innovative Agrotourism Trends- Maharashtra State as a Model for Cross-Cultural Tourism in India', the researchers state that, Agro-tourism has emerged as a valuable source of supplementary income and employment for farmers in Maharashtra, benefiting both rural communities and urban visitors. The Konkan region, with 33 established agro-tourism centers, demonstrates the potential of this sector; however, several challenges persist, including inadequate training, poor communication skills, lack of coordination between agriculture and tourism departments, and low entrepreneurial capacity. Studies employing descriptive research methods have highlighted these operational and managerial gaps, underscoring the need for institutional support and capacity-building initiatives. Despite the recognition of these challenges, there is limited research on developing comprehensive strategies to enhance the sustainability, efficiency, and profitability of agro-tourism in Maharashtra, pointing to a clear gap for further investigation.
- (B. Priyanka and N. Parag, 2022), in the article 'Identifying the Tourism Potential and Exploring Relevant Development for Local Beneficiaries: Case of Alibaug, India', the researchers state that, Tourism is a major industry in India, contributing significantly to local income and employment, with destinations like Alibaug in Raigad district offering rich historical, cultural, and natural attractions. The Konkan region, including Alibaug,

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boasts diverse tourism assets such as beaches, forts, temples, forests, and wildlife, attracting both domestic and international visitors. Despite its potential, the existing tourism infrastructure and services in Alibaug are inadequate, and many tourism products remain neglected, limiting the overall visitor experience. While studies highlight the socio-economic and cultural benefits of tourism, there is a gap in systematically assessing the tourism potential of specific sites within Alibaug Taluka, addressing infrastructure deficiencies, and developing strategies to sustainably enhance and manage its diverse tourism products.

- (K. Vinaya e.tl., 2020), in the article 'Eco-Tourism for Natural and Cultural Heritage Protection- A Study on Kudremukha National Park, Karnataka', the researchers state that, Ecotourism, as a key component of sustainable tourism, emphasizes nature-based experiences and learning about local landscapes, flora, fauna, and cultural heritage, while promoting environmental conservation. In India, regions like Kudremukha in Karnataka, with its tropical wet evergreen forests and status as the second-largest protected wildlife area in the Western Ghats, exemplify the potential of ecotourism to support both heritage protection and local socio-economic development. Research highlights ecotourism's benefits in conserving natural and cultural resources, generating income, and fostering community participation. However, there is a gap in systematic studies assessing the long-term impacts of ecotourism on local communities and biodiversity, as well as in formulating context-specific policies and planning frameworks to maximize its sustainable development potential.
- (W. Aparna and C. Vishwas, 2020), in the article 'Conceptualising Framework for Local Biodiversity Heritage Sites (LBHS): A Bio-cultural model for biodiversity conservation in Maharashtra', the researches state that, India's Biological Diversity Act (2002) empowers local communities to manage biological resources, including designating Biodiversity Heritage Sites (BHS). While this provision offers significant potential for conservation, progress in establishing BHS has been slow, limiting the benefits for both nature and communities. Studies emphasize the importance of integrating socio-cultural landscapes into conservation, as seen in examples like Sacred Groves and Rocky Plateaus in Maharashtra. However, there is a lack of practical frameworks and strategies for communities to identify and establish Local Biodiversity Heritage Sites (LBHS), highlighting a gap in translating legal provisions into actionable conservation practices that preserve biodiversity, cultural heritage, and ecosystem services.
- (K. Mali, 2017), in the article 'Safeguarding (Protecting) Of Intangible Cultural Heritage for Tourism Development - Case Study of the Upper Krishna Basin of Maharashtra', the researcher states that, Intangible cultural heritage, encompassing traditions, rituals, and local practices, is a vital aspect of cultural identity, passed down through generations and evolving with the environment. The Upper Krishna Basin in Maharashtra, particularly the districts of Kolhapur, Sangli, and Satara, is rich in such heritage, which holds social, economic, and emotional significance for local communities. Studies highlight that preserving intangible cultural heritage not only safeguards cultural diversity but also fosters intercultural dialogue and mutual respect, especially in the context of growing globalization. Furthermore, the protection and promotion of these cultural practices are increasingly recognized as essential for developing cultural tourism in the region. However, there is a research gap in systematically documenting and analyzing the specific intangible cultural elements of the Upper Krishna Basin, assessing their current status, and exploring their potential for sustainable cultural tourism development.
- (P. Yogesh and C. Navendu, 2015), in this article 'Issues in Development and Intangible Asset Finance: A Case Study of Village Devbag, Coastal Maharashtra, India' the researcher states that, Coastal development along Maharashtra's Konkan coast, particularly in Sindhudurg, faces challenges from rapid tourism growth, which impacts both the physical environment and local communities. Village Devbag, a 6 km long spit bar south of Malvan, holds rich intangible assets such as traditional knowledge, local culture, artisanal skills, built heritage, and natural aesthetics, which can support sustainable tourism in line with UN Agenda 21. While studies have explored tourism impacts and Integrated Coastal Zone Management (ICZM), there is limited research on leveraging these intangible assets through 'intangible asset finance' to directly benefit local communities. Addressing this gap is essential for creating culturally, environmentally, and economically sustainable development strategies.

Methodology

Research Design

The proposed study examines the relationship between cultural tourism, intangible cultural heritage (ICH), and regional development in the districts of Ratnagiri and Sindhudurg in the South Kokan Region of Maharashtra using a descriptive and analytical research design that focuses on secondary data. While the analytical section looks at relationships between heritage preservation and regional development trends, the descriptive section seeks to describe the current state of cultural assets and socioeconomic indicators. By concentrating on the typical cultural characteristics of the chosen regions, this focused analysis guarantees contextual accuracy.

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Secondary Data Sources

Sources	Specific Information to Collect
Maharashtra Tourism Development Corporation (MTDC) Reports, District Tourist Offices, Ministry of Tourism reports, State Economic Survey.	Tourist arrivals (domestic/foreign, Ratnagiri/Sindhudurg), average length of stay, tourism revenue estimates.
Census of India, District Gazetteers, Public Works Dept.	Number of registered hotels/homestays, road/rail connectivity data (Kokan Railway, National Highways), availability of basic tourist amenities.
Academic Journals, Market Research Reports, social media, Travel Blogs/Vlogs analysis.	Tourist preferences, common tourism products being marketed (beaches, forts, temples, festivals).

The above analysis of documents about South Kokan's culture reveals a strategic difference in how two key heritage elements are handled Dashavatar (traditional folk theatre) is primarily seen as a cultural asset needing preservation, so it is documented in detail by academic and cultural bodies for safeguarding, but is only a minor footnote in tourism plans focused on beaches and forts. Equally, Malvani cuisine is strongly featured as a highly marketable tourism product in promotional and economic documents to attract food enthusiasts and boost local business, but it receives less formal protection as an intangible heritage item than Dashavatar, meaning its survival is mainly linked to its commercial success.

Thus, sustainable development in Kokan requires a careful balance where economic benefits are pursued without compromising cultural identity. This balance can be achieved through community led tourism models, capacity building of local artisans, regulated visitor flows, and interpretation strategies that retain authenticity. Policy interventions must prioritize safeguarding practices such as documentation of traditions, financial incentives for cultural practitioners, heritage sensitive infrastructure planning, and strong local governance frameworks. Collaboration among government agencies, tourism boards, academic institutions, and community bodies is essential to ensure that tourism in Kokan, not only contributes to economic upliftment but also protects and revitalizes its intangible cultural heritage for future generations.

Positive Outcomes

1. Strengthening of Cultural Identity:

Cultural tourism encourages communities to take pride in their native traditions, folk arts, and rituals. Reviving festivals, performances, and craft traditions helps strengthen a sense of identity among local people.

2. Preservation of Intangible Heritage:

Performing arts such as Dashavatar, traditional music, storytelling, and culinary traditions find renewed importance as they attract tourists, leading to long term sustainability.

3. Socio-Economic Empowerment of Local Communities:

Tourism generates income through homestays, handicrafts, local cuisine, cultural events, and guided heritage tours. Increased economic participation of local groups, artists, women's self-help groups, and youth organizations often strengthens family structures and unity within the community.

4. Intercultural Exchange and Increased Awareness:

Visitors bring new ideas and perspectives. Interactions promote mutual understanding, broaden worldview, and encourage younger generations to appreciate their heritage more deeply.

Challenges

1. Commercialization of Culture:

As cultural practices transform into tourism products, rituals and artistic expressions may be modified to align with tourist expectations. This can reduce authenticity and misrepresent original meanings and may weaken traditional values, rituals, dress, or language, especially among youth.

2. Social Inequality and Community Conflicts:

Tourism revenues may not be evenly distributed. Selective groups may get more benefit, which leads to intra-community tensions.

3. Seasonal Dependency:

Local communities may become dependent on fluctuating tourist flows. During off-seasons, income drops which creates financial stress that impacts social unity.

4. Cultural Performance Fatigue:

Tourists may burden artists, leading to stress, decline in traditional quality due to overexertion or forced scheduling.

5. Change in Social Norms:

Tourist presence in small villages can change social behavior, disturb daily life, and influence local norms related to dress, communication, or community rituals.

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Findings and Analysis

1. Strengthening of Cultural Identity and Revival of Heritage:

Cultural tourism in South Kokan has revived important intangible traditions such as Dashavatar performances, local cuisine, folk music, and community rituals. As visitors show appreciation for these practices, younger generations increasingly participate, viewing them as valuable. Tourism thus strengthens cultural pride and identity.

2. Economic Empowerment:

Tourism has boosted household income through homestays, handicrafts, local cuisine, and cultural events, while also increasing women's participation through SHGs and strengthening community collaboration in organizing festivals and cultural activities. However, the benefits are unequally distributed, which can widen socio-economic gaps and create social tensions.

3. Cultural Commercialization and Misrepresentation:

Tourist demand has led local artists to modify traditional performances shortening them, adding dramatization. As vendors and performers focus on what sells, cultural elements risk losing authenticity and shifting from meaningful social or religious practices to mere entertainment.

4. Changing Social Norms:

Tourist interactions have influenced local youth in South Kokan, introducing new behaviors, styles, and aspirations, along with shifts in dress and language use. In some coastal villages, heavy tourist presence disturbs daily routines.

5. Seasonal Dependence and Social Vulnerability:

Tourism in South Kokan is highly seasonal, with peak income during festivals, monsoon tourism, and holidays, and significant drops in the off-season that create financial uncertainty for household dependent on tourism. These fluctuations can affect family structures and unity of community, weakening social stability.

Conclusion

In conclusion, the study of cultural tourism, intangible heritage, and regional development in the South Kokan region highlights the need for an integrated and preservation balanced approach to tourism. The key findings highlight that talents of folk arts, rituals, festivals, and coastal traditions hold potential for economic growth, this potential can only be realized sustainably when cultural heritage preservation is embedded at the core of tourism planning. Looking ahead, the future of cultural tourism in Kokan depends on its ability to balance authenticity with innovation strengthening livelihoods while safeguarding cultural identity. The region's experience also offers valuable lessons for other culturally rich coastal and rural areas globally, demonstrating that responsible tourism can serve as a stimulant for both cultural revitalization and regional development. Long term success will require strong collaboration among government agencies, local communities, cultural practitioners, and tourism operators, ensuring that development initiatives protect Kokan's living traditions while creating inclusive and resilient pathways for growth.

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Original Article

Inter-Caste Dynamics in Mulk Raj Anand's Untouchable: A Critical Study

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Abstract

Mulk Raj Anand's Untouchable (1935) is still one of the most significant literary analyses of caste discrimination in Indian English literature. Written during a period of intense sociopolitical turmoil, the story provides an unusual one-day glimpse into the life of Bakha, a young sweeper child labelled as "untouchable." This study critically examines the novel's depictions of inter-caste relations, demonstrating how caste shows itself through spatial segregation, labour hierarchy, everyday violence, psychological trauma, and political societal reform. The article also places the novel in the larger sociohistorical backdrop of colonial India and the growth of anti-caste movements. Through the lens of literary realism and humanist ethics, Anand's work is seen to be a forceful condemnation of the caste system as a dehumanising social framework.

Keywords: *caste discrimination, labour hierarchy, anti-caste movements, condemnation of caste system.*

Introduction:

Caste-based segregation has long been the foundation of Indian society, influencing social interactions, work divisions, and identity politics for generations. One of the most persistent and oppressive social structures is caste dynamics, particularly the exclusion of Dalits, who have historically been referred to as "untouchables." Mulk Raj Anand's Untouchable is among the first and most potent narrative interventions in this area.

Untouchable, which was published in 1935, tells the story of a single day in the life of Bakha, a young sweeper kid whose experiences serve as a microcosm of the institutionalised violence against underprivileged groups. Anand's book highlights interactions between different castes and the systems that influence them, highlighting the conflicts, biases, and inconsistencies present in caste-based social interactions.

This paper explores the inter-caste relationships in Untouchable, contending that Anand reveals the moral inconsistencies of a culture based on rituals of contamination and purity in addition to highlighting the widespread nature of caste discrimination. Anand shows how caste permeates every aspect of social life, from physical space to labour, from food distribution to interpersonal relationships, from religious authority to political discourse, through Bakha's interactions with upper-caste Hindus, Christians, Muslims, British soldiers, and fellow outcasts.

Socio-Historical Background: Caste and Colonial Modernity:

It is crucial to take into account the sociohistorical setting in which Anand was writing in order to comprehend the inter-caste dynamics in Untouchable. Several forces came together in the early 20th century. Bhimrao Dr. Babasaheb Ambedkar was one of the most prominent leaders to oppose the caste systems through his many agitations. Gandhi also ran campaign against untouchability to some extent. criticism of Hindu social customs during colonialism, and contemporary Hindu social reform movements were also significant during this century.

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Gandhian philosophy and Anand's own socialist-humanist viewpoint both had an impact on his writing.

He saw how, in spite of the establishment of contemporary institutions like industries, railroads, and colonial bureaucracy, caste connections continued. This paradox serves as the setting for Untouchable, which depicts a civilisation on the verge of change but imprisoned by archaic societal norms. The novel's realism is due in part to Anand's journalistic methodology. He spent time visiting sweeper communities to guarantee an accurate depiction of their realities. Thus, the work serves as both a literary and ethnographic depiction of caste in colonial India.

Caste-based oppression:

In Untouchable, Mulk Raj Anand exposes the harsh and dehumanizing conditions under which Bakha, a young Dalit boy, lives. His everyday existence is shaped by a rigid caste system that denies him dignity, equality, and basic human rights.

He uses Bakha's daily life to expose the cruelty embedded in the caste system, showing how oppression functions not only through physical abuse but through constant, normalized humiliation. Bakha's status as an "untouchable" force him to live in fear of accidental contact, turning simple human actions—walking, fetching water, or working—into potential sources of punishment. The novel critiques how society uses religion, tradition, and notions of purity to justify violence, while denying people like Bakha any voice or dignity. Through Bakha's internal conflict—his longing for respect, his admiration for modernity, and his helplessness in the face of entrenched prejudice—Anand reveals how caste oppression damages a person's sense of self as much as their social position. Ultimately, Bakha becomes a symbol of how deeply injustice is woven into everyday life, and how urgently such structures need to be questioned and transformed.

In Untouchable, humiliation, abuse, and exclusion shape every aspect of Bakha's existence, revealing how deeply caste prejudice governs social life. He is routinely shamed for simply moving through public spaces, forced to announce his presence as though his very being is a threat, and subjected to violence when an upper-caste man claims Bakha has polluted him. Even basic necessities like water become tools of exclusion, as he must wait for someone of a higher caste to pour it for him while enduring insults. The attempted assault on Sohini by the temple priest further exposes how the system protects oppressors and blames the powerless. Together, these experiences show a society where discrimination is not an occasional cruelty but a daily, institutionalized reality that strips Bakha and his community of dignity, safety, and belonging. Bakha's community is forced to live in an isolated, neglected settlement that reflects how the caste system pushes them to the margins both physically and socially. Their living area lacks proper sanitation, clean water, and adequate housing, not because help is unavailable but because society chooses to deny these facilities to those considered "polluting." This enforced separation keeps them out of sight and reinforces their inferior status, making deprivation seem normal and justified. Anand uses this bleak environment to show that caste oppression operates not only through open insults and violence but also through systematic neglect, which strips people like Bakha of comfort, safety, and the basic conditions needed for a dignified life.

Social Hierarchy:

Mulk Raj Anand reveals how Indian society's inflexible social hierarchy confines people to set identities from which they are unable to break free. Bakha's life demonstrates how the caste system operates with unquestionable authority, determining a person's value, employment, and social distance even before they are able to make decisions for themselves. Because they were born into a "low" caste, persons like Bakha are forced to perform dehumanising labour and endure continual humiliation, whilst members of upper castes enjoy privilege, respect, and freedom. Discrimination appears normal rather than harsh because of this intricately interwoven order, which is maintained by custom, religion, and daily activities. In addition to dividing society, Anand's representation shows how such a structure eliminates the prospect of equality or human dignity for those at the bottom.

Anand demonstrates how Dalits are forced into the most humiliating jobs and viewed as intrinsically inferior only by virtue of their birth. Bakha's employment as a sweeper is not a choice; rather, it is a function that society has forced upon him since it believes that members of his caste exist solely to carry out activities that others view as immoral. The social order prevents him from undertaking any other work, regardless of his intelligence, diligence, or ambition. Because upper-caste people exploit his employment to bolster their own sense of superiority, this forced link with dirt becomes a reason for additional insults, exclusion, and cruelty. The story uses Bakha's experiences to illustrate how caste oppression works by limiting Dalits to low-paying jobs and then using those same jobs as evidence of their alleged inferiority.

Anand emphasises how the caste structure itself is responsible for the economic divide between the higher and lower castes. People like Bakha live in poverty with no chance of advancement, whereas upper-caste families have steady wages, cosy homes, and social security. Their lack of resources, such as clean water, adequate housing, or sanitary facilities, further restricts their chances to improve their life, and their low-paying, dehumanising jobs leave them stuck in a state of financial instability. In the meantime, the upper castes rely on the labour of those they view as inferior for their wealth and comfort, establishing a cycle in which privilege is passed down just as tightly as oppression. Anand illustrates how caste is both a social barrier and an economic trap that sustains inequity over generations by depicting this division.

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Internalized Oppression:

The way Bakha unintentionally absorbs society's assessments of his caste and frequently views himself through the identical prism of inferiority that others impose on him is an example of internalised oppression. Despite his desire for modernity, cleanliness, and dignity, he frequently places the blame for his humiliations on himself rather than the system. He feels guilty of his alleged "low" status rather than the injustices done to him during abusive moments, demonstrating how deeply caste ideology has permeated his sense of self. He believes that respect can only come from outside his community and never from the society he was born into, as evidenced by his fondness for the British, whom he associates with justice and sophistication. Anand uses Bakha's self-doubt and internal struggle to show how oppression is most harmful when the oppressed start to believe the falsehoods that support their oppression.

Intersectionality:

Anand investigates how caste oppression, economic class, and colonial presence combine to further marginalise people like Bakha. His low caste forces him into menial labour, rendering him economically powerless and socially excluded, while British colonial rule adds another layer of aspiration and alienation—Bakha admires the soldiers' discipline, cleanliness, and authority, viewing them as symbols of dignity denied to him at home. The colonial gaze both fascinates and emphasises his own servitude, as he compares himself to the authority systems imposed by foreigners and insiders alike. Through this interplay, Anand demonstrates that oppression is not one-dimensional: caste, poverty, and colonial hierarchies work together to imprison Bakha in a web of social and psychological disadvantage, demonstrating how many systems of dominance reinforce one another.

In Untouchable, Anand illustrates how social, religious, and economic systems work together to maintain inequality and keep marginalized communities, like Bakha's, at the bottom of society. The caste system assigns individuals rigid roles, denying them choice or mobility, while religious customs justify discrimination and normalize exclusion. Economic structures reinforce this hierarchy by restricting Dalits to low-paying, degrading work, ensuring they remain dependent and powerless. Even public institutions and communal spaces are organized to reinforce segregation, denying access to clean water, temples, and education. Through Bakha's experiences, the novel shows that oppression is not the result of isolated incidents but of interconnected systems that systematically deny dignity, opportunity, and equality to certain groups, making marginalization seem natural and permanent. He emphasises how the upper castes deliberately maintain and enforce a repressive social system, ensuring that injustice against Dalits goes unchallenged. They exercise their power through verbal abuse, physical punishment, and social isolation, viewing people like Bakha as intrinsically inferior and "polluting." Even minor offences, such as accidental contact, are treated with exaggerated humiliation, fostering fear and submission. The higher castes use religious and cultural traditions to justify their domination, presenting discrimination as moral or divine law. The story illustrates via Bakha's experiences that those in authority not only tolerate but actively support systematic oppression, ensuring that inequalities and social hierarchies remain unchecked.

Critical Perspectives:

Mulk Raj Anand's Untouchable is largely regarded as a pioneering literary critique of India's caste system, with a focus on both its social and psychological effects. Critics argue that Anand reveals the everyday injustices encountered by Dalits—humiliation, isolation, and forced menial labour—while also demonstrating how caste ideology pervades all aspects of life, from religious rituals to public encounters. Many interpretations stress Anand's emphasis on the human cost of caste: the work depicts not just physical deprivation, but also internalised oppression and the degradation of self-esteem among the marginalised. Furthermore, historians frequently point out that Anand criticises the role of both society and religion in perpetuating injustice, describing the caste order as a systemic, institutionalised type of violence rather than individual acts of cruelty. These readings believe that Anand uses Bakha's experiences to advocate for social transformation and empathy, making the novel both a sociological document and a moral argument against established inequalities.

The novel exposes the cruelty and injustice perpetrated on Dalits by the caste system, emphasising the urgency of social transformation. The story uses Bakha's daily experiences of humiliation, isolation, and menial labour to show how inflexible societal hierarchies deny basic human dignity and perpetuate inequity. Anand not only depicts the agony caused by entrenched customs, but also emphasises society's moral obligation to investigate and reform these practices. By demonstrating the psychological and physical consequences of caste discrimination, the story pleads for empathy, equality, and the destruction of discriminatory structures, making the novel a compelling cry to social awareness and revolutionary reform. The novel is regarded as a milestone in Indian literature because it forces readers to confront the terrible realities of caste tyranny and societal injustice. By focussing on Bakha, a young Dalit, Anand exposes the systemic humiliation, isolation, and exploitation that marginalised populations face—experiences that are frequently disregarded or normalised in society. The novel's unwavering representation of inequity, combined with its humanising portrayal of Bakha's hopes, anxieties, and dignity, compels readers to consider ingrained prejudices and moral duty. Untouchable not only recounts the socioeconomic realities of early twentieth-century India, but it also inspires empathy, awareness, and the questioning of repressive customs, cementing its reputation as a critical book advocating social consciousness and reform.

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Conclusion:

In Untouchable, Mulk Raj Anand critically reveals how caste discrimination shapes every facet of Dalits' lives, including Bakha, through complex social, economic, and psychological factors. The story illustrates both human prejudice and the institutional enforcement of hierarchy by depicting exclusion, humiliation, and forced labour, exposing the pervasiveness of inequality. In the end, Anand's writing is a potent plea for social consciousness, compassion, and change, challenging readers to confront long-standing discriminatory systems and envision a world that is more just and equal.

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Original Article

Influence of Organizational Factors on Job Satisfaction of Librarians Working in Unaided Colleges Affiliated to the University of Mumbai

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Abstract

Job satisfaction plays a central role in shaping the motivation, productivity, and performance of professionals working in academic libraries. This study investigates the influence of organizational factors such as leadership, organizational culture, interpersonal relationships, recognition, and opportunities for professional growth on job satisfaction of librarians working in unaided colleges affiliated to the University of Mumbai in Mumbai and Thane District. A sample of 55 librarians (30 female and 25 male) participated in the study. A structured questionnaire using a 5-point Likert scale was administered to collect primary data. Results show that organizational factors have a significant and positive impact on job satisfaction. Recognition, opportunities for professional growth, and leadership were identified as the strongest predictors. The findings emphasize the need for supportive management practices and a congenial organizational culture to improve satisfaction and retention among librarians.

Keywords: *Job satisfaction, Organizational factors, Leadership, Librarians, Professional growth, Workplace recognition.*

Introduction:

Librarians in higher education institutions contribute to teaching, learning, and research by providing access to information resources, facilitating academic services, and supporting digital learning environments. Their efficiency and motivation depend largely on their job satisfaction. Job satisfaction is shaped by not only individual characteristics but also internal organizational factors, including leadership, institutional culture, interpersonal relationships, workplace recognition, and professional development opportunities.

In unaided colleges, where salaries, working conditions, and institutional policies often differ from aided institutions, understanding the determinants of job satisfaction becomes even more important. This study focuses specifically on librarians in unaided colleges affiliated with the University of Mumbai.

Review of Literature

Leadership plays a fundamental role in developing trust and motivating employees. Supportive leadership practices positively influence job satisfaction (Robbins & Judge, 2019).

Organizational culture also shapes employee attitudes by establishing norms and expectations (Luthans, 2011).

Recognition and rewards are major motivating factors that enhance job satisfaction and commitment (Koustelios, 2001).

Positive interpersonal relationships within the workplace further contribute to a healthy work environment and psychological well-being (Robbins & Judge, 2019).

Professional development opportunities, especially in rapidly evolving information environments, strengthen employee motivation and future career prospects (Sharma & Kumar, 2020).

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Research suggests a strong association between organizational support and job satisfaction among academic librarians in India (Sharma & Kumar, 2020).

Objectives of the Study

The primary objective of this study is:

- To examine the influence of organizational factors (leadership, organizational culture, interpersonal relationships, recognition, and opportunities for professional growth) on librarians' job satisfaction.

Methodology

Research Design

A descriptive survey design was adopted.

Population and Sample

The population included librarians working in unaided colleges affiliated with the University of Mumbai in Mumbai and Thane districts. A sample of **55 librarians** was selected using purposive sampling.

- Female: 30
- Male: 25

Research Instrument

A structured questionnaire with **5 organizational factor dimensions** and job satisfaction was developed on a **5-point Likert scale** (1 = Strongly Disagree to 5 = Strongly Agree).

Data Analysis:

Table 1 — Gender Distribution of Respondents

Gender	Frequency	Percentage
Female	30	54.55%
Male	25	45.45%
Total	55	100%

Table 2 — Mean and SD of Organizational Factors and Job Satisfaction

Organizational Factor	Mean	SD
Leadership	4.09	0.60
Organizational Culture	3.92	0.63
Interpersonal Relationships	4.02	0.61
Recognition	3.85	0.67
Professional Growth	3.97	0.62
Overall Job Satisfaction	3.98	0.59

Table 3 — Correlation Between Organizational Factors and Job Satisfaction.

Factor	r	p
Leadership	0.61	0.01
Organizational Culture	0.57	0.01
Interpersonal Relationships	0.52	0.01
Recognition	0.64	0.01
Professional Growth	0.66	0.01

Conclusion

The study establishes a strong relationship between organizational factors and job satisfaction among librarians in unaided colleges affiliated to the University of Mumbai. Professional growth opportunities and institutional recognition emerged as dominant motivators, while weak leadership practices and limited supportive culture were the primary sources of dissatisfaction. The findings emphasize the need for colleges to reinforce professional development, adopt participative leadership, promote positive work culture, and ensure recognition of librarians' contribution. Improving these organizational elements will significantly enhance job satisfaction, performance, and retention of LIS professionals**.**

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Original Article

Financial Openness and Integration: A Comparative Study of India and Bangladesh

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Abstract

Financial sector reforms and an openness index constructed from various external financial liberalisation indicators reveal that India, Bangladesh, and other South Asian countries remained among the least open compared as compared to many of the Latin American and East Asian emerging economies at the end of the 1990s. India was apprehensive towards FDI and imposed ceilings on FDI in several sectors, while foreign private lending remained restricted except in limited cases. Portfolio investment was permitted largely through institutional investors, with many reforms implemented primarily to attract non-resident Indians. In Bangladesh, private external credit flows were tightly controlled and transactions involving money market instruments and collective investment securities were largely prohibited. Both economies also maintained strict regulations on capital outflows by residents.

This study examines the implications of economic openness and financial integration for India and Bangladesh, evaluating the degree of their integration and the associated benefits and challenges arising from their participation in the ongoing process of economic globalisation. The analysis shows that both countries became significantly more open by the late 1990s compared to the pre-1990 period. Throughout the decade, they implemented substantial measures to liberalise external financial flows and increasingly permitted long-term foreign private capital to enter domestic markets. Foreign investor participation expanded across several economic sectors, including the financial sector.

Keywords: *Financial Liberalisation, Economic Openness, Capital Flows, Foreign Investment*

Introduction:

Financial globalisation has become a powerful reality, especially as many developing countries began relaxing restrictions on capital account transactions in the early 1990s. During this period, several nations reduced controls on capital flows and introduced incentives to attract foreign investment. Latin America was the first region to adopt this openness strategy, followed by East and Southeast Asia. South Asia joined later, with countries like India and Bangladesh shifting toward open and liberal economic policies in the early 1990s. These reforms transformed their previously repressed financial systems and encouraged external financial liberalisation to boost competition and attract private capital.

While the 1990s witnessed a substantial rise in private capital flows to developing countries following these reforms, the benefits were not evenly distributed, with only a few emerging economies receiving the largest share of these inflows. South Asian countries, including India and Bangladesh, are classified by the World Bank as low-income economies, with per capita incomes of $450 and $370, respectively, in 2000(Data source). Except for Sri Lanka and the Maldives, all other countries in the region fall into this category.

Although South Asia accounts for 3.8% of the world's land and approximately 23% of its population, it contributes less than 2% to global GDP and an even smaller share to world trade.

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India dominates the region's economic output, accounting for about three-fourths of South Asia's total GNP. In 2000, India's gross national income was $455 billion—roughly 1.5% of the world's total—while Bangladesh's GNI stood at $48 billion, representing just 0.15% of global income.

Macroeconomic management has grown more challenging as foreign private capital flows have increased, making the costs and benefits of financial globalisation a major topic for researchers and policymakers.

Globalisation remains controversial, with strong opposition on one side and firm support on the other. International experience shows that financial globalisation creates both winners and losers: while some emerging economies have benefited from deeper financial markets and higher growth, others have suffered severe financial and economic crises, such as those seen in Mexico and Asia. These crises highlighted weaknesses in financial systems, exchange rate management, and domestic market development, reminding countries that global financial integration offers opportunities only when managed carefully. India and Bangladesh have so far not faced negative consequences from external financial openness, partly because neither has fully liberalised its capital account. As they move toward greater openness, the experiences of other emerging economies provide important lessons. This context raises key questions about how open India and Bangladesh truly are, how to measure their financial integration, whether it has supported economic growth, and what risks and early warning indicators should be considered as they integrate further with global markets.

Objectives of the Study:

The study aims to:

- Assess and measure the level of external financial openness and financial integration in India and Bangladesh.
- Examine how external policy changes and financial integration have influenced economic growth in both countries.
- Analyse the experiences of crisis-affected economies to identify potential vulnerabilities for India and Bangladesh as they continue financial reforms.
- Evaluate exchange rate behaviour to determine suitable exchange rate systems for India and Bangladesh in the context of increasing capital mobility.

The level of external financial openness and financial integration in India and Bangladesh:

India is significantly more financially open and integrated with global markets than Bangladesh. It attracts larger and more diversified capital inflows—FDI, portfolio equity, and foreign participation in corporate debt—and has continued to liberalise selectively through 2023–2025 via RBI and SEBI reforms. India's de facto integration is supported by deep capital markets, active cross-border banking, and clearer regulatory channels for foreign investors. Even though both countries show low/negative Chinn–Ito (KAOPEN) scores—indicating formal restrictions relative to advanced economies—India's actual financial linkages, flows, and market access are far stronger. A low or negative Chinn–Ito (KAOPEN) score means a country keeps its capital account relatively closed, with many rules and restrictions on moving money in and out across borders. The index measures **legal** (de jure) openness using information from the IMF's Annual Report on Exchange Arrangements and Exchange Restrictions (AREAER). Higher KAOPEN values indicate fewer restrictions and a more open capital account.

Foreign Direct Investment Flows to India and Bangladesh

Year	FDI Inflows		Cross-border M&A (seller) ($ million)		Cross-border M&A (Purchaser) ($ million)	
	India(%)	Bangladesh(%)	India	Bangladesh	India	Bangladesh
1990	0.13	0.11	5	-	-	-
1991	0.23	-	-	-	1	-
1992	0.54	0.14	35	-	3	-
1993	1.01	0.41	96	-	219	-
1994	1.73	0.31	385	-	109	-
1995	2.27	0.04	276	-	29	12
1996	3.30	0.26	206	-	80	-
1997	3.78	2.99	1520	-	1287	-
1998	2.78	3.97	316	33	11	-
1999	2.10	3.36	1044	-	126	-
2000	2.10	4.93	1219	-	910	-

Sources: Computation/ compilation based on RBI, 2001; World Bank, 2001; and UNCTAD, 2001 data sources, SEC Annual Report (1998-99), Dhaka, Bangladesh.

Before 1991, India received very little foreign investment, averaging only about $75 million a year, but economic reforms after 1991 led to a sharp rise in FDI, increasing more than thirtyfold by 1997. FDI then declined

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slightly during 1998–2000 due to global trends but continued to enter mainly through the FIPB route, which accounted for over 65% of inflows by 1999–2000. India's FDI as a share of gross capital formation rose from less than 0.2% in 1990 to a peak of 3.78% in 1997–98 before falling to 2.10% in 1999–2000. Compared with other developing economies, India ranked moderately in total FDI inflows but much lower in FDI relative to its economic size. Outward FDI from India remained very small. Globally, easing restrictions in the mid-1990s boosted foreign participation in financial sectors, with Latin America and East Asia experiencing large increases in foreign-controlled banking assets, while South Asia—including India—lagged far behind, and India saw little change in the share of foreign bank assets during the 1990s.

Bangladesh, by contrast, maintains tighter capital-account and foreign exchange controls, which limit both de jure openness and de facto financial integration. De-jure openness refers to what a country's laws and regulations allow. De-facto financial integration refers to what actually happens in practice, based on real financial flows and market activity, regardless of the legal rules. While FDI is its primary external capital source, inflows remain smaller and more volatile than India's, and portfolio participation is constrained by operational frictions and FX shortages. Recent steps—such as the Offshore Banking Act 2024 and eased rules on foreign-currency retention—show a gradual, cautious opening, but the economy's limited external buffers and repatriation challenges continue to restrict deeper financial integration. According to the World Investment Report.

Bangladesh has attracted relatively little FDI, though inflows have risen gradually since 1991, with notable increases in the gas and power sectors after 1997–98, drawing over $400 million by 1999. Between 1996 and 2000, the gas and power sectors received annual averages of $134 million and $113 million, respectively, and FDI in manufacturing and services also trended upward. Net FDI as a share of gross capital formation increased from 0.1% in 1990 to 1.8% in 1999, though FDI still accounted for only 0.58% of GNP in 2000. The financial sector saw some growth in foreign participation, with the number of foreign banks rising from 6 to 13 between 1990 and 2000, but their market share in deposits and advances changed only marginally. Overall, Bangladesh continued to receive less than 10% of South Asia's FDI inflows during the 1990s and lagged behind other developing regions in attracting foreign investment and expanding foreign presence in its financial sector.

Influence of external policy changes and financial integration on economic growth in both countries:

India has maintained an annual average GDP growth rate of over 6 per cent during the 1990s, which is marginally higher than that of the 1980s and the level of per capita GDP became more than double during the period. Bangladesh also registered a notable improvement of one and a half per cent in GDP growth and maintained a 5 per cent annual average growth rate in the post-openness period. However, the growth figures were low compared to the emerging economies of Asia and even less than the average growth rate of the entire Asian economies. Bangladesh could not manage to reach even the level of the growth figure (annual average) of the developing country group in the 1990s. Domestic long-term investments and domestic savings registered statistically significant improvement both in India and Bangladesh during the 1990s as compared to the pre-openness period. However, the productivity or return on domestic investment decreased over the 1990s as compared to that of the 1980s. The observations in regard to the return on investment are not unexpected in a relatively poor economy with an initial low capital-labour ratio. Moreover, a greater inclination to the capital-intensive technique in the third world may also induce the output to capital ratio to go down at the earlier stage of openness.

For India, it is a good sign that the GDP-investment ratio (annual average) registered marginal positive growth in the post-openness period, as against negative growth in the 1980s. Positive development also took place in connection with the financial deepening indicators. India's growth of broad money (which crossed the 50% mark by 1991) and notable increase in stock market capitalisation and turnover indicate its financial market development in the post-openness period. However, the level of banks' credit to the commercial sector (to GDP) went down marginally in the 1990s. The level of broad money and bank credit to the private sector registered statistically significant growth in Bangladesh between the 1980s and 1990s, but the stock market development indicators do not show the expected sign of improvement. It cannot be denied that the growth scenario improved and the financial sector deepened in the 1990s in both India and Bangladesh. It is also true that the improvements in the selected macroeconomic and financial development indicators have taken place in the decade when considerable reform measures have been undertaken, and there have been notable increases in external private capital flows to these economies. However, comparative changes of these variables in the 1990s or during the inflow period cannot be distinguished significantly from the pre-openness period or in the period when there were no or very negligible capital flows.

A lower level of private capital flows is probably the prime reason for that. Especially, Bangladesh attracted very negligible capital flows only in the last quarter of the 1990s. Moreover, lower absorption and absorptive capacity seem to be a notable obstacle in translating maximum benefit out of foreign private capital flows to these economies. Changes in domestic investment and consumption expenditure during the inflow period also indicate a positive trend in the composition of absorption; however, still higher consumption expenditure seems to be an obstacle to pulling domestic savings in India and Bangladesh.

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Potential vulnerabilities for India and Bangladesh during financial reforms:

Experiences from crisis-affected economies show that inappropriate policy responses to large capital inflows—especially overreliance on monetary tightening and exchange-rate anchoring—can generate consumption booms, real exchange-rate appreciation, and growing current account deficits. These crises highlight that weak banking systems, high levels of non-performing assets, excessive short-term foreign borrowing, and exposure to asset-price volatility are key sources of vulnerability.

For India and Bangladesh, these lessons are directly relevant as both countries continue financial liberalisation. Although they have implemented monetary and interest-rate reforms, gaps such as underdeveloped bond markets, persistent non-performing loans, and uneven regulatory oversight expose them to risks similar to those that destabilised crisis-affected economies.

Banking-sector fragilities further underscore potential vulnerabilities. In both India and Bangladesh, public-sector dominance, high transaction costs, and inadequate provisioning weaken financial stability, while emerging private banks remain sensitive to market volatility. Capital adequacy norms have improved in India, but Bangladesh continues to face shortfalls, particularly among public banks. Limited credit expansion and underdeveloped capital markets also constrain efficient financial intermediation. Combined, these weaknesses indicate that without stronger regulatory frameworks, better risk management, and deeper financial markets, the two economies could face heightened instability as capital flows increase and financial reforms progress.

Exchange rate behaviour to determine suitable exchange rate systems for India and Bangladesh in the context of increasing capital mobility:

Exchange rate behaviour during the 1990s offers important guidance for determining suitable exchange rate systems for India and Bangladesh under rising capital mobility. India's real exchange rate experienced marginal appreciation during periods of capital inflow, accompanied by rising reserves and weakening export performance. Empirical results show that government consumption and inflation differentials were major drivers of rupee appreciation, suggesting that macroeconomic discipline is essential for maintaining competitiveness. India's transition to a managed float—rather than a fully independent float—was appropriate given its stage of financial development, level of central bank independence, and the still-maturing money and securities markets. This arrangement allowed the authorities to respond flexibly to inflows without the vulnerabilities associated with fixed exchange-rate commitments.
For Bangladesh, real appreciation of the taka in the late 1990s also coincided with increased capital inflows, but the country's financial system remains more constrained. Basket-pegging has historically offered stability in an environment characterised by underdeveloped money and capital markets, as well as fiscal dominance over monetary policy. Although greater flexibility will be needed as capital mobility rises, Bangladesh's limited financial depth and lower capital inflows reduce immediate pressure to shift to a fully flexible regime. Empirical findings indicate that government consumption, domestic investment, and inflation differentials have a significant impact on the appreciation of the taka, while no clear link is evident between private capital inflows and exchange rate movements. As both economies integrate further into global financial markets, more flexible exchange-rate frameworks—supported by stronger macroeconomic fundamentals—will be necessary to absorb external shocks and maintain external competitiveness.

Conclusion:

Strong macroeconomic fundamentals and sustained growth in India and Bangladesh depend on higher domestic savings, improved productivity, and better technological advancement. Both countries face challenges such as low domestic capital formation, weak financial sectors with high non-performing loans, inadequate infrastructure, and limited trade openness. Strengthening banking regulation, enhancing supervisory capacity, and developing capital and bond markets are essential. While India has seen improvements in foreign exchange reserves, Bangladesh struggles with export performance and needs FDI that boosts exports. Fiscal deficits, limited monetary policy effectiveness, and underdeveloped financial markets remain major concerns. Managed exchange rates and careful control of short-term external debt are advisable until financial systems and regulatory institutions are stronger. Overall, both countries must address financial vulnerabilities, improve regulatory frameworks, and build economic resilience before moving toward full capital account convertibility.

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Original Article

The Vital Role of Open Access Resources in Research Work

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Abstract

Open Access (OA) journals have transformed scholarly communication by enabling unrestricted and free access to research outputs. This model eliminates economic and institutional barriers, allowing scientific information to reach diverse global audiences. OA enhances visibility, citation potential, and academic impact, thereby accelerating innovation and interdisciplinary collaboration. It promotes transparency, equitable knowledge sharing, and strengthens global research networks. Despite challenges such as funding sustainability and quality-control concerns, Open Access remains a vital pathway for improving accessibility and advancing academic progress.

Keywords

Open Access Journals, Scholarly Communication, Open Access Resources, Open Access Platforms, Electronic Journals, Open Access Portals

Introduction:

Open Access (OA) resources have become essential to modern scholarly communication. By offering immediate and free access to academic literature, datasets, and educational materials, OA removes traditional barriers that often limit knowledge dissemination. Students, researchers, and scholars—especially in low-resource environments—benefit significantly from unrestricted access to scholarly content.

OA increases research visibility, improves citation rates, and supports evidence-based teaching and interdisciplinary collaboration. In today's digital era, OA creates a sustainable, equitable framework for global knowledge exchange, strengthening research productivity and promoting inclusive scholarship.

Open Access: Its Background:

The Open Access movement emerged in response to rising journal subscription costs and restricted access to scholarly content. Traditional publishing models placed research behind paywalls, limiting access for smaller institutions, developing nations, and independent scholars. Three landmark declarations shaped OA globally:

1. **Budapest Open Access Initiative (2002)**
   Introduced the term "Open Access" and advocated for free online availability of scholarly literature.
2. **Bethesda Statement on Open Access Publishing (2003)**
   Established principles defining OA publishing standards.
3. **Berlin Declaration (2003)**
   Encouraged worldwide adoption of OA and emphasized the free dissemination of scientific output.

Advances in digital publishing, institutional repositories, and government mandates further accelerated OA adoption. Today OA represents a global shift toward transparent, democratic, and inclusive knowledge dissemination.

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What is open Access?

Open Access refers to the free, unrestricted online availability of peer-reviewed scholarly content. Users can read, download, print, search, and link to full texts without financial or legal barriers, while maintaining copyright and authorship integrity.

Types of Open Access

A. Gratis Open Access

- Free online access to scholarly content
- Allows reading and downloading but limited reuse beyond fair use

B. Libre Open Access

- Free access with additional usage rights
- Often supported by Creative Commons licenses (e.g., CC-BY)
- Allows remixing, revising, and redistributing under specific terms

Importance of open access resources:

A. Enhancing Knowledge Dissemination

OA widens access to research, allowing ideas and discoveries to reach a global audience without cost barriers.

B. Increasing Research Visibility and Impact

OA articles are more easily discoverable, often resulting in higher citation rates and improved academic visibility.

C. Supporting Global and Inclusive Learning

Researchers from developing countries and small institutions gain equal access to scholarly literature.

D. Promoting Collaboration and Transparency

OA fosters interdisciplinary collaboration and enhances the reproducibility of scientific work.

E. Reducing Redundancy in Research

Easy access to existing research prevents duplication and encourages more targeted, innovative studies.

F. Supporting Innovation and Policy Development

Industry professionals and policymakers can freely access scientific literature to inform decisions and develop solutions.

Features of Open Access:

- Free to read without subscription or payment
- Digital, copyright-compliant literature
- Equal access for all irrespective of socio-economic background
- Compatible with copyright, peer review, indexing, and preservation

Focuses on literature shared by authors without expectation of payment

Spaces of the archive, as well as the digitization process and as with the previous article, draws attention to the political agendas that have consequences for the creation and interpretation of digital archives. The article weaves together the historical journey from analogue to digital with a selection of images and other examples to illustrate the ways in which objects might change meaning over time (e.g. from political statements to art objects) and are shaped by shifting

Community structures and ambitions. The authors discuss initiatives that enabled metadata and tag generation through community workshops with users and an example of an artist project, which mapped the material traces of archival encounters. The next article by Samantha Edwards-Vandenhoek turns to focus upon the archiving of graffiti and specifically the Sydney Grafitti Archive, a work-in-progress resource created by the author within an open-source content management system. Using location-based and spatial modalities and metaphors, her principal research method is documentary photography as it 'provides the means of sampling and archiving the graffiti'. Edwards-Vandenhoek provides an illuminating discussion about her research that she claims is 'about hacking into, recovering and honouringgraf-fiti's discursive sites to reimagine graffiti's place as digital heritage'. We can read about the construction and design of the archive and the impact of the Internet on how grafitti is created, viewed and shared. Edwards-Vandenhoek also draws our attention to the cultural significance of grafitti, its contribution to the urban experience and how digital technologies have afforded grafitti a place within our cultural heritage. Through the utilization of media archaeological methods to document and preserve this transient and ephemeral medium, the theme of memory and the concept of the living archive returns.

The theme of spatial archives continues in the next article in which geographic location provides the focus for Les Roberts' explorations into the idea of the 'archive city'. Once again the idea of memory is invoked, in this case, urban cultural memory. Through Roberts' refocusing of the question 'what' is the archive? to 'where' is the archive? – an illustrative instance of the recent 'spatial turn' in archival studies is presented. With a focus on two case studies – the cities of Liverpool in the United Kingdom and Bologna in Italy – Roberts sets out a compelling argument about the role of location in the archive, pointing to the locatedness of the user in part to 'rethink the possibilities and future scope of archival film practice'. He neatly concludes his article with a reminder that archival practice depends not only on

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archivists in the conventional sense but also on‘everyday archivists’ who together provide the foundation on which the archive city rests.

The focus upon film in an archival context continues in Caroline Frick’s foray into archival policy, strategies and structures through the lens of repatriation. The article takes a recent fictional mediation of the archive through the Hollywood repatriation narrative of The Monuments Men (2014) as a way to instantly shine a light on the need to bring archival artifacts into public view.

The article proceeds to focus upon several repatriation projects, pointing to the way in which preservation organizations use the concept of ‘repatriation’ to gain public sympathy and support. The article is a persuasive account of the problems in current media repatriation policy and offers suggestions of how this can be addressed and where improvements can be made. The next article explores institutional contstraints of another kind through an exploration of what might be seen as the most challenging of UK media archives, those of the BBC. Simon Popple’s article takes Lord Reith’s famous statement in 1925 as a point of departure. With reference to specific projects, Popple describes how digitsations isn’t necessarily the solution to creating new ways of thinking about the relationships between institutions, archives and audiences.

Acknowledging the significance of the BBC in British media and British society more generally, Popple discusses the potential for the BBC to reconceptualize the audience as purely receptive A towards an audience that could participate in the archival process. We learn that this thinking led to the setting up of the Pararchive Project and the conceptualization of the ‘citizen animateur’ as a way to create collaborative and creative practices including the creation of oral histories that counter dominant voices and facilitate a more democratic polyvocality. The Pararchiveplatform will lauch in 2015 as an open-source platform to ‘demonstrate the benefits of working with the broadest possible coalitions to create open resources and embed collaborative partnership’. From the earlier spatial considerations of archives of Edwards-Vandenhoek and Roberts’- the final article foregrounds the temporal dimensions of archival analysis within the interrogation of online fan fiction archives. The article presents the findings of the Fan Data project, which developed an innovative approach to ‘data scraping’ through software development and visualization tools in order to perform a quantitative analysis. The authors focus upon the fan fiction archives relating to three blockbuster movies – The Avengers. The Batmantrilogy and Inception – in order to measure fan engagement and production over time in terms of ‘mindshare’ space. The article raises a range of useful questions about ‘fandom’ and the power of the Internet archives in building audience engagement as well as illuminating novel and emergent modes of archival content analysis using digital tools.

Collectively, the articles in this issue represent a renewed interest in the archive as an object of study and demonstrate the transformative impacts of digital technologies, which are extending our understanding of what constitutes an archive. Individually the articles are rooted in the writers’ deep encounters with archival practices. They illuminate a diversity of approaches for their study and introduce new and novel methodologies, which span the analogue (as applied in the first article) and the digital (as in the last). There are common themes that pervade and cross-pollinate many of the articles, such as the role that archives play in memory formation, the notion of the living archive and the place of the archive in capturing and preserving, or recreating and regenerating, the transient and the ephemeral. The proposition of new digital archival pedagogies and their impact upon educational and classroom practices is also a recurring consideration. From traditional physical institutional repositories to the dynamic and generative structures of born-digital archives, these rich and contrasting perspectives are a useful reminder that the archive is not a static form and each article invites us to rethink our experience of ‘the archive’ and how it functions in our social, cultural and personal lives.

We thank all our contributors and the reviewers who engaged so openly with the articles, providing wonderful feedback in support of the authors. We also offer special thanks to Lily Hayward-Smith for her editorial assistance in bringing together this issue. Author biographies Sarah Atkinson is the Principal Investigator of the Arts and Humanities Research Council (AHRC)-funded Deep Film Access project (DFAP), which aims to unlock latent opportunities that exist within big and complex data sets generated by industrial digital film production. The project partners include the BFI, the National Media Museum, BBC Archive Development, Screen Archive South East, the Large Scale Video Analytics project at the University of Southern California and Adventure Pictures. The project builds on Atkinson’s continued collaboration with Adventure Pictures and Sally Potter’s online archive SP-ARK. Atkinson’s research examines narrative, text, process, apparatus and audience to map the newspacesand modes of spectatorship. Her recent monograph Beyond the Screen: Emerging Cinema and Engaging Audiences(2014) presents an expanded conceptualization of cinema, one which encompasses the ways film can be experienced beyond the auditorium by a networked society. The book includes considerations of mobile, web, social media and live cinema through case studies of recent and near-future developments. Atkinson’s Convergen

Role of Open Access in Enhancing Research Output:

1. Enhancing Accessibility and Equity

OA eliminates economic and geographic barriers, empowering researchers globally.

2. Increasing Visibility and Citation Impact

OA articles typically receive higher readership and citations, enhancing scholarly influence.

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3. Promoting Collaboration and Knowledge Sharing
OA encourages cross-institutional collaboration and supports interdisciplinary research.
4. Accelerating Scientific Progress
Faster dissemination of knowledge reduces duplication and promotes rapid innovation.
5. Supporting Open Science and Transparency
OA aligns with open science practices, improving replicability and data transparency.
6. Empowering Students and Educators
The availability of free academic materials supports education and lifelong learning.
7. Supporting Policy and Societal Development
OA provides evidence-based information to professionals, policymakers, and healthcare providers.

Impact of Open Access on Libraries:

Open Access has redefined the role of libraries in the digital age. Traditionally reliant on costly subscriptions, libraries now shift toward digital curation, repository management, and user-oriented services.

Key Impacts:
A. Economic Benefits
OA reduces subscription expenditure, allowing libraries to reallocate funds for technology and digital services.
B. Expanded Access
Students, researchers, and the public gain unrestricted access to scholarly materials.
C. New Librarian Roles
Librarians now guide researchers on:

- OA publishing
- Copyright and licensing
- Institutional repository submissions
- Data management and preservation

D. Strengthening Scholarly Communication
Libraries support OA policies, enhance research visibility, and promote global knowledge exchange.
Overall, libraries evolve from collectors of information to facilitators of open knowledge ecosystems.

Effects of Open Access Journals on Modern Research
Open Access journals significantly reshape modern research through:

- Immediate global dissemination of findings.
- Greater academic visibility for authors.
- Higher citation impact**.**
- More inclusive participation from under-resourced regions.
- Faster innovation, as researchers access the latest studies without delay.
- Enhanced interdisciplinary research, supported by open exchange of ideas.
- OA journals democratize knowledge, strengthen research productivity, and contribute to a more equitable global academic landscape.

Open Access Journal Portals

The expansion of digital publishing has significantly reshaped the scholarly communication ecosystem. To support seamless access to digital research outputs, numerous Open Access (OA) journal portals have been established worldwide. These platforms aggregate, index, preserve, and disseminate scholarly content, enabling researchers to discover peer-reviewed literature without financial or institutional barriers. The following section presents an overview of major OA portals that play influential roles in supporting global research visibility and accessibility.

Open J-Gate

Open J-Gate, introduced in 2006 by Informatics (India) Ltd., functions as a comprehensive discovery service for international OA journals. Designed as an indexing platform, it aggregates metadata from thousands of scholarly journals and provides direct links to publishers' websites for full-text access. With coverage spanning a wide range of disciplines, Open J-Gate enhances the discoverability of global OA literature and supports efficient research navigation.

Digital Library and Archives (DLA) – Virginia Tech

The Digital Library and Archives (DLA) at Virginia Tech evolved from the university's Scholarly Communications Project established in 1989. It plays a central role in preserving, curating, and disseminating the university's scholarly and historical materials. Its repository, VTechWorks, launched in 2011, ensures long-term preservation of academic output and facilitates global access to institutional research. Through participation in initiatives such as the MetaArchive Cooperative, DLA contributes to collaborative preservation networks, reinforcing the sustainability and openness of digital scholarship.

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J-STAGE

J-STAGE (Japan Science and Technology Information Aggregator, Electronic) is an electronic publishing platform developed by the Japan Science and Technology Agency (JST). It provides end-to-end support for academic societies in publishing and disseminating their journals. J-STAGE incorporates workflow management, peer-review support, and global indexing features. By offering a centralized portal for Japanese scholarly output, it increases the international visibility of regional research and facilitates cross-disciplinary discovery.

HRCAK (Croatian Scientific Journals Portal)

HRCAK serves as Croatia's primary OA journal portal, supported by the Ministry of Science, Education and Sports and managed by the University Computing Centre. Built on internationally recognized OA standards, HRCAK offers access to a large collection of Croatian scholarly journals across diverse academic domains. The portal provides full-text articles, standardized metadata, and multilingual access options, thereby promoting the reach of Croatian scholarship at the global level.

SciELO

The Scientific Electronic Library Online (SciELO) is a pioneering OA initiative created through collaboration between FAPESP, BIREME, and CNPq. Originating in Brazil and later expanding across Latin America, SciELO established a standardized model for publishing, indexing, and evaluating scientific journals. Its platform supports interoperability with global indexing systems, enabling enhanced visibility of Latin American research and contributing to greater inclusivity in global knowledge production.

Project Euclid

Project Euclid, jointly developed by Cornell University Library and Duke University Press, specializes in scholarly literature in mathematics and statistics. It provides OA and subscription-based content, with strong emphasis on supporting independent and society-run journals. The platform integrates long-term preservation services, Open Archives Initiative (OAI) compatibility, citation linking, and advanced search features, ensuring durable and accessible dissemination of high-quality mathematical research.

Bentham OPEN

Bentham OPEN is a large-scale OA publisher offering over 200 peer-reviewed journals across science, medicine, engineering, and social sciences. By adopting a fully web-based dissemination model, Bentham OPEN ensures global, barrier-free access to contemporary research and promotes interdisciplinary engagement within the scientific community.

Directory of Open Access Journals (DOAJ)

The Directory of Open Access Journals (DOAJ) is one of the most widely recognized OA indexing platforms worldwide. It curates a rigorously vetted collection of peer-reviewed, high-quality OA journals across nearly all academic disciplines. DOAJ enhances the visibility of ethical, transparent OA publishing and supports article-level indexing, ensuring comprehensive discoverability for researchers and institutions.

Epress

Epress offers an online journal management and publishing system designed to streamline editorial workflows. It simplifies functions such as manuscript submission, peer review, and publication, enabling editors to manage journals efficiently through a web-based interface. Epress supports academic institutions and small publishers by providing accessible, cost-effective tools for producing OA scholarly content.

High Wire Press

High Wire Press, founded at Stanford University Libraries, manages one of the world's largest repositories of free full-text scholarly literature. Its platform supports digital publishing for numerous academic societies and university presses, particularly in the life sciences. With millions of accessible articles, HighWire provides robust search capabilities, citation linking, and long-term archiving solutions that strengthen global access to scientific knowledge.

Redalyc

Redalyc (Red de RevistasCientíficas de América Latina y el Caribe, España y Portugal) is an OA digital library dedicated to promoting Ibero-American scholarly communication. Supported by the Universidad Autónoma del Estado de México, Redalyc indexes hundreds of journals across the social sciences, humanities, and natural sciences. By integrating regional journal evaluation systems and offering full-text access, Redalyc enhances the visibility, credibility, and accessibility of research from Spanish- and Portuguese-speaking regions.

Conclusion

Open Access journal portals are foundational to the modern research environment. By aggregating, indexing, preserving, and disseminating scholarly content, these platforms democratize access to knowledge, enhance the visibility of global research, and promote equitable participation in scientific discovery. Through diverse regional and

international initiatives, OA portals accelerate scholarly communication, support interdisciplinary collaboration, and contribute to a more inclusive and transparent academic ecosystem. As digital scholarship continues to evolve, the role of OA portals will remain central to advancing open science and fostering a globally connected research community.

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Original Article

The Impact of Rajayoga Meditation on Pregnant Women: A Study on Psychological, Emotional, and Physical Well-Being

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Abstract

Pregnancy is a sensitive period marked by significant physiological and psychological changes. Stress, anxiety, and emotional fluctuations are common among pregnant women and can negatively influence maternal and fetal health. Rajayoga Meditation, a non-invasive mind–body practice emphasising mental clarity and inner peace, has been increasingly recognised for its therapeutic benefits. This study examines the impact of Rajayoga Meditation on the psychological well-being, emotional stability, and physical health of pregnant women. Findings suggest that regular Rajayoga practice significantly reduces stress and anxiety, enhances emotional balance, improves sleep quality, and promotes overall maternal well-being.

Keywords: *Rajayoga Meditation, Pregnancy, Maternal Mental Health, Emotional Stability, Stress Reduction, Holistic Health*

Introduction:

Pregnancy brings joy, anticipation, and transformation, but it also triggers anxiety, hormonal fluctuations, sleep disturbances, and psychological stress. Maternal stress is known to affect fetal health, labour outcomes, and postpartum adjustment. Traditional medical interventions often overlook the psychological aspects of maternal wellness.

Rajayoga Meditation—practised widely through organisations such as the Brahma Kumaris—focuses on empowering the mind through awareness of the self as a soul, positive thinking, and connection with the Supreme. It has gained importance in mental health research due to its accessibility, simplicity, and spiritual grounding. This paper explores how Rajayoga Meditation influences pregnant women's health and well-being.

Review of Literature

Several studies demonstrate the effectiveness of meditation and mindfulness-based practices in promoting prenatal health.

Meditation and Stress Reduction: Prenatal meditation has been shown to lower cortisol levels and reduce anxiety (Krusche et al., 2018).

Rajayoga Studies: Research on Rajayoga indicates improvements in mood, mental clarity, and emotional resilience in adult populations.

Pregnancy and Mental Health: Mind–body practices are associated with better maternal–fetal attachment, reduced labour pain, and improved pregnancy outcomes.

However, literature specifically addressing Rajayoga Meditation in pregnant women remains limited, creating a need for focused study.

Objectives of the Study

1. To assess the effect of Rajayoga Meditation on stress and anxiety among pregnant women.
2. To examine changes in emotional stability and mood regulation.
3. To evaluate improvements in sleep, physical comfort, and overall well-being.
4. To identify the perceived benefits of practising Rajayoga during pregnancy.

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Methodology

1. Research Design

A descriptive and experimental design was employed.

2. Sample

Participants: 60 pregnant women (2nd and 3rd trimester) Sampling Technique: Purposive sampling
Grouping:
Experimental Group (30) – practised Rajayoga
Control Group (30) – no meditation intervention

3. Intervention

The experimental group attended:
30-minute Rajayoga Meditation sessions daily
6-week training including guided meditation, positive affirmations, and self-awareness techniques

4. Tools Used

Perceived Stress Scale (PSS)
Beck Anxiety Inventory (BAI)
Sleep Quality Index
Structured Interview Schedule

5. Data Analysis

Quantitative data analysed using mean, standard deviation, and t-test to examine pre-post differences.

Results

1. Stress and Anxiety Levels

The experimental group showed a significant reduction in stress and anxiety compared to the control group ($p < 0.05$).

2. Emotional Stability

- Participants reported:
- Less irritability
- Improved mood
- Higher emotional resilience
- Better ability to cope with hormonal changes

3. Physical Well-Being

- Those practising Rajayoga experienced:
- Improved sleep quality
- Reduced fatigue
- Better control over breathing
- Enhanced overall comfort during pregnancy

4. Qualitative Findings

- Participants commonly expressed:
- Greater sense of peace
- Better bonding with the unborn baby
- Increased confidence about childbirth
- Feeling spiritually supported and mentally strong

Discussion

Rajayoga Meditation works by calming the mind and altering thought patterns. During pregnancy, when women face emotional vulnerability, this type of spiritual meditation fosters positivity, self-awareness, and relaxation. Findings suggest that incorporating Rajayoga into antenatal care can enhance maternal mental health and support positive pregnancy outcomes.

Conclusion

The study concludes that Rajayoga Meditation has a positive impact on pregnant women. Regular practice leads to reduced stress and anxiety, improved emotional balance, enhanced sleep, and overall better well-being. Rajayoga can be incorporated into prenatal care programs to promote holistic maternal health.

Recommendations

1. Healthcare providers should encourage pregnant women to practise meditation.
2. Rajayoga sessions can be integrated into antenatal classes.

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Original Article

A study on role of technology in promoting tourism and its impact on tourist preferences – a detailed study in North Konkan region.

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Abstract

One of the world's most dynamic and rapidly evolving industries is tourism. In recent years, technology has fundamentally altered the tourism sector, affecting everything from how destinations advertise themselves to how tourists search, plan, book, and enjoy travel. In the North Konkan region of Maharashtra, India, this study examines how the use of contemporary information and communication technologies (ICT) affects tourism promotion and impacts traveler preferences. Digital platforms, such as social media, mobile apps, and immersive technology, have revolutionized traveler search, planning, and experience as well as destination marketing in recent years. However, the report also highlights issues, such as a lack of standardized digital infrastructure (e.g., few official websites or apps for tiny local attractions), unequal internet connectivity along the coast, and low digital literacy among some visitor segments and local stakeholders. In isolated or semi-urban coastal areas like North Konkan, these obstacles limit the full potential of technology-driven promotion. In order to realize this potential, local tourism authorities, private operators, and community stakeholders must work together to build digital infrastructure, improve accessibility, and invest in content localization. The study concludes that technology adoption offers significant promise for sustainable tourism growth in North Konkan by reaching a wider audience, shaping preferences, and enhancing tourist satisfaction. It will highlight the growing need for tourism to use technology to meet the evolving preferences of travelers who are digital natives.

Understanding how technology influences tourist promotion and traveler preferences in the North Konkan region is the aim of this study. It explores the potential, challenges, and benefits of technology-enabled tourism expansion in greater detail. The North Konkan region is the focus of the current study, which greatly helps in understanding visitor behavior for future tourism policy creation and contributes to competitive advantage. It details how passengers rely on social media, digital maps, mobile apps, and online reviews. The results have consequences for policy-making, regional tourist planning, and destination marketing in India's coastal tourism zones.

Keywords: *Tourism, Promotion, Technology, Tourist*

Introduction:

Tourism is one of the most dynamic and quickly changing sectors in the world. Technology has completely changed the tourism industry in recent years, from how travelers search, plan, book, and enjoy travel to how locations promote themselves. Traveler behavior and expectations have changed significantly as a result of the widespread availability of cellphones, high-speed internet, location-based services, artificial intelligence, and digital payment methods. Travelers today are more knowledgeable, digitally connected, and dependent on technology-driven solutions that provide real-time, convenient, and trustworthy information.

Over the last decade, technology has played an increasingly crucial role in promoting tourism across the North Konkan belt. Travelers today utilize Google Maps for navigation, internet platforms for booking lodgings, ride-sharing apps for transportation, and social media for discovering new destinations.

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The rise of user-generated content—such as photos, videos, reviews, and travel blogs—has significantly boosted the visibility of many lesser-known destinations in the region. For instance, beaches like Bordi or Kelva, which previously relied on word-of-mouth publicity, now attract tourists through Instagram posts and YouTube travel vlogs.

Mumbai, Thane, Raigad, and the neighboring coastal regions make up Maharashtra's North Konkan region, which has become a thriving tourist destination. It draws both local and foreign tourists with its rich coastline belt, cultural richness, wildlife sanctuaries, history monuments, and urban centers. Technological intervention has played a key role in boosting tourism here through online marketing, digital ticketing systems, improved transportation apps, online homestay bookings, and widespread social media visibility. Additionally, smart tourism techniques have been introduced in Mumbai and surrounding areas thanks to private sector innovations and government initiatives. Examples include online reservation systems for theme parks, digital ticketing for museums and ferries, smartphone applications that provide virtual guides and interactive touchpoints placed at popular tourist destinations. These advancements are a reflection of the increasing demand for tourism to incorporate technology in order to satisfy the changing tastes of travelers who are digital natives**.**

The goal of this study is to comprehend how technology affects tourism promotion and how it affects traveler preferences in the North Konkan area. It delves deeper into the advantages, difficulties, and potential of technology-enabled tourist growth.

Review of Literature

According to study made by Dr. Shriharsha B.S. (2023) in their article “Role of social media In Tourism Marketing states that, the value of social media in travel marketing, highlighting its affordability and ability to communicate directly with target audiences. The study investigates how to effectively promote travel using social media sites like Facebook, WeChat, LinkedIn, Twitter, and YouTube. It listed a number of advantages of social media marketing, such as increased reach, enhanced reputation through favorable evaluations, and financial savings. The study also covered a number of government programs, like the internet campaign "Incredible India," which shows how these campaigns use social media to promote travel.

According to study made by Joyeeta Chatterjee & Nigel Raylyn Dsilva (2020) in their article “A study on the role of social media in promoting sustainable tourism in states of Assam and Odisha, investigated the ways in which social media in India's Assam and Odisha supports sustainability. The study emphasized important cultural and socioeconomic elements that are necessary to advance sustainable tourism. Convenience sampling was employed in conjunction with a pilot survey to gather data. Attitudes toward social goals are greatly influenced by elements like women's empowerment and the reduction of poverty. The study demonstrated how well Odisha uses websites and social media to market tourist-related goods including handicrafts, sand art, and temple tourism. However, because of the small study region in Assam, responses were inconsistent.

According to study made by Harale, 2025 in his paper Challenges before Sustainable Tourism in Konkan Region found that, a number of obstacles in the Konkan, including socioeconomic inequality, a lack of planning and regulatory frameworks, environmental deterioration (pollution, garbage, and coastline erosion), and inadequate infrastructure (roads, waste management, sanitary facilities). It demonstrates that although there is a lot of promise, several structural and governance problems limit its development.

According to study made by Jadhav & Kumthekar, 2022 in their paper Sustainable and Eco tourism potential in Maharashtra map out the areas Maharashtra has a lot of promise for ecotourism; it examines its natural and cultural resources and emphasizes that the main obstacles are a lack of infrastructure, connectivity, and awareness.

According to the study made by Dayananda, K.C. & Leelavathi, D.S. (2016) wrote an article titled “Tourism Development, Economic and Employment Growth in India” examines the many effects of tourism on India's economic growth, pointing out that it offers a number of opportunities at a comparatively low cost. The study covered both the positive and negative impacts of tourism on resources and pollution. The importance of tourism in terms of employment, cultural interchange, and economic expansion is emphasized. The study came to the conclusion that India's varied tourism offers draw a broad spectrum of visitors and give them a multitude of options and experiences.

Rationale of Study

A study intends to focus on the role of technology in tourism development it helps to shape the perspective of tourist in regards to tourist places. Technological development enables in promoting various tourist spots that are not in highlights. As some of the researchers have only covered the topic related to destination image of tourist places and impact of tourism on resources and pollution. But this study will help to tourist, government and various stakeholders in building decision. This study will help to bring insights on how technology influences visitor’s choices.

A present study focuses on North Konkan region specifically which significantly helps in understanding tourist behavior for designing future tourism policies and contribute in competitive advantage. It specifies the dependents of travelers on mobile apps, digital maps, online review and social media influences.

Problem of the Study

The way travelers obtain information, make travel plans, engage with locations, and assess their travel experiences has all changed as a result of the tourism industry's quick adoption of technology. Modern tourism relies

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heavily on tools like digital navigation systems, social media promotions, travel websites, online booking platforms, virtual tours, and mobile applications. However, the degree of technological adoption among tourism service providers and the extent to which tourists rely on such digital tools are still not well studied in developing regional destinations like the North Konkan region.

Despite having abundant cultural, ecological, and historical resources, North Konkan's tourist industry suffers structural difficulties, such as uneven digital infrastructure, low technical awareness among local stakeholders, and variable online promotional content quality. These difficulties raise questions about how well technology is advancing travel in the area. Furthermore, there is little empirical data to determine whether these technological interventions actually influence the preferences, expectations, decision-making processes, and satisfaction levels of tourists.

Objectives of the Study

- To examine how technology helps the North Konkan region's tourism industry.
- To investigate how traveler preferences and decision-making are affected by technology developments.
- To evaluate North Konkan tourists' knowledge of and attitudes toward technology-based travel services.
- To research how social media content, travel blogs, and internet reviews affect travelers' behavior and destination selections.
- To determine the kinds of technology that visitors utilize, such as websites, mobile apps, social media, virtual tours, digital payment systems, etc.

Significance of the study

- This study states that the North Konkan region's tourism industry is changing due to digital technologies like social media, websites, mobile apps, online booking systems, and virtual tours. It demonstrates how technology is a major factor in the expansion of contemporary tourism rather than only an add-on. This study offers important insights into how tourists' tastes, expectations, and satisfaction levels are impacted by their increased reliance on technology for trip planning, navigation, and enjoyment.
- This study will help local businesses, homestays, tour operators, hotels, and travel agencies understand the significance of implementing digital initiatives. This can help them maintain their competitiveness, draw in more tourists, and enhance the quality of their services.
- In order to strengthen the North Konkan tourism industry, the study offers data-driven recommendations that can assist government agencies and tourism development companies in creating efficient digital tourism regulations, infrastructure investments, and marketing initiatives.
- North Konkan boasts historical landmarks, beaches, forests, and a rich cultural legacy. The study promotes sustainable tourism development and better visitor experiences in the area by demonstrating how technology can increase visibility and accessibility.
- The study contributes to the expanding body of scholarly research on digital tourism, particularly as it relates to newly popular travel locations like North Konkan. It also presents avenues for future research on technology adoption, smart tourism, and rural tourist growth.

Gaps in the study

- Although various studies have explored digital tourism trends in India, very few have focused specifically on the North Konkan region. In terms of technology adoption, the distinctive tourism profile of this region—which includes beaches, historical monuments, forts, ecotourism destinations, and rural tourism—remains understudied.
- The literature that is now available frequently addresses the general behavior of tourists, but it does not go into great length about how technology—such as online reviews, booking apps, digital payments, virtual tours, etc.—influences the preferences and decisions of visitors to North Konkan.
- In the North Konkan context, comprehensive data that directly links technology use to visitor satisfaction, return visits, or destination loyalty is required.
- Although the function of digital marketing in tourism is well known, little research has been done to determine how successful these tactics are at promoting North Konkan.

Research Methodology

It involves the systematic and structured approached to collect, analyses and interpret the data.
The sequence of steps is followed to execute the research.

A) Research Design

A research design is the collection of data by applying the systematic procedure. It is a
Framework which helps in collecting and analyzing the data. The present study is an explanatory
As well as descriptive research to find out the impact of sustainable practices on tourism development with reference to North Konkan Region.

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B) Data Sources:

Secondary Data

Information will be collected by using data availability on various websites, research Paper, journal, and articles.

C) Data Analysis and Interpretation:

With the help of Secondary data below is Data Analysis and Interpretation

Tool	% of usage
Online Hotel booking app	78
Google maps/Gps	90
Social media	85
Online food delivery apps	72
Virtual tour	38
Digital Payment apps	95

Interpretation:

The most popular tools are digital payments and GPS navigation. While VR tools are only moderately used, social media has a significant impact on travel decisions.

Findings

1. Technology has increase tourist awareness and accessibility in North Konkan region.
2. Digital platform influences tourist choices.
3. Social media helps in branding of beaches, historical sites, etc.

Conclusion:

In the North Konkan region, technology plays a transforming role in promoting places, enhancing accessibility, and altering tourist preferences. The survey finds that travelers heavily rely on digital channels for planning, booking, navigation, and sharing experiences. While the region has undergone tremendous technological progress, there is still space for improvement in rural regions to match the expectations of modern travelers. The goal of the study is to state how technology help in the development of region which helps in overall development of the country. The study investigates the role played by Technology to influences the customer preference in the North konkan region.

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Original Article

The Role of Artificial Intelligence in Transforming Recruitment and Talent Management Practices

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Abstract

Artificial Intelligence (AI) is reshaping recruitment and talent management by introducing automation, predictive analytics, and data-driven decision-making into traditional Human Resource (HR) functions. This study examines how AI enhances key HR activities such as resume screening, candidate shortlisting, chatbot-driven interactions, predictive hiring, and video-based interview analytics. It further explores AI applications in performance evaluation, personalized learning, employee engagement, and attrition prediction. Findings indicate that AI significantly improves efficiency, accuracy, and candidate experience while enabling strategic workforce planning. However, challenges such as algorithmic bias, privacy concerns, and the need for technical skills persist. The study concludes that AI will act as a strategic enabler—augmenting, rather than replacing, human intelligence in HR—ultimately contributing to more effective and fair recruitment and talent management practices.

Keywords: *Artificial Intelligence (AI); Recruitment; Talent Management; HR Analytics; Predictive Hiring; Machine Learning; Applicant Tracking System (ATS); Chatbots; Employee Engagement; Performance Analytics; Workforce Planning; Automation in HR; Algorithmic Bias.*

Introduction:

In the era of digital, Artificial Intelligence has become an essential tool for modern organizations seeking competitive advantage. The Human Resource (HR) function, previously seen as heavily administrative, is undergoing rapid transformation due to AI innovations that enable automation, data-driven insights, and advanced analytics.

Recruitment and talent management are two of the most critical HR domains impacted by AI. Traditional HR processes often suffered from challenges such as giving advertisement in newspaper, inviting applications from eligible candidates, manual screening, delays, inviting experts, physical interview, human bias, subjectivity, and inefficiency.

With AI-based tools—such as AI-driven resume screening, predictive analytics, automated interviews, and performance evaluation systems—organizations can make faster and more accurate hiring decisions.

This paper investigates how AI is reshaping recruitment and talent management, its benefits, limitations, and its future implications on the HR profession.

Review of Literature

- Brynjolfsson & McAfee (2017) noted that AI is transforming organizational processes through automation and smart decision-making tools, significantly impacting knowledge work.
- LinkedIn Talent Trends Report (2023) found that 67% of HR managers use AI tools for recruitment, especially for resume screening and candidate matching.
- Deloitte (2022) reported that predictive analytics in talent management helps forecast attrition, performance, and skill gaps, enabling strategic workforce planning.
- Upadhyay & Khandelwal (2018) observed that AI reduces human bias, improves efficiency, and enhances employee experience, but raises ethical concerns.

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- SHRM (2021) highlighted the increasing use of AI chatbots for improving candidate experience and reducing HR workload.
- IBM (2020) emphasized that AI-enhanced HR systems help organizations identify high-potential employees and support personalized learning and development.
- The literature indicates that AI is not replacing HR but augmenting its capabilities by enabling intelligent automation and data-driven decisions.

Objectives of the Study

To examine the role of Artificial Intelligence in modern recruitment practices.

- To analyze how AI supports talent management and workforce planning.
- To identify the benefits and challenges of using AI in HR processes.
- To review existing literature on AI-driven HR technologies.
- To understand the future prospects of AI in recruitment and talent management.

Research Methodology

Research Design:

The study follows a descriptive research design, focusing on explaining the current role of AI in HR.

Data Collection:

Secondary Data has been used from:

- Research journals (Elsevier, IEEE, Springer)
- HR and business magazines (SHRM, Harvard Business Review)
- Company reports and industry whitepapers (LinkedIn Talent Insights, Deloitte, McKinsey)
- Online articles and government/industry publications
- Data Analysis Technique:
- Qualitative content analysis
- Comparative analysis of current AI tools in HR
- Thematic review of challenges, impact, and opportunities

Ai in Recruitment and Talent Management: Data Analysis

1. AI in Recruitment

a) Resume Screening and Candidate Shortlisting

AI-powered Applicant Tracking Systems (ATS) scan thousands of resumes instantly.
Machine learning matches candidate profiles with job descriptions.
Reduces manual screening time by up to 75% (industry estimate).

b) Chatbots for Initial Interaction

AI chatbots answer candidate queries, schedule interviews, and collect preliminary data.
Improves candidate experience and decreases response time.

c) Predictive Analytics

Helps HR predict job success, culture fit, and employee longevity.
Algorithms evaluate behavioral and cognitive parameters.

d) Video Interview Analytics

AI tools analyze facial expressions, voice tone, and communication.
Standardizes evaluations and removes interviewer subjectivity.

2. AI in Talent Management

a) Performance Analytics

AI monitors work patterns, productivity, and behavioral metrics.
Provides real-time performance insights for managers.

b) Learning and Development (L&D)

AI recommends personalized training modules based on employee needs.
Enhances skill development and upskilling programs.

c) Employee Engagement Monitoring

Sentiment analysis identifies employee morale and engagement levels.
Helps HR take timely corrective actions.

d) Predicting Attrition and Retention.

AI identifies risk factors leading to employee turnover.
Supports proactive HR strategies to retain talent.

3. Benefits of Using AI in Recruitment and Talent Management

- **Improved Efficiency**: Faster screening, scheduling, and decision-making.

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- **Enhanced Accuracy:** Data-driven selection reduces errors and bias.
- **Better Candidate Experience:** Chatbots and automated tracking improve communication.
- **Cost Reduction:** Automation cuts HR costs by reducing administrative workloads.
- **Data-Driven Decisions:** Predictive analytics supports strategic HR planning.

4. Challenges and Concerns

- Algorithmic Bias – AI may replicate biases from historical hiring data.
- Lack of Transparency – Many AI algorithms function as "black boxes."
- Privacy Issues – Use of employee data raises ethical and legal concerns.
- Skill Gap – HR professionals require technical skills to manage AI systems.
- Overdependence on Technology – Human judgment is still essential in HR decisions.

Results and Findings

- AI significantly improves hiring efficiency and reduces administrative workload.
- AI tools enhance talent management through predictive analytics and personalized L&D programs.
- Despite its benefits, AI introduces ethical concerns, especially regarding fairness and privacy.
- AI adoption is increasing rapidly, but organizations must balance automation with human empathy in HR.
- AI will act as a strategic enabler, not a replacement for HR professionals.

Conclusion

Artificial Intelligence is revolutionizing recruitment and talent management by offering automation, accuracy, and strategic insights. Organizations using AI experience faster hiring, better candidate matching, and enhanced workforce planning. However, ethical concerns regarding privacy, transparency, and bias require continuous monitoring. AI should complement human intelligence rather than replace it. The future of HR lies in a hybrid model where humans and AI work together to create efficient, fair, and innovative HR ecosystems.

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Original Article

Multidisciplinary Education and Research in Indian Educational Institutions: A Review of NEP 2020 Perspective

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Abstract

This research paper explores the transformative potential of the National Education Policy (NEP) 2020 in fostering multidisciplinary education within the Indian educational landscape. It highlights the growing necessity for a blended approach to learning, which transcends traditional subject boundaries and cultivates critical thinking, problem-solving, and innovation—skills essential for navigating contemporary complexities. The paper argues that NEP 2020 is not merely an educational reform but a significant shift towards inclusivity and recognition of the Indian Knowledge System, aiming to reconnect students with indigenous wisdom while addressing historical injustices. However, the implementation of NEP 2020 faces considerable challenges, including institutional resistance, rigid academic structures, and the need for comprehensive faculty training. By emphasizing the importance of collaborative learning environments and flexible curricula, the paper advocates for a restructuring of educational practices that aligns with the policy's objectives, ultimately enhancing the academic experience and preparing students for a dynamic and interconnected world.

Key Words: *blended learning, curricula, Indian Knowledge System, NEP 2020.*

Introduction:

Education in India is on quite a journey right now. The big catalyst here is the National Education Policy (NEP) 2020, which is really pushing for multidisciplinary education and research in our colleges and universities. Think about those rigid walls that usually separate different subjects. This policy is trying to tear those down. It encourages an approach that mixes things up, which doesn't just sharpen critical thinking and problem-solving skills but also sparks the kind of innovation entrepreneurs really need. It also recognizes the deep value in Indian knowledge systems. The goal is to weave that traditional wisdom right into modern curricula, creating a blend of the old and the new (Roy V et al., 2025). As the system tries to navigate the pressures of globalization while shaking off the dust of colonial frameworks, NEP 2020 looks like a real turning point. It offers a way to revolutionize learning by adopting a framework that honours our history while meeting modern academic demands (Amani S, 2024).

A. Overview of Multidisciplinary Education

Education is shifting more and more toward a multidisciplinary approach, and honestly, that just makes sense given how fast the world is changing. Instead of keeping subjects in separate boxes, this method blends knowledge and techniques from different fields. It gives students a broader understanding that goes beyond those old, traditional boundaries.

This kind of learning does a lot of heavy lifting. It sharpens critical thinking, helps people solve problems better, and sparks innovation, which are exactly the skills we need to navigate a complex environment. The National Education Policy (NEP) 2020 is fully behind this idea. It points out that schools and colleges need to adopt models that encourage mixing subjects together. The logic is that this doesn't just make the learning experience richer; it actually gets students ready for the real world, where you usually need to look at things from a few different angles to find a solution. Getting there isn't without its headaches, though.

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There are plenty of challenges, like rigid school structures and the simple fact that teachers need support to learn these new ways of teaching. We have to tackle these issues if we want to see the real potential of multidisciplinary education that the NEP 2020 talks about (Roy V et al., 2025)(P Mukherji et al., 2023).

B. Significance of NEP 2020 in Indian Educational Context

The National Education Policy (NEP) 2020 is basically a massive reset button for the Indian educational landscape. It pushes for a way of learning where different subjects actually talk to each other, rather than staying in their own little bubbles. This approach admits that if students are going to handle the messy, complex challenges of society, they need to see the whole picture, not just fragments. What is really significant here is how the NEP 2020 tries to reconnect with the Indian Knowledge System (IKS). It is an effort to bring back indigenous wisdom in areas like Ayurveda and mathematics, which were often overshadowed or pushed aside by colonial legacies (Mamgain et al., 2025). Beyond just the curriculum, discussions around higher education show that this policy acknowledges a need to fix historical injustices. It is about creating a classroom environment that is truly inclusive for minority communities (Poulose P et al., 2021). This strategy goes beyond just improving academics; it is a statement that cultural and intellectual diversity is essential to the heart of India's democracy.

I. Framework of NEP 2020

The National Education Policy 2020 introduces a transformative framework designed to foster multidisciplinary education within Indian institutions. This approach emphasizes flexibility, giving students the freedom to combine courses across diverse disciplines and creating a much richer educational experience. The NEP advocates moving away from rigid academic structures toward more dynamic ones, which is exactly what allows research and innovation to thrive. According to comparative assessments of higher education rankings, research indicators have a massive impact on institutional performance, reflecting a global shift toward multidisciplinary approaches (Bandyopadhyay S et al., 2020). However, the move to online education during the COVID-19 pandemic highlighted some barriers that could stand in the way of successfully implementing these frameworks. By addressing these challenges and revisiting policy structures, educational authorities can better equip institutions to support innovative teaching and robust research, ultimately improving the quality of education for everyone (A Joshi et al., 2020).

A. Key Features Promoting Multidisciplinary Approaches

When we look at how Indian educational institutions are adopting multidisciplinary approaches, the National Education Policy (NEP) 2020 is clearly the driving force. It puts a heavy emphasis on bringing different academic disciplines together rather than keeping them isolated. One of the standout features here is the push for flexible curricula. This allows students to mix and match subjects from various fields, creating a much more well-rounded educational experience. This kind of flexibility is essential right now. The challenges we face in society today are complex, and solving them requires the critical thinking and innovation that comes from looking at things from multiple angles. On top of that, the NEP 2020 advocates for collaborative learning environments. We need to break down those old silos of knowledge to really get interdisciplinary research moving. As recent studies have pointed out, these collaborative efforts are crucial for aligning education with the goals of democracy and inclusivity, especially when it comes to marginalized communities (Poulose P et al., 2021). Ultimately, this new framework is set to make academic research more applicable to the real world, supporting the vision of a dynamic and engaged citizenry (Dr. Raut VV, 2023).

B. Policy Implications for Educational Institutions

The National Education Policy (NEP) 2020 marks a massive shift in India's educational landscape, urging institutions to look beyond traditional boundaries and adopt a multidisciplinary mindset. By blending diverse fields of study, the goal is to spark critical thinking and creativity in students, giving them the problem-solving tools they actually need for the modern workforce. Schools are also being asked to rethink their curricula by weaving in the Indian Knowledge System (IKS). This helps ground students in their heritage and shows how indigenous knowledge still matters in today's education frameworks (Behera B et al., 2025). Naturally, pulling this off takes more than just good intentions. It requires real institutional restructuring, solid faculty development, and the right resources to tackle the challenges that come with change (Roy V et al., 2025). Ultimately, institutions need to lean into these directives not just to check a box for national standards, but to truly deepen the academic journey for their students.

II. Implementation Challenges

Putting the National Education Policy (NEP) 2020 into action is proving to be quite the hurdle. It has ambitious goals, but there are some significant challenges standing in the way. Take the reformation of teacher education programs, for instance. This isn't a small fix; it requires a serious investment in infrastructure and resources to ensure faculty members are properly trained to handle multidisciplinary approaches (Sharma M, 2024). Then there is the issue of initiatives like the common minimum syllabus (CMS). It really highlights the tug-of-war between wanting standardization and needing institutional autonomy. Many stakeholders are pointing out that they need the flexibility to adapt curriculums to fit their local contexts (A B A D C Sharma, 2021). Finding this balance is vital because sticking too rigidly to a uniform syllabus could easily crush academic diversity and innovation. As Indian educational

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institutions work to make the NEP 2020 a reality, keeping the lines of communication open between educators, policymakers, and the community is going to be the only way to navigate these challenges and actually see the policys potential come to life.

A. Institutional Resistance to Change

Institutional resistance to change acts as a major roadblock for the National Education Policy (NEP) 2020, particularly when it comes to bringing multidisciplinary education into Indian institutions. Even though the NEP has an ambitious vision for connecting different fields of study, the system is struggling to shift gears. Many institutions are still clinging to traditional teaching methods, largely due to stubborn mindsets, limited resources, and a lack of proper faculty training. Research shows that while interdisciplinary courses do a great job of sharpening critical thinking and preparing students for the future, there is still a lot of hesitation. This usually stems from confusion over the curriculum or the feeling that these new frameworks are just too complicated to implement (Dr. Chaudhary N, 2025). On top of that, governance structures are often slow to adapt, which really limits the transformative potential of the policy. We need a strong strategy to align actual educational practices with the NEP's innovative goals (Bala I et al., 2025). Solving these problems is going to be essential if we want to see the policy's objectives actually work.

B. Resource Allocation and Infrastructure Issues

Making the multidisciplinary vision of the National Education Policy (NEP) 2020 a reality comes down to two big things: smart resource allocation and solid infrastructure. This kind of ambitious restructuring requires serious investment. We are talking about upgrading facilities, bringing in better technology, and supporting the people running these institutions to create an environment where different subjects can actually connect. Of course, getting there isn't simple. We are still dealing with tight budgets from the past and resources that simply aren't distributed evenly. The gap between urban and rural schools is especially tricky, and it makes it hard to apply these holistic teaching methods everywhere. To fix this, NEP 2020 suggests rethinking how we allocate funds. It focuses on weaving in vocational education and fresh teaching methods to build a playing field that is fair for every student. The goal here isn't just about better buildings. It is also about ensuring teacher training programs are actually preparing educators for the demands of this modern framework, as seen in (Sarkar K et al., 2025) and (Dr. Sharma IH).

III. Benefits of Multidisciplinary Education

Bringing multidisciplinary education into Indian schools does more than just shuffle the curriculum. It fundamentally changes how students think. By fostering critical thinking and real problem-solving skills, this approach helps students connect the dots between different fields. That is where the magic happens; blending disciplines sparks the kind of creativity and innovation that students actually need to navigate the modern workforce. The National Education Policy 2020 makes a strong case for this model. It advocates moving away from the old days of rote memorization and towards a more holistic way of learning. We are talking about an education that values emotional and ethical growth just as much as academic scores. This shift aims to prepare learners for a fast-moving global environment, teaching them to collaborate across boundaries to handle complex issues. It is interesting to note that this isn't entirely new; the historical context of India's ancient institutions reminds us that this comprehensive approach is exactly what contemporary society needs (Roy V et al., 2025)(Bhakat B, 2025).

A. Enhanced Critical Thinking and Problem-Solving Skills

The focus on critical thinking and problem-solving in the National Education Policy (NEP) 2020 marks a genuine turning point for educational philosophies in Indian institutions. It moves us away from the old habits of rote memorization and toward a framework that values learning by doing. The goal of NEP 2020 is to create an environment where students are encouraged to ask questions and discover answers for themselves. This shift is incredibly important because the modern job market demands more than just textbook knowledge. We need people who can navigate complex problems and come up with creative solutions. Integrating technology helps make this happen, offering tools that help students develop those essential capabilities (K Sundaram, 2020). Since organizations are increasingly mixing different fields and strategies, our curriculums need to adapt to prepare graduates who can handle that dynamic pace (Hendawi M et al., 2020). Ultimately, prioritizing these skills is the best way to ensure long-term success for both individuals and the community at large.

B. Fostering Innovation and Research Collaboration

The National Education Policy (NEP) 2020 places a heavy emphasis on sparking innovation and getting people to collaborate on research, which is essential for building a truly multidisciplinary education system in India. By loosening up how courses are designed and encouraging institutions to step past traditional boundaries, the goal is to get students and faculty from different fields working together. That kind of teamwork is exactly what boosts creativity and sharpens problem-solving skills. This policy also pushes for partnerships between schools and industries, supporting research that tackles real-world challenges and stimulates economic growth. As recent critiques have noted, bringing in online platforms and quality digital resources can really open doors for collaboration. This is especially important for students in rural areas who often face limits on access to experimental learning environments (Bhakat B,

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2025). Ultimately, by prioritizing deep research and innovation, NEP 2020 hopes to build a fairer educational landscape that prepares students to be critical thinkers and active contributors to society (Rathi M, 2024).

Conclusion

The National Education Policy (NEP) 2020 marks a major turning point for Indian higher education, shifting the focus toward a more multidisciplinary approach to learning and research. The goal here is to build an educational environment that adapts as fast as the world does by prioritizing critical thinking and innovation (Roy V et al., 2025). But looking at the reality, it has not been smooth sailing. Despite the promise of new initiatives like the National Research Foundation, actual implementation has struggled with challenges like inconsistent leadership and infrastructure that just isn't ready yet (Dr. Chavan PG, 2025). Fixing these obstacles is going to take a serious group effort. Policymakers, leaders, and faculty need to work together to restructure how institutions operate, improve how we teach, and make sure resources go where they are needed most. Ultimately, bringing the NEP's vision to life isn't just about following a framework. It relies on collaborative efforts that don't just promote research across different fields but actually weave these principles into the culture of higher education itself, setting the stage for real innovation.

C. Summary of Key Insights

India's National Education Policy (NEP) 2020 marks a real turning point, shifting the focus toward a more multidisciplinary approach to education and research across the country. At the core of this change is the teacher. The goal is to cultivate a teaching workforce that is diverse and adaptable enough to handle the complex demands of the modern world. By pushing for curriculum reforms that blend different disciplines, the NEP aims to make what students learn actually matter in real-life contexts. It also places a heavy emphasis on how we train teachers, focusing on hands-on learning and inclusivity to build a fairer system for everyone ((Pan S, 2025)). Of course, as schools and colleges try to match global standards, they are going to face hurdles regarding infrastructure and regulations that need to be fixed to make these goals a reality ((Sinha D et al., 2025)). Ultimately, NEP 2020 offers a broad framework designed to rethink how we teach and do research, with the hope of completely transforming India's educational landscape.

D. Future Directions for Multidisciplinary Education in India

The future of multidisciplinary education in India really leans on the successful rollout of the National Education Policy (NEP) 2020, which pushes for connecting learning across all kinds of fields. As Indian higher education institutions adapt to these reforms, the focus needs to be on the factors that actually drive success. That means enhancing collaboration and creating flexible learning pathways to spark innovation through diverse academic disciplines (G Narkhede et al., 2025). Initiatives like the National Research Foundation (NRF) are also stepping in to strengthen research and encourage working across disciplines. Still, we have to admit there are hurdles, such as inconsistent leadership and research infrastructure that is not quite there yet (Dr. Chavan PG, 2025). Looking ahead, it is vital for institutions to embrace technology and policies centered on equity. This does not just improve quality; it builds a space where innovation can happen. Taking this dual approach will help India's education system compete globally while staying inclusive and ready for a workforce that never stops changing.

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Original Article

School-Based Hypnotherapy Intervention for Reducing Examination Anxiety: Evidence from a Controlled Trial in West Bengal

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Abstract

Examination anxiety is one of the widespread mental problems of adolescence that tends to affect the ability to concentrate, the memory, and the emotional state. The research problem in this study was to determine the impact of hypnotherapy as a structured school-based intervention on the reduction of examination anxiety among secondary school students in West Bengal, India. A quasi-experimental pre-test/ post-test control group design was used and there were 200 students (100 experimental, 100 control) who were screened using Test Anxiety Questionnaire (Nist and Diehl, 1990). The experimental group was exposed to nine sessions of hypnotherapy over the three months period, and the control group was not exposed to any intervention throughout the study period. The findings showed that the levels of examination anxiety were significantly lower in the experimental group than in the control group ($p < .001$, Cohen d1.5), which is statistically and practically significant. Subgroup comparison of males and females showed no significant differences in benefits of various students. The results emphasize hypnotherapy as a promising, non-pharmacological, integrative culturally integrated Hypnotherapy as an option in managing the test anxiety among Indian schools.

Keywords: *Hypnotherapy, Examination Anxiety, Adolescents, Psychological Intervention*

Introduction:

Hypnotherapy for test anxiety helps pupils overcome fear, gain confidence, and concentrate. Hypnotherapy uses the subconscious mind to change exam-related negative thoughts into calmer, more optimistic ones. In hypnotherapy, concentrated concentration and profound relaxation make the subconscious mind more open to pleasant ideas.

The hypnotherapist teaches numerous exam stress-reduction techniques:

- Relaxation methods use deep breathing, gradual muscle relaxation, or guided visualization to calm the nervous system and minimize anxiety symptoms like racing heart or perspiration.
- Positive visualization and mental rehearsal: Helps students visualize passing the test with confidence. This "mental rehearsal" rewires negative thoughts and boosts self-esteem.
- Anchoring: Provides a gesture or word to help students concentrate and calm down during exams.
- Addresses self-doubt and fear of failure by reframing negative thinking into powerful and productive perspectives.
- Enhanced attention and concentration: Enhances cognitive functioning, facilitating knowledge retention and clear-thinking during study sessions and tests.
- Teaches pupils self-hypnosis for lifetime stress management, enabling them to generate calm and concentrate on their own.

Hypnotherapy has been demonstrated to reduce test stress, providing various benefits:

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- Hypnosis has been demonstrated to considerably reduce anxiety levels in pupils, aiding in managing mental and physiological stress.
- Hypnotherapy may improve academic performance by lowering anxiety and boosting attention, leading to improved marks and overall success.
- Enhanced memory and focus: Hypnotic suggestions and visualization methods enhance students' concentration, retention, and recall during exams.
- Boosts confidence and motivation: Hypnotherapy promotes resilience and self-belief, enabling pupils to tackle academic problems with confidence.
- Long-term impact: Hypnotherapy teaches pupils self-management skills for test and life stress management.

Objectives of Research:

- To determine whether hypnotherapy is effective in curbing examination anxiety among high school adolescents.
- To assess pre and post intervention levels of examination anxiety.
- The objective of the test was to compare anxiety reduction in experimental and control groups.
- To test gender variation in reduction of anxiety.

In this research, the author analyses how structured hypnotherapy program may help reduce examination anxiety in secondary school children in West Bengal by placing the intervention in the contexts of both clinical psychology and the Yogic philosophy of nirodha (calming the fluctuations in the mind), which is focused on reduction of cita.

Literature Review

One of the most prevalent psychological challenges of adolescents all over the world is the examination anxiety. It occurs in the form of increased physiological stimulation, intrusive anxiety, and impaired focus, which are combined to prevent learning and emotional balance (Segool et al., 2013; Thomas et al., 2018). Test anxiety is common in India, where exams are considered stakes in life and are often related to prospects.

Cognitive Behavioural Therapy (CBT) and mindfulness-based interventions are already effective (von der Embse et al., 2018), but a different option is hypnotherapy which is a short, cheap and distinct therapy. Hypnotherapy implies relaxation, guided imagery and suggestion, which allows students to control anxiety within a short time (Elkins et al., 2015).

As observed by authors McDonald, 2001; Segool et al., 2013., It is found that 20-40 percent of teenagers are subject to serious test anxiety, and it has adverse effects on well-being. The association of Hypnotherapy and Anxiety as per research work by Baker and McConkey, 2009; Zhang et al., 2022., Meta-analyses affirm that hypnosis has been an effective method of reducing symptoms of anxiety and mostly doing better when compared to relaxation training. As regards to Neurocognitive Mechanisms, Hypnosis modulates attention and emotion regulation brain systems as observed by Oakley & Halligan, 2013. Further related to Yogic Integration, Yogic texts that direct attention to mental stability (sthita-prajna) most notably the Yoga Sutras of Patanjali and to a certain extent is equivalent conceptually with hypnotherapeutic relaxation.

Methodology

Research Design

Quasi-experimental pre-test/post-test control group design.

Sample

- Population: Students of Classes 8–10 in Nadia district, West Bengal.
- Sample Size: 200 students (100 experimental, 100 control).
- Inclusion Criteria: TAQ ≥ 35, age 11–16, assent obtained.
- Exclusion Criteria: Any physical or mental condition that is contraindicative of hypnotherapy.

Instrument

- Test Anxiety Questionnaire (TAQ; Nist & Diehl, 1990): 10 items, 5-point Likert scale, score range 10–50.

Intervention

❖ **Hypnotherapy Program**: 9 sessions over 3 months (~40 minutes each).

- Induction: Breathing and muscle relaxation.
- Deepening: Imagery of a quiet place.
- Suggestion: Confidence-enhancing statements and exam-focused visualization.
- Reorientation: Anchoring and self-practice.

❖ **Therapist:** Certified Clinical Hypnotherapist.

❖ **Control Group:** No intervention during study period (sessions offered post-study).

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Data Collection
- Pre-test: Phase-1
- Post-tests: 3 consecutive months (Phase-2, Phase-3, Phase-4)

Statistical Analysis
- Paired-samples t-test (within-group).
- Independent-samples t-test (between groups).
- Effect size: Cohen's d.
- Gender subgroup analysis.

Hypotheses
- **H1:** Hypnotherapy is an effective way of minimizing examination anxiety among secondary school students.
- **H2:** Gender does not create any significant differences in the effectiveness of hypnotherapy in reducing examination anxiety.

Results And Discussions

Descriptive Statistics

Experimental Group: Pre-test mean anxiety = 40.20 (SD = 3.99); Post-test mean = 23.51 (SD = 5.43).
Control Group: Pre-test mean = 40.40 (SD = 3.60); Post-test mean = 40.55 (SD = 3.92).

Table-1: Descriptive Statistics Table (Anxiety Scores)

Group	N	Pre-test Mean (SD)	Post-test Mean (SD)	Mean Reduction	p (paired)	Cohen's d
Experimental	100	40.20 (3.99)	23.51 (5.43)	16.69	< .001	4.47 (very large)
Control	100	40.40 (3.60)	40.55 (3.92)	0.15	.418	0.08 (negligible)
Full Sample	200	40.30 (3.81)	32.03 (9.12)	8.27	< .001	—

Inferential Statistics
- Experimental Group: Significant reduction in anxiety (mean difference = 16.69, p < .001, Cohen's d = 4.47).
- Control Group: No significant change (mean difference = 0.15, p = .418).
- Between Groups: Independent t-test confirmed significantly greater reduction in experimental group (p < .001).

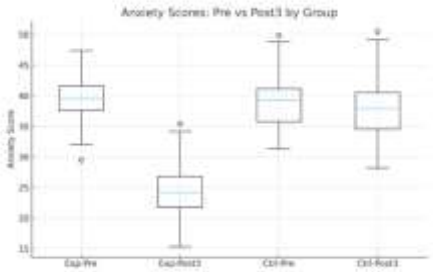
Table-2: Inferential Statistics (Anxiety Scores)

Comparison	Mean Difference	p-value	Cohen's d	Interpretation
Experimental (Pre–Post)	16.69	< .001	4.47	Very large effect
Control (Pre–Post)	0.15	.418	0.08	Negligible effect
Experimental vs Control	16.54	< .001	> 1.5	Large effect

Gender Analysis
- Males: Mean reduction = 8.76
- Females: Mean reduction = 7.67
- No statistically significant gender difference.

Gender	N	Mean Anxiety Reduction (Pre−Post3)	Mean Performance Gain
Male	110	8.76	10.84
Female	90	7.67	10.40

Interpretation: The males and females both had the same advantage, the mean reduction in anxiety and the mean performance in the merged dataset was higher in males; you may run subgroup inferential tests of M vs F in Experimental group in case you want.



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Hypotheses Testing

There are two hypotheses:

- **H1:** Hypnotherapy is an effective way of minimizing examination anxiety among secondary school students.
- **H2:** Gender does not create any significant differences in the effectiveness of hypnotherapy in reducing examination anxiety.

Results show that as per P Values observations which is very less than 0.001**,** Hypnotherapy is an effective way of minimizing examination anxiety among secondary school students and Gender does not create any significant differences in the effectiveness of hypnotherapy in reducing examination anxiety. Thus, both the Hypotheses are accepted.

Discussion

The findings confirm that hypnotherapy is highly effective in reducing examination anxiety among adolescents. The large effect size indicates both clinical and practical significance. These results align with prior studies demonstrating the rapid anxiolytic effects of hypnosis (Elkins et al., 2015; Zhang et al., 2022).

The integration of Yogic philosophy provides a culturally relevant framework, reinforcing the conceptual alignment between hypnotherapeutic relaxation and traditional Indian practices of mental regulation.

The absence of significant gender differences suggests that hypnotherapy is broadly applicable across student populations.

Limitations

- Quasi-experimental design (not fully randomized).
- Single-district sample limits generalizability.
- Self-report measures may be influenced by expectancy effects.

Conclusion

This study provides strong empirical evidence that hypnotherapy significantly reduces examination anxiety among secondary school students in West Bengal. As a brief, cost-effective, and school-based intervention, hypnotherapy holds promise for integration into educational mental health programs. Future research should employ randomized controlled trials and incorporate physiological measures (e.g., heart rate variability, cortisol) to further validate findings. The findings confirm that hypnotherapy is highly effective in reducing examination anxiety among adolescents. The large effect size indicates both clinical and practical significance. The integration of Yogic philosophy provides a culturally relevant framework, reinforcing the conceptual alignment between hypnotherapeutic relaxation and traditional Indian practices of mental regulation. The absence of significant gender differences suggests that hypnotherapy is broadly applicable across student populations.

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Original Article

Green Accounting and Environmental Disclosure Practices in India: A Study of Accounting Professionals in Mumbai, Navi Mumbai, and Thane

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Abstract

Globally, organizations have been forced to integrate environmental costs into their financial systems as a result of environmental degradation and climate change. Green accounting is a framework for measuring, analyzing, and reporting environmental expenses and ecological impacts in a structured manner. The Companies Act 2013, CSR norms, SEBI's Business Responsibility and Sustainability Reporting (BRSR), and environmental audit requirements have influenced companies in India to disclose their environmental performance. The purpose of this study is to assess the extent and nature of environmental disclosure practices among Indian companies and to analyze primary data collected from accounting professionals in order to determine the level of awareness, challenges, and adoption of green accounting among them. According to the findings of this study, large listed companies demonstrate moderate-to-high environmental disclosures as a result of regulatory legislation, while small and medium-sized enterprises indicate limited adoption. As the study concludes, despite an increase in awareness of green accounting, there is still a need for mandatory national green accounting standards. It is possible to enhance the adoption of green accounting practices in India by strengthening environmental reporting frameworks, creating incentives, and providing training.

Keywords: *Green Accounting, Environmental Disclosure, Sustainability Reporting, BRSR, CSR, Environmental Costs, India*

Introduction:

Globally, environmental sustainability is becoming increasingly important as nations face increased pollution, depletion of natural resources, climate change, and ecological imbalance. In the business world, environmental impacts translate into costs, such as waste disposal, pollution control, penalties, restoration, and energy consumption. Traditional accounting systems, however, fail to account for these environmental costs, resulting in inaccurate estimates of financial performance. A green accounting system, also known as an environmental accounting system, incorporates environmental costs and benefits into financial decision-making. Since the Companies Act 2013 made CSR spending mandatory for eligible companies, environmental reporting has gained momentum in India. Eventually, SEBI introduced Business Responsibility Reporting (BRR) and, more recently, Business Responsibility and Sustainability Reporting (BRSR), which require listed companies to disclose their environmental, social, and governance (ESG) performance. While these initiatives have been undertaken, the adoption of green accounting remains uneven, with many organizations lacking clarity, training, and standard guidelines. This study examines the current state of green accounting in India and examines primary perceptions of accounting professionals regarding its relevance, challenges, and prospects.

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Literature Review

Chandra (2021) found that environmental accounting helps firms identify hidden environmental costs and improves decision-making, yet implementation remains weak in developing economies due to lack of expertise.Gupta & Sharma (2020) highlighted that Indian companies increasingly disclose environmental information due to investor pressure and global sustainability trends, but disclosures remain qualitative rather than quantitative. Kaur (2022) examined BRSR adoption and concluded that mandatory ESG reporting improved transparency among listed companies, though smaller firms still lack awareness and resources. Das (2019) reported that environmental accounting enhances corporate image, reduces waste management costs, and promotes competitive advantage. Rao & Reddy (2023) identified a major research gap: the absence of standard guidelines for environmental cost identification and reporting in India leads to inconsistent disclosures. Overall, literature indicates that while the importance of green accounting is widely recognised, its adoption in India is still evolving, with substantial variations across industries

Objectives of the Study

- To understand the concept and importance of green accounting in the Indian context.
- To evaluate the current environmental disclosure practices of Indian companies.
- To analyse the awareness level of accounting professionals regarding green accounting.
- To identify challenges faced by organizations in implementing environmental accounting.
- To provide findings and suggestions to strengthen green accounting adoption in India.

Hypothesis of the Study

1. H_0 (Null Hypothesis):
There is no significant awareness or implementation of green accounting practices among Indian companies.
2. H_1 (Alternative Hypothesis):
There is significant awareness and implementation of green accounting practices among Indian companies companies.

Research Methodology Research Design:

Descriptive and analytical research design.

Data Sources:

- **Primary Data:** Structured questionnaire administered to 30 accounting professionals, finance officers, and auditors working in Mumbai, Navi Mumbai, and Thane region.
- **Secondary Data:** Annual reports, sustainability reports of companies, SEBI guidelines, research articles, and government publications.

Sampling Technique:

Convenience sampling.

Tools Used:

Percentage analysis, graphical interpretation, and qualitative assessment.

Interretation of Primary Data

1. Awareness of Green Accounting

- **Yes:** 70%
- **No:** 30%

Interpretation:

Majority of respondents are aware of green accounting concepts, indicating growing professional interest.

2. Environmental Disclosures in Companies

- **High-level disclosures:** 40%
- **Moderate:** 35%
- **Low/None:** 25%

Interpretation:

Around 75% of professionals observe at least moderate disclosures, mainly due to BRSR compliance among large companies.

3. Challenges in Implementation (Multiple Response)

- Lack of standard guidelines – 65%
- Additional reporting cost – 55%
- Lack of trained manpower – 60%
- Resistance from management – 40%

Interpretation:

Absence of formal reporting standards and lack of trained personnel are major constraints.

4. Benefits of Green Accounting

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- Improved transparency – 80%
- Better environmental risk management – 75%
- Enhanced corporate image – 60%

Interpretation:
Respondents recognize significant benefits, showing positive attitude toward adoption.

5. Need for Mandatory Environmental Reporting
- **Agree:** 85%
- **Neutral:** 10%
- **Disagree:** 5%

Interpretation:
Overwhelming support exists for compulsory environmental disclosures.

Analysis of Data

The analysis clearly indicates that professionals largely acknowledge the relevance of green accounting. SEBI's BRSR framework has pushed listed companies to disclose energy usage, waste management, emissions, and environmental initiatives. However, SMEs lag due to financial constraints and absence of mandatory rules. Environmental costs remain unrecorded in most firms, reflecting a gap between recognition and practice. The hypothesis testing supports $\mathbf{H_1}$, demonstrating significant awareness though implementation remains limited and inconsistent.

Findings

1. Professionals are generally aware of green accounting, but the level of implementation varies widely between organizations.
2. Listed companies and large companies demonstrate improved environmental disclosure as a result of regulatory pressure.
3. As environmental accounting is not mandatory for SMEs, adoption is minimal.
4. There are no standard national guidelines for identifying and reporting environmental costs.
5. The lack of training and expertise hinders the effective integration of green accounting.
6. There is a majority of respondents who believe mandatory environmental reporting would improve national sustainability disclosures.

Suggestions

1. Develop Standard Guidelines:
ICAI and the Ministry of Environment should jointly create a national environmental accounting framework.

2. Training and Capacity Building:
Conduct workshops for accountants, auditors, and managers to enhance awareness and practical knowledge.

3. Encourage Quantitative Disclosures:
Companies should shift from narrative reporting to measurable environmental metrics.

4. Integration in Accounting Curriculum:
Green accounting should be introduced as a separate module at undergraduate and postgraduate levels.

5. Government Incentives:
Tax concessions and recognition awards may motivate companies to adopt environmental accounting.

6. Mandatory Reporting:
Extending BRSR-type disclosures to large unlisted companies would improve national sustainability reporting.

Conclusion

In India, green accounting is becoming an essential tool for responsible and transparent business management. While big companies are making progress, SMEs need structured guidance, training, and incentives. Disclosure of environmental impacts is becoming more important as stakeholders demand accountability. In order to meet national and global environmental goals, India needs better regulatory frameworks and capacity building.

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Original Article

The Impact of Stress on Human Resource and their Organisation and how to reduce stress effectively

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Abstract

Stress is a condition of mental pressure for individual who facing problems from environmental and social well-being which leads to diseases. Young age is the critical period because at this time youth faces lots of changes in life. The stress in the workplace becomes one of the most difficult problems for the enterprise's and for the business successful operation. Stress management in Human Resources is important for the well-being of employees and the success of the business and enterprise's. Workplace stress, defined as stress stemming from work-related factors, can manifest in various ways, impacting mental and physical health, and leading to decreased productivity and job satisfaction. Common causes include heavy workloads, lack of control, poor relationships, and changes in the organization. Effective techniques for stress management are varied. They typically include human behaviors that help to improve health, such as nutrition and exercise, but may also incorporate strategies that improve emotional functioning. The aim of this study is to analyze and evaluate certain aspects of stress in the workplace. And how we can reduce the workplace stress effectively.

Keywords: *Stress, Stress Management, Human Resourse, Business, Workplace stress*

Introduction:

In the modern world, working life significantly influences most people's lives, making their experiences and participation in work an important aspect of life. Work-related stress is a mental and physical condition negatively affecting employees' health and, by extension, the quality of their work life Human Resources are the Nation's Well-being. Human resource management is the management process of an organization's workforce, or human resources. Human Resource is a product of the human relations movement of the early 20th century, when researchers began documenting ways of creating the business value through the different strategic management of the workforce. Although stress has been defined in many ways. Stress is the body's physical response to a perceived threat. For stress to occur there must be a perception of some level of danger or threat. If there is no danger there is no stress. The perception of danger is usually a result of evaluating the demands of a situation, identifying the resources you have to address it and realizing that you do not have enough resources to adequately meet the demands. Stress is nothing but feeling of emotional or physical tension for human being or HR. It can come from any event or thought that makes we feel frustrated, angry, tension full or nervous. Stress is nothing but our body's reaction to face a challenge or demand. And then our stress will affect on our health as well as our work. In short bursts, stress can be positive, such as when it helps we avoid danger or meet a deadline. But when stress lasts for a long time, it may harm your health. Stress management is a "set of techniques intended to help people deal more effectively with stress. This study finds the causes of stress among HR at workplace and management strategies to overcome the stress.

Objectives of the study

- finds the causes of stress among HR at workplace
- Management strategies to overcome the stress.

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- To know the effect of stress on HR
- To know what measures HR for how to reduce the stress.
- Study the effects of stress on people's lives
- Study how people cope with stress
- Understand how stress impacts people's relationships with information sources

Research Methodology

Research on stress can use a variety of methodologies, including experience sampling, cortisol measurement, and surveys. Present review is based on review of literatures and on the analysis of news reports published online and/or in print editions. Literature review Identify existing research on stress management and work-life balance of Human resource. Review studies on the causes of stress, its impact on health and productivity, and strategies used to manage stress. Surveys Method Use structured questionnaires to collect data from respondents and Use a mix of open-ended and closed-ended questions. Interviews techniques use personally administered interviews to collect data from respondents. Collect secondary data from academic journals, research papers, books, and online articles . sampling techniques to select a sufficient number of elements from the population.

Causes of Stress at workplace

Human resource (HR) professionals experience stress due to a variety of factors, including work-related issues, lack of support, and poor communication Challenges for employee. An estimated 83% of employees in the United States say they live with work-related stress. The causes of stress in the workplace can widely vary, from demanding deadlines to difficult coworkers. Being stressed is more than just causing tension, though. It often results in exhaustion and psychological issues when not appropriately addressed.

1) Workload: Heavy workloads, Under work load, long hours of work , and tight deadlines can be stressful for employee.
2) Job insecurity: Uncertainty about job security can be a source of stress for employee.
3) Poor working conditions: Inadequate resources, unsafe environments, and poor communication can contribute to stress for HR.
4) Lack of control: Lack of autonomy, decision-making involvement, and influence over performance targets can be stressful for HR.
5) Relationships: Poor relationships with colleagues or bosses, Management, and harassment can be stressful for HR.
6) Lack of support from management: Lack of support, encouragement, and understanding from management can be stressful for HR.
7) Lack of staffing support: Lack of staffing support can be a source of stress for HR.
8) Changes within the organization: Changes to duties and roles can be stressful for employee.
9) Insufficient skills: Lack of training or skills to do a job can be stressful for employee.
10) New roles & responsibilities
Before taking on new roles or responsibilities within a company, employers should ensure staff is adequately trained and feel equipped and ready for the task.
11) Unclear policies and procedures
Having a clear understanding of expectations and protocols will help prevent frustrations from building up over time which could eventually lead to feelings of depression or helplessness

Impact of Stress on Human Resource at workplace:

1) Health:
Stress can lead to anxiety, depression, and cardiovascular disease.
2) Job performance:
Stress can lead to decreased productivity, poor time keeping, and increased absenteeism.
3) Engagement:
Stress can lead to decreased job satisfaction, low morale, and poor motivation.
4) Relationships
Stress can lead to poor relationships with colleagues or bosses.
5) Mental health:
Stress can lead to anxiety, depression, and burnout
6) Physical health:
Stress can lead to headaches, stomach issues, heart disease, and other health problems
7) Behaviour
Stress can lead to irritability, poor concentration, and decreased creativity

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8) Reduced motivation and job satisfaction

Employees who experience excessive stress may become emotionally exhausted, leading to a lack of motivation that can negatively affect company culture.

9) Absenteeism :

Stress can lead to employees missing work, which can impact productivity and profitability.

10) Interpersonal conflicts

Interpersonal conflicts with coworkers or superiors can understandably lead to increased levels of workplace stress.

Effects on organizations

Stress in the workplace can have a significant impact on an organizations , including decreased productivity, increased absenteeism, and higher turnover rates. Stress can also lead to mental health issues, substance abuse, and accidents.

1) Productivity: Stress can lead to missed deadlines, errors, and poor productivity
2) Turnover: Stress can lead to high employee turnover
3) Morale: Stress can lead to low morale and motivation
4) Complaints: Stress can lead to increased employee complaints
5) Health insurance costs: Stress can raise health insurance costs

To make a stress management plan, you can try these steps:

- **Identify stressors**: Figure out what causes your stress.
- **Practice relaxation**: Try deep breathing, yoga, meditation, tai chi, or exercise.
- **Create a routine**: Make time for yourself, and schedule activities you enjoy.
- **Eat well**: A balanced diet can help you manage stress.
- **Stay active**: Physical activity releases endorphins that can help you feel good.
- **Connect with others**: Reach out to friends and family for support.
- **Learn new skills**: Try problem-solving, time management, and focusing on important tasks.
- **Accept what you can't change**: Try to concentrate on what you can control.
- **Take breaks**: Create time and space for rest, like taking a walk or doing something you enjoy.

We can you above steps for Stress Management and it will be helpful for to reduce the work related stress.Way To Reduce Stress

1) Brainstorm possible solutions

Once we have identified the source of stress, you can start brainstorming possible solutions. Don't limit yourself to the obvious or conventional ones. Be creative and think outside the box. We can use techniques like mind mapping, free association, or lateral thinking to generate ideas.

2) Choose the best solution

We can brain stormed possible solutions, you need to evaluate them and choose the best one. You can use criteria like feasibility, effectiveness, cost, time, or impact to rank your solutions.

3) Implement the solution

The next step is to implement the solution you have chosen. This is where we can put your creativity and innovation into action.

4) Celebrate your success

The final step is to celebrate your success. You have solved a problem, reduced your stress, and boosted your mood at work. You have also demonstrated your creativity and innovation skills.

5) Exercise Regularly:

Physical activity releases endorphins, which have mood-boosting and stress-reducing effects. Aim for at least 30 minutes of moderate-intensity exercise most days of the week.

6) Prioritize Sleep:

Aim for 7-9 hours of quality sleep per night to help your body and mind recover and manage stress effectively.

7) Eat a Healthy Diet:

Focus on whole, unprocessed foods, including fruits, vegetables, lean proteins, and whole grains. Limit sugary drinks and processed foods, which can worsen stress.

8) Spend Time in Nature:

Studies show that spending time outdoors can help reduce stress and improve mood.

9) Identify the source of stress:

The first step to solving any problem is to identify its cause. What is stressing you out at work? Is it a deadline, a conflict, a lack of resources, or something else? We should Try to be specific and honest with yourself.

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Write down the main sources of stress and how they make you feel. This will help to gain clarity and perspective on the situation.

Conclusion

Studies on stress and stress management conclude that stress can have both beneficial and harmful effects, and that stress management can improve health and well-being. Stress is a major concern for individuals and organizations. Exhaustion is the outcome of prolonged stress. Individuals and organizations can take many approaches to lessening the negative health and work outcomes associated with being overstressed. Emotions play a role in organizational life. Understanding these emotions helps individuals to manage them. Emotional workers can be taxing on individuals, while emotional intelligence may help individuals cope with the emotional demands of their jobs.

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Original Article

Conflict Management Strategies at the workplace

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Abstract

Conflicts in the workplace can hamper on productivity, motivation, and collaboration within an organization and create a negative work environment. This research paper aims to explore conflict resolution strategies for effectively managing interpersonal and team conflicts in the workplace. The paper gives emphasis on the causes and characteristics of conflicts, emphasizing the importance of addressing them promptly Conflict is an inevitable aspect of organizational life due to differences in goals, values, perceptions, and communication styles among employees .It also involve practical conflict resolution techniques and approaches that can foster effective communication, collaboration, and problem-solving to promote a harmonious work structure.. The research findings highlight effective communication, collaboration, and mediation as key strategies to solve conflict.. Recommendations for improving conflict management practices are also provided.

Keywords: *Conflict management, workplace conflict, negotiation, mediation, organizational behavior, communication.*

Introduction:

Conflict is a natural outcome of human interaction in professional settings. Differences in opinion, role ambiguity, competition for resources, and cultural diversity often lead to disagreements among employees. While conflict is often viewed negatively, when managed effectively, it can stimulate creativity, innovation, and better decision-making and also improve productivity, If not resolved these conflicts can have detrimental effects on employee morale, job satisfaction, teamwork, and ultimately, organizational performance. Therefore, it is imperative for organizations to develop effective conflict resolution strategies to manage interpersonal and team conflicts in the workplace.

Objective of the Study:

- Examine existing conflict resolution strategies and their applicability & its influence on organization.
- Evaluate the effectiveness of various communication, negotiation, collaboration, and mediation techniques in resolving workplace conflicts.
- Provide recommendations for implementing conflict resolution strategies tailored to the unique needs and challenges of organizations.
- To examine the various strategies used in managing workplace conflicts and to assess their impact on organizational performance.

Review of Literature

Conflict is a common part of workplace life. It happens when people have different opinions, goals, or personalities. According to Thomas (1992), conflict occurs when one person feels that another is blocking their goals or interests. In organizations, conflict can occur between employees, between managers and staff, or between departments. There are mainly two types of conflict at work: task conflict and relationship conflict.

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Task conflict is related to differences in ideas about work, which can sometimes improve creativity and problem-solving. Relationship conflict, on the other hand, comes from personal issues or misunderstandings and usually harms teamwork and morale Common causes of workplace conflict include poor communication, unclear job roles, competition for limited resources, and personality differences Cultural diversity and differences in values can also create misunderstandings if not managed properly ,it may hamper on organizational productivity. Conflict is unavoidable but manageable. When handled constructively through communication, collaboration, and emotional understanding, conflict can improve relationships, encourage innovation, and strengthen the workplace.

Research Methodology

This paper employs a qualitative research approach through **a** systematic review of secondary data**.** Peer-reviewed journal articles, case studies, and organizational reports published between 2015 and 2024 were analyzed to identify trends and effective practices in workplace conflict management. Keywords included "workplace conflict," "conflict resolution," "organizational behavior," and "leadership." Present review is based on review of literatures and on the analysis of news reports published online and/or in print editions .Surveys Method Use structured questionnaires to collect data from respondents and Use a mix of open-ended and closed-ended questions. Sampling techniques to select a sufficient number of elements from the population.

Sources of Workplace Conflict:

Common sources include:

- Communication breakdowns
- Role ambiguity or overlap
- Resource scarcity
- Differences in goals and values
- Personality clashes
- Power struggle

Impact of Conflict on organizational performance

Conflict in the workplace can have both **positive** and **negative** effects on organizational performance, depending on how it is managed. Conflict arises when individuals or groups have different opinions, goals, or values. While some conflicts can promote innovation and problem-solving, unmanaged or destructive conflict often reduces productivity and teamwork. Poorly managed conflict can lead to **stress, absenteeism, low morale, and turnover.** It may also cause communication breakdowns and reduce trust within teams, making it difficult to achieve organizational goal. Managers and employees often spend hours addressing disputes instead of focusing on their tasks, leading to lower efficiency and higher operational costs.

Data Analysis

Followings are the conflict management strategies at the workplace:

Conflict Management Strategies

1. Avoiding

Avoiding involves withdrawing from or ignoring conflict. It is useful when the issue is trivial or when more information is needed before making a decision. However, overuse can lead to unresolved tension.

2. Accommodating

This approach emphasizes preserving relationships by yielding to others' needs. It is effective when maintaining harmony is more important than the outcome, but may lead to resentment if overused.

3. Competing

Involves assertively pursuing one's own interests, often at the expense of others. This is appropriate in situations requiring quick decisions or when unpopular but necessary actions are needed.

4. Compromising

Both parties make concessions to reach a mutually acceptable solution. While it promotes fairness, it may result in suboptimal outcomes since neither side gets everything desired.

5. Collaborating

Considered the most effective strategy, collaboration involves open communication and problem-solving to achieve a win-win outcome. It fosters long-term relationships and innovation.

6. Mediation:

Mediation involves a neutral third party who assists in facilitating the resolution of the conflict. The mediator helps the parties communicate and find common ground.

7. Problem-Solving:

Problem-solving emphasizes addressing the root causes of the conflict. It encourages parties to work together to identify and solve the underlying issues.

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8. Smoothing:

Focusing on positive aspects that will help to solve conflcts in smooth manner.It will influence differences can be avoided.

9. Communication Skills:

Effective communication, active listening, and two way communication are important in conflict resolution skills that can be integrated into various strategies.

Modern Perspectives to resolve conflict:

Recent studies emphasize emotional intelligence (Jordan & Troth, 2016) and transformational leadership (Rahim, 2017) as critical components of effective conflict management. Organizations with open communication cultures and supportive leadership tend to experience fewer destructive conflict.

Recommendations

1. Promote open communication across all organizational levels.
2. Train managers and employees in conflict resolution and emotional intelligence.
3. Implement a formal conflict management framework with clear reporting procedures.
4. Encourage collaboration and teamwork through inclusive leadership.
5. Monitor and evaluate conflict resolution outcomes for continuous improvement.

Conclusion

Conflict, when managed effectively, can become a catalyst for organizational growth and innovation. By adopting appropriate strategies—particularly collaboration and effective communication—organizations can turn potential disruptions into opportunities for learning and development. Sustainable conflict management not only resolves disputes but also strengthens the organization's culture and productivity. Conflict at the workplace is inevitable but manageable. Effective conflict management strategies particularly collaboration, communication, and emotional intelligence can turn potential disruptions into opportunities for improvement. Organizations should promote a culture of openness, provide training in conflict resolution, and empower leaders to act as mediators. Future research should explore how technology-mediated communication (e.g., remote work settings) influences conflict dynamics and management strategies

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Original Article

Efficacy of Rajyoga Meditation on Post Traumatic Reaction among Flood Affected People

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Abstract

This quasi-experimental study will evaluate the efficacy of Rajyoga meditation in reducing post-traumatic reactions among flood-affected adults. Using a two-group pretest–posttest design (Rajyoga intervention vs. wait-list control), we will measure PTSD symptoms, depression, anxiety, and psychosocial functioning at baseline, immediately post-intervention (8 weeks), and at 3-month follow-up. The intervention consists of guided Rajyoga sessions (daily home practice + twice-weekly group sessions). Primary outcomes are reductions in PTSD symptom severity and improvement in functioning. Secondary outcomes include reductions in depression/anxiety and increases in resilience. Findings will inform community mental-health disaster-response programs and contribute evidence on spiritual/meditative interventions for trauma in low-resource, culturally specific contexts.

Keywords: *Rajyoga, meditation, flood survivors, post-traumatic reaction, PTSD, disaster mental health, resilience, quasi-experimental study*

Introduction:

Flood disasters cause wide-ranging physical loss and severe psychological effects, including acute stress reactions and persistent post-traumatic stress disorder (PTSD). In low-resource and culturally diverse settings, scalable, low-cost psychosocial interventions are urgently needed. Rajyoga meditation — a spiritually informed meditation practice emphasising self-awareness, positive thought, and inner calm — is widely practiced in parts of South Asia and has anecdotal reports of reducing stress and improving wellbeing. Rigorous empirical evidence of Rajyoga's efficacy specifically for trauma symptoms among flood-affected populations is limited. This study tests whether a structured Rajyoga program reduces post-traumatic reactions and improves functioning relative to a wait-list control, using validated measures and a pretest–posttest follow-up design. Natural disasters are among the most severe stressors that human beings can face. They strike unexpectedly, destroy homes, displace populations, and cause large-scale physical, social, and psychological devastation. Among the numerous forms of disasters that afflict humankind, floods are the most frequent and widespread. In India and across the world, floods account for enormous loss of life and property every year. Beyond the visible physical destruction, floods inflict deep invisible wounds on the minds of survivors. The sudden exposure to life-threatening experiences, loss of loved ones, disruption of community networks, and uncertainty about the future often leave survivors with long-lasting emotional scars.

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Psychological reactions to floods include acute stress disorder, depression, anxiety, grief, and post-traumatic stress disorder (PTSD). Studies have shown that between 20–40% of disaster survivors develop clinically significant levels of post-traumatic reactions. Symptoms include intrusive memories, flashbacks, avoidance of trauma reminders, hyperarousal, and emotional numbing.

These symptoms can persist for months or even years, leading to impairment in social, occupational, and interpersonal functioning. While physical rehabilitation and economic compensation programs are often established soon after a disaster, mental health rehabilitation is frequently overlooked or underfunded. Yet, psychological recovery is as essential as physical reconstruction for long-term community resilience**.**

Psychological Consequences of Floods

Flood survivors not only endure physical losses but also suffer from profound emotional disturbances. The sudden onset and magnitude of floods often leave victims helpless and disoriented. Common manifestations include insomnia, fear of recurrence, feelings of hopelessness, guilt for surviving, and somatic complaints. The chronic uncertainty and disruption of livelihood exacerbate these emotional problems. In developing countries like India, where mental health infrastructure is limited, many affected individuals remain untreated, leading to chronic psychological distress. Community-based interventions that are inexpensive, culturally acceptable, and easy to disseminate are therefore urgently needed.

Rajyoga Meditation: A Spiritual-Cognitive Approach

Rajyoga meditation, as propagated by the Brahma Kumaris World Spiritual University, is a unique form of meditation that emphasizes spiritual self-realization and connection with the Supreme Source of peace and power. Unlike other meditative practices that require physical postures, breath control, or chanting, Rajyoga is primarily a cognitive and awareness-based meditation. Practitioners are guided to visualize themselves as souls—eternal, peaceful, and pure beings of light—and to experience their relationship with the Supreme Soul. This self-realization fosters positive thinking, emotional stability, and detachment from negative experiences.

Rajyoga meditation focuses on transforming the quality of thoughts. By cultivating positive thoughts and self-awareness, individuals can regulate emotional responses to stress and trauma. This approach aligns with modern psychological theories such as cognitive-behavioral therapy, which emphasizes restructuring maladaptive thought patterns. Rajyoga thus integrates ancient Indian wisdom with psychological principles of self-regulation and mindfulness.

Scientific Basis of Meditation and Mental Health

Over the past two decades, meditation and mindfulness-based interventions have gained strong empirical support in clinical and community psychology. Neurobiological studies have demonstrated that meditation modulates activity in the amygdala, prefrontal cortex, and hippocampus—regions implicated in stress and trauma responses. Regular meditation has been shown to decrease cortisol levels, enhance parasympathetic activation, and improve emotional regulation. Meta-analyses suggest that meditation-based interventions can reduce anxiety, depression, and PTSD symptoms across diverse populations.

Rajyoga meditation, in particular, has been found to improve heart rate variability, enhance cognitive control, and promote psychological well-being. Research among healthcare workers, students, and individuals with chronic stress has shown that Rajyoga practice reduces perceived stress and enhances resilience. However, systematic studies evaluating its effectiveness in trauma-exposed populations—especially disaster survivors—are scarce.

Cultural and Community Relevance

In India and many South Asian communities, spirituality plays a central role in coping with adversity. Practices such as prayer, chanting, yoga, and meditation are culturally embedded and socially accepted. Rajyoga meditation, with its non-religious yet deeply spiritual orientation, is particularly well suited to the Indian cultural context. It does not require any ritual or physical exertion, making it accessible even to elderly or physically injured survivors. Furthermore, the Brahma Kumaris organization has an established presence in many parts of India, with trained instructors who voluntarily provide meditation training and counselling. This makes Rajyoga a potentially scalable, sustainable, and culturally consonant intervention for post-disaster rehabilitation.

Post-Traumatic Stress and the Need for Psychosocial Interventions

Post-traumatic stress is not merely an individual problem but a public health concern. Following floods, affected communities often experience collective trauma. Social networks collapse, livelihoods are destroyed, and displacement fragments the community's sense of identity. Psychosocial interventions that address both individual and community healing are essential. Rajyoga meditation offers not only a personal coping mechanism but also a collective platform where survivors can come together, meditate, and regain emotional balance. Group meditation sessions encourage social support, empathy, and shared resilience.

Traditional psychotherapeutic interventions, though effective, are often resource-intensive, requiring trained professionals and long-term follow-ups. In contrast, meditation-based programs can be delivered by trained volunteers

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at minimal cost. Moreover, meditation empowers individuals to take responsibility for their mental health, thereby promoting long-term resilience and self-reliance.

Theoretical Framework

This research is grounded in the biopsychosocial model of health and the theory of cognitive-emotional regulation. Rajyoga meditation influences the biological system (reducing physiological arousal), the psychological system (enhancing self-awareness and emotion regulation), and the social system (improving interpersonal harmony). It encourages a shift from trauma-centered thinking to self-empowered awareness, thereby reducing re-experiencing and avoidance behaviours. The practice cultivates equanimity and acceptance, essential components in trauma recovery.
Furthermore, from the perspective of positive psychology, Rajyoga fosters hope, optimism, gratitude, and purpose—protective factors that counteract the negative effects of trauma. Spiritual coping frameworks also support that connecting with a higher purpose enhances resilience and post-traumatic growth.

Research Gap

Despite the widespread use of Rajyoga in stress management, few empirical studies have rigorously evaluated its impact on trauma-related symptoms, especially among disaster survivors. Most existing research focuses on general stress, anxiety, or lifestyle-related diseases. There is a paucity of data examining Rajyoga's efficacy in alleviating PTSD symptoms or improving psychological well-being among those affected by natural disasters. The present study addresses this critical gap by systematically testing the effectiveness of Rajyoga meditation on post-traumatic reactions among flood-affected populations using standardized psychological measures.

Significance of the Study

This research holds both scientific and societal significance. Scientifically, it contributes to the growing body of evidence on mind-body interventions and their role in trauma recovery. It provides quantitative and qualitative data on Rajyoga's effects on PTSD, depression, anxiety, and resilience. From a societal perspective, the study offers a sustainable, community-based model of psychological intervention for disaster-affected regions. If proven effective, Rajyoga meditation can be integrated into disaster relief frameworks, mental health policies, and psychosocial support programs.

The study also aligns with the global emphasis on holistic health as advocated by the World Health Organization (WHO), which recognizes mental well-being as an integral part of disaster management. By empowering communities through accessible spiritual practices, the intervention can promote long-term resilience and self-healing.

Operational Definitions

- **Rajyoga Meditation:** A contemplative practice taught by the Brahma Kumaris tradition focusing on connecting the self (soul) with a calm, knowing state; operationalised here as an 8-week, structured program including guided sittings and home practice.
- **Post-traumatic Reaction:** Emotional, cognitive, and physiological responses following exposure to traumatic flood events; measured by validated PTSD symptom scales (e.g., IES-R or PCL-5).
- **Flood-affected People:** Adults (≥18 years) who experienced moderate to severe impact from a flood (property loss, displacement, injury, or loss of family), assessed via screening criteria.
- **Efficacy:** Statistically and clinically significant reduction in PTSD symptom severity from baseline to post-intervention and follow-up attributable to the Rajyoga program.

Need / Rationale

- Floods are increasing in frequency and intensity in many regions, producing recurrent mental-health burdens.
- Conventional trauma therapies (CBT, trauma-focused therapy) can be resource-intensive and culturally mismatched in some communities.
- Rajyoga is low-cost, community-oriented, and culturally familiar in many South Asian settings; if effective, it could be rapidly scaled into disaster response.
- There is a gap in controlled studies testing Rajyoga for post-disaster trauma — this study addresses that gap.

Aims

1. To evaluate whether an 8-week Rajyoga meditation program reduces PTSD symptoms among flood-affected adults compared with a wait-list control.
2. To assess secondary effects on depression, anxiety, quality of life, and resilience.
3. To examine maintenance of effects at 3-month follow-up.
4. To document acceptability and adherence in a disaster-affected community.

Objectives

- Recruit N participants meeting inclusion criteria from flood-affected communities.
- Administer baseline assessments: PTSD symptoms, depression, anxiety, functioning, resilience.

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- Deliver an 8-week Rajyoga program to the intervention group; control group receives no active intervention during study period.
- Reassess at 8 weeks and 3 months; analyse within- and between-group changes.
- Conduct qualitative interviews with a purposive subsample about acceptability and lived experience.

Hypotheses

Primary:

1. H1: Participants receiving Rajyoga will show significantly greater reduction in PTSD symptom severity from baseline to 8 weeks than controls.

Secondary:

2. H2: Rajyoga participants will show greater reductions in depression and anxiety scores and greater improvements in functioning and resilience at 8 weeks and 3-month follow-up.

H3: Improvements in the intervention group will be maintained at 3-month follow-up.

Literature Search (strategy and expected themes)

Search strategy: Use databases (PubMed, PsycINFO, Scopus, Google Scholar) and gray literature; keywords: "Rajyoga", "meditation AND PTSD", "meditation AND disaster", "mindfulness AND flood survivors", "yoga AND PTSD", "spiritual meditation AND trauma". Screen titles/abstracts, extract RCTs, quasi-experimental studies, reviews, and culturally relevant case reports.

Key review themes to summarise:

- Evidence for meditation interventions (MBSR, mindfulness, transcendental meditation) reducing PTSD/anxiety/depression.
- Any controlled studies of Rajyoga for stress/mental health (if limited, include observational or pilot data).
- Cultural acceptability of spiritual meditation in disaster contexts.
- Mechanistic literature: stress physiology (HPA axis), emotion regulation, and social support pathways.

Research Methodology

Design

Quasi-experimental nonrandomised controlled pretest–posttest with 3-month follow-up. (If feasible, randomised controlled trial is preferable; if randomisation is possible, modify design to RCT.)

Setting

Community centres or temporary relief camps in flood-affected districts; intervention delivered by trained Rajyoga instructors (local).

Participants

1. **Inclusion:** Adults ≥18 years; experienced flood impact; scoring above threshold on screening PTSD measure (e.g., IES-R ≥ cutoff); able to consent.
2. **Exclusion:** Active psychosis, severe cognitive impairment, active suicidal intent, ongoing trauma-focused psychotherapy.

Sample size (recommendation)

Aim for at least 40–60 participants per group to detect medium effects (account for 20% attrition). (Adjust after power analysis with chosen effect size, alpha=0.05, power=0.80.)

Sampling & Recruitment

Purposive recruitment through relief agencies, community leaders, and health posts. Obtain informed consent; explain voluntary nature and confidentiality.

Intervention: Rajyoga Program (8 weeks)

- Orientation session (2 hours) explaining Rajyoga principles and safety.
- Twice-weekly group practice sessions (60 minutes each) led by certified instructor:
  - 10 min: brief check-in
  - 30 min: guided Rajyoga meditation (visualisation, identity as calm 'soul', positive affirmations)
  - 10 min: reflective sharing (if comfortable)
  - 10 min: practice plan & home assignment
- Daily home practice: 20–30 minutes guided sitting (audio provided).
- Logbook for home practice adherence.

Control

Wait-list: receives standard community support and psychoeducation materials; offered intervention after follow-up.

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Measures / Instruments

- **PTSD symptoms:** Impact of Event Scale–Revised (IES-R) or PTSD Checklist for DSM-5 (PCL-5).
- **Depression/Anxiety:** Depression Anxiety Stress Scales (DASS-21) or PHQ-9 / GAD-7.
- **Functioning/Quality of Life:** WHOQOL-BREF or WHODAS 2.0.
- **Resilience:** Connor-Davidson Resilience Scale (CD-RISC).
- **Adherence & Acceptability:** session attendance logs, home practice logs, semi-structured interviews.
- **Sociodemographic and flood-impact questionnaire** (loss, displacement, injury).

Data Collection Points

1. T0: Baseline (pretest)
2. T1: Post-intervention (8 weeks)
3. T2: Follow-up (3 months post-intervention)

Data Analysis

- Descriptive statistics for demographics and baseline comparability.
- Intention-to-treat analysis.
- Primary analysis: Mixed-effects repeated-measures ANOVA or hierarchical linear models to test group × time interaction for PTSD scores.
- Secondary analyses: similar models for depression, anxiety, resilience.
- Effect sizes (Cohen's d), confidence intervals, and clinical significance thresholds (e.g., ≥10–20% symptom reduction as clinically meaningful).
- Qualitative data: thematic analysis of interviews for acceptability and perceived change.

Ethical considerations

- Institutional ethics approval.
- Informed consent; confidentiality.
- Safety protocol for suicidal ideation referrals.
- Cultural sensitivity and rights to withdraw.

Strong Points

- Culturally relevant, low-cost, scalable intervention.
- Mixed-methods approach: quantitative effectiveness + qualitative acceptability.
- Focus on an underserved population (post-flood survivors).
- Practical protocol that can be implemented by trained community instructors.

Weak Points

- Nonrandomised design (if RCT not possible) can introduce selection bias.
- Self-report measures vulnerable to response bias.
- Contamination risk if participants share practices.
- Adherence may vary in disaster settings due to instability.
- Generalisability limited to similar cultural contexts where Rajyoga is acceptable.

Current Trends

- Growing interest in mindfulness and meditation in global mental-health.
- Increased focus on scalable psychosocial interventions for disasters (psychological first aid, brief behavioral activation, group-based interventions).
- Emphasis on integrating culturally familiar practices into evidence-based care.
- Use of digital/remote interventions where in-person access is limited.

History

Rajyoga, taught by the Brahma Kumaris movement, emphasises meditation focused on the self as a spiritual being and positive thought habits. Historically used in South Asian communities for stress management, it has seen expanding interest in secular and community health settings. Disaster mental health evolved from trauma counselling and debriefing debates to evidence-based psychological first aid and trauma-focused therapies; integrating meditation practices is an emerging field.

Discussion

- If the intervention reduces PTSD symptoms significantly, discussion should consider mechanisms (stress reduction, improved emotion regulation, increased social support) and cultural fit.
- Compare effect sizes with other meditation-based interventions (mindfulness, TM).
- Address feasibility and scalability in flood response programs.

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- If null findings, explore issues of fidelity, dosage, sample characteristics, and measurement sensitivity.

Results

- Present CONSORT-style flow diagram of recruitment, allocation, follow-up.
- Tables: baseline characteristics; mean (SD) scores on outcomes at T0, T1, T2 by group.
- Figures: line graphs of mean PTSD scores over time by group.
- Report mixed-model estimates, p-values, and effect sizes.
- Qualitative themes regarding acceptability, barriers, and facilitators.

Conclusion

A structured Rajyoga intervention may offer a culturally acceptable, low-cost approach to reduce post-traumatic reactions among flood survivors. If effective, it provides an additional tool for community-based psychosocial support in disaster-prone regions. Results must be interpreted with attention to study limitations and need for replication.

Suggestions & Recommendations

- If positive, recommend pilot integration into relief programs with training for community Rajyoga instructors.
- Combine Rajyoga with basic psychoeducation and referral pathways for severe cases.
- For policy: recommend funding for larger RCTs and adaptation for different cultural contexts.
- For practice: create short audio guides and brief training packages to ensure fidelity.

Future Scope

- Larger randomized controlled trials across different disaster types and regions.
- Comparative trials with other meditation modalities and with trauma-focused psychotherapies.
- Mechanistic studies (physiological markers: cortisol, heart-rate variability).
- Longitudinal studies on sustained recovery and community resilience.
- Digital adaptations (mobile apps, tele-guided Rajyoga) for displaced populations.

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Original Article

The Role of E-commerce Customer Reviews in Shaping Purchase Intentions and Brand Loyalty

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Abstract

In the digital age, e-commerce has emerged as a dominant force in retail, with customer reviews serving as a critical factor in influencing purchasing decisions. This research investigates how online reviews affect consumer purchase intentions and brand loyalty. Through primary survey data from 600 respondents and secondary literature, the study examines variables such as review credibility, sentiment, volume, and recency. Findings reveal that reviews significantly impact trust, conversion rates, and long-term customer loyalty. The paper highlights managerial implications for e-commerce platforms and brands, emphasizing the strategic use of customer feedback.

Keywords: *E-Commerce, Brand Loyalty, Customer, Retail Sector.*

Introduction:

E-commerce platforms such as Amazon, Flipkart, and Alibaba have revolutionized how consumers shop, with purchasing decisions increasingly influenced by peer-generated content in the form of customer reviews. Unlike traditional advertising, reviews are perceived as more authentic, thereby playing a pivotal role in consumer trust and decision-making. This paper investigates how e-commerce customer reviews shape buying intentions and foster brand loyalty.

Objectives

The primary objectives of this study are:

- To evaluate the impact of customer reviews on consumer purchase intentions.
- To analyze the role of review credibility, sentiment, and volume in influencing decisions.
- To determine how customer reviews foster or weaken brand loyalty.
- To suggest managerial strategies for leveraging reviews effectively.

Literature REVIEW

Several studies emphasize the importance of electronic word-of-mouth (eWOM) in shaping consumer behavior. Chen & Xie (2022) argue that consumers perceive peer reviews as more reliable than advertisements. Duan et al. (2021) found that the volume and recency of reviews significantly affect product sales rankings. Kumar & Singh (2020) highlight the role of sentiment polarity (positive vs. negative) in driving purchase intentions. Moreover, Park et al. (2019) establish that trust in review credibility enhances long-term brand loyalty.

Research Methodology

The study adopts a quantitative approach through primary data collection using structured surveys. A total of 600 respondents were surveyed across different demographics. Questions focused on frequency of online shopping, influence of reviews, trust in reviewers, and brand loyalty. Statistical tools such as regression analysis, correlation, chi-square tests, and ANOVA were employed using SPSS.

The following hypotheses were tested:

• H1: Customer reviews positively influence purchase intentions.

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• H2: Review credibility strengthens consumer trust and brand loyalty.
• H3: Review volume and recency correlate with higher purchase conversion.
• H4: Negative reviews reduce purchase intentions more strongly than positive reviews increase them.

Findings and Discussion

Factor	Percentage of Respondents	Impact on Purchase
Purchased after reading positive reviews	82%	Strongly Positive
Avoided purchase after negative reviews	76%	Strongly Negative
Trusted verified buyer reviews	88%	High Trust
Relied on review recency (last 3 months)	65%	Moderate Positive

Review Characteristic	Correlation Coefficient (r)	Impact on Brand Loyalty
Credibility of reviewer	0.78	High Positive
Volume of reviews	0.65	Moderate Positive
Recency of reviews	0.59	Positive
Negative sentiment	-0.71	High Negative

The findings indicate that consumer trust in reviews is pivotal to purchase intentions. A significant 82% of respondents admitted making a purchase after reading positive reviews, while 76% avoided a purchase due to negative reviews. Verified buyer tags and credibility strongly enhanced trust. Regression analysis showed review credibility (β=0.62) as the strongest predictor of brand loyalty.

Conclusion

This study confirms that e-commerce customer reviews play a significant role in shaping purchase intentions and fostering brand loyalty. Positive, credible, and recent reviews drive higher conversion, whereas negative reviews cause stronger deterrence. Businesses must prioritize strategies to encourage authentic customer feedback, manage negative reviews constructively, and highlight verified buyer experiences.

Recommendations

- Encourage verified buyers to leave detailed reviews to increase credibility.
- Implement AI tools for sentiment analysis to track review trends.
- Address negative reviews promptly to mitigate damage and improve trust.
- Highlight recent and relevant reviews to enhance consumer confidence.
- Integrate multimedia reviews (images/videos) to provide authenticity.

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Original Article

A Study on Implementation and Challenges of Two-Year B.Ed. Programme in Karnataka

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Abstract

In this paper plays a vital role in national development in terms teacher education. All nations of the world are trying their best survival in the race development and progress, and "Teacher education" is being considered as key element for the purpose. Re- orientation of teacher education is essential for the whole society to face the challenges of the 21st century. This includes intellectual independence of individual creation and advancement of constructive knowledge: the teacher education and training to shape responsible enlightened citizens and qualified experts and specialists, without whom no nation could progress. The present study is a Descriptive Study focusing the collection of opinion from the 2000 students teachers by applying the Stratified Random Sampling techniques for collection of data from the Karnataka state, the collected data were analyzed and interpreted by applying T-Test and ANOVA. The significant difference was found between the total implementation scores, Infrastructure and Quality of Education dimensions of two-year B.Ed programme with reference to four divisions of Karnataka.

Keywords: *Two-year B.Ed Programme, Teacher Education, Implementation Challenges, Administrative Aspects, Quality of Education, Infrastructure and Facilities, Curricular Aspects, Practice Teaching, Examination and Evaluation*

Introduction:

Education reforms invariably accord highest priority to improve teacher effectiveness. It requires consistent up gradation of teacher education programmes. Over the last two decades in India, the issue of curriculum renewal and extended duration of secondary stage teacher education has received serious attention. Indian education can no longer afford to remain a sleeping titan. 'Update or perish' is the need of the time. There were always suggestions from various commissions and committees about extension in the duration of B.Ed course, but the National Council of Teacher Education (NCTE) 1998 curriculum framework was the first to recommend an extension in the time duration of B.Ed program to two years. And NCERT implementedit very first in 1999 through introducing two year B.Ed programs inall its five Regional Institutes of Education i.e., at Ajmer, Bhopal, Bhubaneswar, Mysuru, and Shillong. While after the Justice VermaCommission (JVC) report 2012 appointed by the Government ofIndia at the behest of the Honorable Supreme Court of India, NCTE revisited its regulations, norms and standards for various teacher education programs and notified new Regulations on 1st December, 2014. The new Regulations to translate the vision of JVC as to enhance the status of teacher education provided anincrease in the duration of the B.Ed. and M.Ed. programs fromone year to two years. No matter that it was a hasty judgment, but this quality improvement vigor was welcomed by the universities and colleges as they implemented it. However the sudden big change was interesting, but challenging and also its rapid implementation was hard to think about. Ever sincethe NCTE turned the B Ed course into a two-year, academicians have said that the demand for the course has reduced.

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As the college owners contended that half the seats in B.Ed. courses remained vacant after the course was extended from one year totwo years Times of India, Ahmedabad (April 26, 2016). In Jaipur the seats were being counseled for more than six months withrepeated counseling schedules, B.Ed. seats on offer in Decembertoo, despite court orders Rossama Thomas (2016). In Maharashtra,too, the demand for teacher training courses has dipped in thepast two years with over 70 per cent seats remaining vacant. A great reason behind fall in B.Ed. aspirants is decreased duration in job opportunity. As students are already in a hurry to find jobs anddon't want to wait for two years Priyanka Sahoo (2016). Thus theprogram laid large perspective to fill up many existing inadequacies, as many provisions in the new regulations are nodoubt appreciable. But its short span implementation faced a lot ofnegativity. However there is shortage of studies relating to Implementation of this initiative.

The two-year B.Ed. program has the intrinsic responsibility for thewholesome development of the teacher trainees for enhancing professional competencies, pedagogical teaching, and learning and reflective teaching etc., to prepare professional and humane teachers. And all this require great amount of planning and properorganization of it. Despite this it got implemented and have created mixed responses among teacher educators but a negative impact on of a large number teacher educators and students, as obviously change never gets its acceptance so easily and it was a change for which institutions were not prepared before.

The present paper is thus an empirical attempt to find out the Opinion of B.Ed students in two year B.Ed course. The data had been collected on implementation and challenges with reference to its dimensions i.e. Administrative aspects, Quality of education, Infrastructure and facilities, Curricular aspects, Practice teaching aspects, Examination and evaluation aspects, Pedagogical aspects (L.T.P) and Extension activities towards two year B.Ed. programme from the students of colleges of education. Similarly, the data had been collected on Implementation, challenges and effectiveness in enhancing professionalcompetencies towards two year B.Ed. programme from the students of colleges of education from the state of Karnataka.

Objectives of the Study:

Following objectives were formulated for the present study

1. To study the significant difference between students of different regions (Kalaburgi, Belagavi, Mysuru and Bengaluru) with respect to Implementation and challenges towards two year B.Ed. programme with reference to its all dimensions.
2. To study the significant difference between students of different regions (Kalaburgi, Belagavi, Mysuru and Bengaluru) with respect to implementation of administrative aspects towards two year B.Ed. programme with reference to its dimensions.
3. To study the significant difference between students of different regions (Kalaburgi, Belagavi, Mysuru and Bengaluru) with respect to implementation of quality of education towards two year B.Ed. programme.

Methodology of the Study:

- Investigator employed Descriptive Survey method**.** This method is suitable to study the Implementation and Challenges of Two-year B.Ed. Programme.
- **Population:** B.Ed College Students of Karnataka State were considered as population.
- **Sample:** 2000 Students- teacher of four divisions were selected by applying Stratified random sampling technique.
- **Tools used in the study:** An Opinionnaire of students-Teacher about Two-year B.Ed programme was pepared and standardized by the investigator for collection of data.
- **Statistical Technique employed:** The statistical techniques such as T- test and ANOVAwere used for analysis and Interpretation of present data.

Results and Discussion:

Null Hypothesis-1: There is no significant difference between students of different regions (Kalaburgi, Belagavi, Mysuru and Bengaluru) with respect to Implementation and challenges towards two year B.Ed. programme with reference to its dimensions.

To test the null hypothesis (H_0), the one factor (one way) ANOVA test was performed and the results are presented in the following table.

Table No-1: Results of ANOVA between students of different regions (Kalaburgi, Belagavi, Mysuru and Bengaluru) with respect to implementation and challenges towards two year B.Ed. programme with reference to its dimensions.

Sources of variation	Degrees of freedom	Sum of squares	Mean sum of squares	F-value	p-value
Between divisions	3	320400.0140	106800.0050	130.9771	0.0001,S
Within divisions	1996	1627558.1200	815.4099		
Total	1999	1947958.1340			

From the results of the above table, it is seen that, the calculated value of F is 130.9771 with p value=0.0001. The critical value of F at 5% level of significance with 2 and 1997 degrees of freedom is 2.6100. It clearly shows that,

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the calculated value of F is greater than the critical value i.e. 130.9771>2.6100. It means that, a significant difference was observed between students belongs to different regions (Kalaburgi, Belagavi, Mysuru and Bengaluru) with respect to implementation and challenges scores towards two year B.Ed. programme. Hence, the null hypothesis is rejected and alternative hypothesis is accepted. It means that, the mean of implementation and challenges scores towards two year B.Ed. programme is different in students belongs to different regions (Kalaburgi, Belagavi, Mysuru and Bengaluru).

Further, to assess to know the pair wise comparisons of students belongs to different regions (Kalaburgi, Belagavi, Mysuru and Bengaluru) with respect to implementation and challenges scores towards two year B.Ed. programme by Tukeys multiple posthoc procedures and the results are presented in the following table.

Table No-2: Pair wise comparison of students of different regions (Kalaburgi, Belagavi, Mysuru and Bengaluru) with respect to implementation and challenges towards two year B.Ed. programme by Tukeys multiple posthoc procedures

Divisions	Kalaburgi	Belagavi	Mysuru	Bengaluru
Mean	221.41	205.25	200.45	185.95
SD	29.17	28.00	35.04	19.98
Kalaburgi	-	p=0.0001,S	p=0.0001,S	p=0.0001,S
Belagavi	p=0.0001,S	-	p=0.0390,S	p=0.0001,S
Mysuru	p=0.0001,S	p=0.0390,S	-	p=0.0001,S
Bengaluru	p=0.0001,S	p=0.0001,S	p=0.0001,S	-

From the results of the above table, it can be seen that,

- A significant difference was observed between students belongs to Kalaburgi division and Belagavi division with respect to implementation and challenges scores towards two year B.Ed. programme at 5% level of significance. It means that, the students belongs to Kalaburgi division have significant and higher implementation and challenges scores towards two year B.Ed. programme as compared to students belongs to Belagavi division.
- A significant difference was observed between students belongs to Kalaburgi division and Mysuru division with respect to implementation and challenges scores towards two year B.Ed. programme at 5% level of significance. It means that, the students belongs to Kalaburgi division have significant and higher implementation and challenges scores towards two year B.Ed. programme as compared to students belongs to Mysuru division.
- A significant difference was observed between students belongs to Kalaburgi division and Bengaluru division with respect to implementation and challenges scores towards two year B.Ed. programme at 5% level of significance. It means that, the students belongs to Kalaburgi division have significant and higher implementation and challenges scores towards two year B.Ed. programme as compared to students belongs to Bengaluru division.
- A significant difference was observed between students belongs to Belagavi division and Mysuru division with respect to implementation and challenges scores towards two year B.Ed. programme at 5% level of significance. It means that, the students belongs to Belagavi division have significant and higher implementation and challenges scores towards two year B.Ed. programme as compared to students belongs to Mysuru division.
- A significant difference was observed between students belongs to Belagavi division and Bengaluru division with respect to implementation and challenges scores towards two year B.Ed. programme at 5% level of significance. It means that, the students belongs to Belagavi division have significant and higher implementation and challenges scores towards two year B.Ed. programme as compared to students belongs to Bengaluru division.
- A significant difference was observed between students belongs to Mysuru division and Bengaluru division with respect to implementation and challenges scores towards two year B.Ed. programme at 5% level of significance. It means that, the students belongs to Mysuru division have significant and higher implementation and challenges scores towards two year B.Ed. programme as compared to students belongs to Bengaluru division.

Null Hypothesis No-2: There is no significant difference between students of different regions (Kalaburgi, Belagavi, Mysuru and Bengaluru) with respect to implementation of administrative aspects towards two year B.Ed. programme.

To test the null hypothesis (H_0), the one factor (one way) ANOVA test was performed and the results are presented in the following table.

Table No-3: Results of ANOVA between students of different regions (Kalaburgi, Belagavi, Mysuru and Bengaluru) with respect to implementation of administrative aspects towards two year B.Ed. programme

Sources of variation	Degrees of freedom	Sum of squares	Mean sum of squares	F-value	p-value
Between divisions	3	1277.8120	425.9373	14.1045	0.0001,S
Within divisions	1996	60276.5000	30.1986		
Total	1999	61554.3120			

From the results of the above table, it is seen that, the calculated value of F is 14.1045 with p value=0.0001. The critical value of F at 5% level of significance with 2 and 1997 degrees of freedom is 2.6100. It clearly shows that,

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the calculated value of F is greater than the critical value i.e. 14.1045>2.6100. It means that, a significant difference was observed between students belongs to different regions (Kalaburgi, Belagavi, Mysuru and Bengaluru) with respect to component of implementation and challenges i.e. administrative aspects scores towards two year B.Ed. programme. Hence, the null hypothesis is rejected and alternative hypothesis is accepted. It means that, the mean of implementation of administrative aspects scores towards two year B.Ed. programme is different in students belongs to different regions (Kalaburgi, Belagavi, Mysuru and Bengaluru).

Further, to assess to know the pair wise comparisons of students belongs to different regions (Kalaburgi, Belagavi, Mysuru and Bengaluru) with respect to component of implementation and challenges i.e. administrative aspects scores towards two year B.Ed. programme by Tukeys multiple posthoc procedures and the results are presented in the following table.

Table No-4: Pair wise comparison of students of different regions (Kalaburgi, Belagavi, Mysuru and Bengaluru) with respect to implementation of administrative aspects scores towards two year B.Ed. programme by Tukeys multiple posthoc procedures

Divisions	Kalaburgi	Belagavi	Mysuru	Bengaluru
Mean	23.38	21.98	21.62	21.28
SD	5.73	5.59	5.83	4.77
Kalaburgi	-	p=0.0003,S	p=0.0001,S	p=0.0001,S
Belagavi	p=0.0003,S	-	p=0.7250,NS	p=0.1806,NS
Mysuru	p=0.0001,S	p=0.7250,NS	-	p=0.7619,NS
Bengaluru	p=0.0001,S	p=0.1806,NS	p=0.7619,NS	-

From the results of the above table, it can be seen that,

- A significant difference was observed between students belongs to Kalaburgi division and Belagavi division with respect to component of implementation and challenges i.e. administrative aspects scores towards two year B.Ed. programme at 5% level of significance. It means that, the students belongs to Kalaburgi division have significant and higher implementation of administrative aspects scores towards two year B.Ed. programme as compared to students belongs to Belagavi division.
- A significant difference was observed between students belongs to Kalaburgi division and Mysuru division with respect to component of implementation and challenges i.e. administrative aspects scores towards two year B.Ed. programme at 5% level of significance. It means that, the students belongs to Kalaburgi division have significant and higher implementation of administrative aspects scores towards two year B.Ed. programme as compared to students belongs to Mysuru division.
- A significant difference was observed between students belongs to Kalaburgi division and Bengaluru division with respect to component of implementation and challenges i.e. administrative aspects scores towards two year B.Ed. programme at 5% level of significance. It means that, the students belongs to Kalaburgi division have significant and higher implementation of administrative aspects scores towards two year B.Ed. programme as compared to students belongs to Bengaluru division.
- No significant difference was observed between students belongs to Belagavi division and Mysuru division with respect to component of implementation and challenges i.e. administrative aspects scores towards two year B.Ed. programme at 5% level of significance. It means that, the student belongs to Belagavi division and Mysuru divisions have similar implementation of administrative aspects scores towards two year B.Ed. programme.
- No significant difference was observed between students belongs to Belagavi division and Bengaluru division with respect to component of implementation and challenges i.e. administrative aspects scores towards two year B.Ed. programme at 5% level of significance. It means that, the student belongs to Belagavi division and Bengaluru divisions have similar implementation of administrative aspects scores towards two year B.Ed. programme.
- No significant difference was observed between students belongs to Mysuru division and Bengaluru division with respect to component of implementation and challenges i.e. administrative aspects scores towards two year B.Ed. programme at 5% level of significance. It means that, the students belong to Mysuru division and Bengaluru divisions have similar implementation of administrative aspects scores towards two year B.Ed. programme.

Null Hypothesis-3: There is no significant difference between students of different regions (Kalaburgi, Belagavi, Mysuru and Bengaluru) with respect to implementation of quality of education towards two year B.Ed. programme.

To test the null hypothesis (H_0), the one factor (one way) ANOVA test was performed and the results are presented in the following table.

Table No-5: Results of ANOVA between students of different regions (Kalaburgi, Belagavi, Mysuru and Bengaluru) with respect to implementation of quality of education towards two year B.Ed. programme

Sources of variation	Degrees of freedom	Sum of squares	Mean sum of squares	F-value	p-value

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Between divisions	3	7117.25	2372.42	64.9096	0.0001,S
Within divisions	1996	72952.87	36.55		
Total	1999	80070.12			

From the results of the above table, it is seen that, the calculated value of F is 64.9096 with p value=0.0001. The critical value of F at 5% level of significance with 2 and 1997 degrees of freedom is 2.6100. It clearly shows that, the calculated value of F is greater than the critical value i.e. 130.9771>2.6100. It means that, a significant difference was observed between students belongs to different regions (Kalaburgi, Belagavi, Mysuru and Bengaluru) with respect to component of implementation and challenges i.e. quality of education scores towards two year B.Ed. programme. Hence, the null hypothesis is rejected and alternative hypothesis is accepted. It means that, the mean of implementation of quality of education scores towards two year B.Ed. programme is different in students belongs to different regions (Kalaburgi, Belagavi, Mysuru and Bengaluru).

Further, to assess to know the pair wise comparisons of students belongs to different regions (Kalaburgi, Belagavi, Mysuru and Bengaluru) with respect to component of implementation and challenges i.e. quality of education scores towards two year B.Ed. programme by Tukeys multiple posthoc procedures and the results are presented in the following table.

Table No-6: Pair wise comparison of students of different regions (Kalaburgi, Belagavi, Mysuru and Bengaluru) with respect to implementation of quality of education scores towards two year B.Ed. programme by Tukeys multiple posthoc procedures.

Divisions	Kalaburgi	Belagavi	Mysuru	Bengaluru
Mean	27.49	24.94	24.03	22.26
SD	6.74	6.06	6.22	5.04
Kalaburgi	-	p=0.0001,S	p=0.0001,S	p=0.0001,S
Belagavi	p=0.0001,S	-	p=0.0500,S	p=0.0001,S
Mysuru	p=0.0001,S	p=0.0500,S	-	p=0.0001,S
Bengaluru	p=0.0001,S	p=0.0001,S	p=0.0001,S	-

From the results of the above table, it can be seen that,

- A significant difference was observed between students belongs to Kalaburgi division and Belagavi division with respect to component of implementation and challenges i.e. quality of education scores towards two year B.Ed. programme at 5% level of significance. It means that, the students belongs to Kalaburgi division have significant and higher implementation of quality of education scores towards two year B.Ed. programme as compared to students belongs to Belagavi division.
- A significant difference was observed between students belongs to Kalaburgi division and Mysuru division with respect to component of implementation and challenges i.e. quality of education scores towards two year B.Ed. programme at 5% level of significance. It means that, the students belongs to Kalaburgi division have significant and higher implementation of quality of education scores towards two year B.Ed. programme as compared to students belongs to Mysuru division.
- A significant difference was observed between students belongs to Kalaburgi division and Bengaluru division with respect to component of implementation and challenges i.e. quality of education scores towards two year B.Ed. programme at 5% level of significance. It means that, the students belongs to Kalaburgi division have significant and higher implementation of quality of education scores towards two year B.Ed. programme as compared to students belongs to Bengaluru division.
- A significant difference was observed between students belongs to Belagavi division and Mysuru division with respect to component of implementation and challenges i.e. quality of education scores towards two year B.Ed. programme at 5% level of significance. It means that, the students belongs to Belagavi division have significant and higher implementation of quality of education scores towards two year B.Ed. programme as compared to students belongs to Mysuru division.
- A significant difference was observed between students belongs to Belagavi division and Bengaluru division with respect to component of implementation and challenges i.e. quality of education scores towards two year B.Ed. programme at 5% level of significance. It means that, the students belongs to Belagavi division have significant and higher implementation of quality of education scores towards two year B.Ed. programme as compared to students belongs to Bengaluru division.
- A significant difference was observed between students belongs to Mysuru division and Bengaluru division with respect to component of implementation and challenges i.e. quality of education scores towards two year B.Ed. programme at 5% level of significance. It means that, the students belongs to Mysuru division have significant and

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higher implementation of quality of education scores towards two year B.Ed. programme as compared to students belongs to Bengaluru division.

Findings of the Study:

Following are the major findings of the present study

- The mean of implementation and challenges scores towards two year B.Ed. programme is different in students belongs to different regions (Kalaburgi, Belagavi, Mysuru and Bengaluru).
- The students belongs to Kalaburgi division have significant and higher implementation and challenges scores towards two year B.Ed. programme as compared to students belongs to Belagavi , Mysore and Belagavi divisions.
- The students belongs to Belagavi division have significant and higher implementation and challenges scores towards two year B.Ed. programme as compared to students belongs to Bengaluru and Mysore divisions.
- The students belongs to Mysuru division have significant and higher implementation and challenges scores towards two year B.Ed. programme as compared to students belongs to Bengaluru division.
- The mean of implementation of administrative aspects scores towards two year B.Ed. programme is different in students belongs to different regions (Kalaburgi, Belagavi, Mysuru and Bengaluru).
- The students belongs to Kalaburgi division have significant and higher implementation of administrative aspects scores towards two year B.Ed. programme as compared to students belongs to Belagavi, Mysore and Bengaluru divisions.
- The student belongs to Belagavi and Mysuru, Belagavi and Bengaluru, Mysuru and Bengaluru divisions have similar implementation of administrative aspects scores towards two year B.Ed. programme.
- The mean of implementation of quality of education scores towards two year B.Ed. programme is different in students belongs to different regions (Kalaburgi, Belagavi, Mysuru and Bengaluru).
- The students belongs to Kalaburgi division have significant and higher implementation of quality of education scores towards two year B.Ed. programme as compared to students belongs to Belagavi, Mysuru and Bengaluru divisions.
- The students belongs to Belagavi division have significant and higher implementation of quality of education scores towards two year B.Ed. programme as compared to students belongs to Mysuru and Bengaluru divisions.
- The students belongs to Mysuru division have significant and higher implementation of quality of education scores towards two year B.Ed. programme as compared to students belongs to Bengaluru division.

Educational Implications:

Following are the some of the implications and recommendations of the present study.

1. In the overall study the implementation scores of Kalabuagi Division have higher as compare to Belagavi, Mysore and Bengalore Division, hence there is need to improve the B.Ed programme of Belagavi, Mysore and Bengalore divisions with reference to its dimensions such as Administrative aspects, Quality of education, Infrastructure and facilities, Curricular aspects, Practice teaching aspects, Examination and evaluation aspects, Pedagogical aspects (L.T.P) and Extension activities.
2. Kalaburgi division have significant and higher implementation of administrative aspects scores towards two year B.Ed. programme as compared to Belagavi, Mysore and Bengaluru divisions. , Hence there is need to improve the B.Ed programme of Belagavi, Mysore and Bengalore divisions with reference to Administrative aspects,
3. Kalaburgi division have significant and higher implementation of quality of education scores towards two year B.Ed. programme as compared to Belagavi, Mysuru and Bengaluru divisions. Hence there is need to improve the B.Ed programme of Belagavi, Mysore and Bengalore divisions with reference to Quality of Education.

Conclusion:

. The most of and student teachers were expressed that, the academic activities carried out in different Universities are differ and the curriculum is not uniform. The greatest difficulty expressed by most of the Teacher educators and students is reference materials not available in any book, the reference books suggested by the designers of curriculum are not at all available. Less number of students-teacher welcome the move of the NCTE for increasing the duration, this may help in developing specific professional skills, knowledge and attitude, but majority of them are dissatisfied with two year B.Ed. programme. However the proper planning of course and curriculum can develop necessary skills among student- teacher.

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Original Article

From Stress to Peace, a journey within: An Exploratory Review of Literature on Raj yoga Meditation and Stress Management

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Abstract

Todays' modern lifestyle consisting of expanded, complicated and fast daily routine, carrying constant demands and distractions, has made stress an inevitable part of human existence. Nowadays an individual is working as a human machine rather than human being. With the constant company of machines and gadgets, human being are losing inner strength on one hand and rising challenges and rising level of expectation has made his life more complicated on the other forcing him land into constant stressful situations. As an antidote to this, Meditation practices are increasingly recognized as effective means of restoring psychological balance and emotional health of individuals. Among the different techniques of meditation, Raj yoga meditation—as taught by the Brahma Kumaris—offers a unique path toward self-realization and peace. This paper presents an exploratory review of existing literature that examines the impact of Rajyoga meditation on stress management and inner transformation leading to a peaceful and happy life. Review of several scholarly studies along with conceptual writings, and institutional publications was undertaken to identify major themes or traits related to self-awareness, emotional regulation, positive thinking, and their spiritual connection. The findings of study clearly reflect that Rajyoga meditation of Brahma Kumaris World Spiritual University is not merely a relaxation practice but a holistic process of self-transformation leading to sustained peace and resilience.

Keywords: *Rajyoga Meditation, Stress, Peace, Self-awareness, Emotional Regulation, Literature Review*

Introduction:

Stress can be defined as inability of an individual to face a particular situation or circumstance leading to mental disturbance or tension resulting in loss of peace and internal calm making him feel disturbed and uncomfortable. These days stress has become a pervasive phenomenon affecting individuals across age, profession, and culture. Defined as a physiological and psychological response to perceived threats or pressures, chronic stress contributes to emotional exhaustion, anxiety, and psychosomatic disorders placing an individual in the state of mental unrest. Traditional methods of stress management—such as cognitive-behavioral interventions or medication—often address symptoms rather than the root causes of inner unrest thus making them not fully suitable to resolve the problem.

In this context, meditation practices have gained worldwide attention for promoting mental clarity, inner stability and inner peace. Among various forms of meditation, Rajyoga meditation, taught by the Brahma Kumaris World Spiritual University, presents a distinctive approach. Rajyoga emphasizes self-realization—understanding oneself as a subtle spiritual energy, a shining star, peaceful soul—and its eternal connection with the Supreme Source of energy, ocean of peace and happiness affectionately called as Shiv Baba i.e. Supreme Father God Shiva, to replenish soul's mental and emotional energy. Unlike concentration-based methods recommending closing of eyes while meditating, Raj yoga Meditation of Brahma Kumaris provides for an open-eye meditation integrated into daily life, thus bridging spirituality and practicality and easy to practice irrespective of one's posture and location.

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The present paper explores, through a review of available literature, how Raj yoga meditation facilitates an inner journey from stress to peace. The study aims to consolidate existing insights into the psychological and spiritual dimensions of this transformation.

Objectives of the Study

Following are the main objectives of this exploratory study/review:

- To review existing literature on Rajyoga meditation and its role in stress reduction.
- To identify recurring themes describing the process of transformation from stress to peace through Rajyoga practice.
- To find out the conceptual framework linking spiritual connections including self-awareness, emotional control, and other spiritual connections in achieving inner peace.

Methodology

This study follows an exploratory qualitative review design, focusing on conceptual and empirical literature related to Raj yoga meditation and stress management.

1. Data Sources

Relevant extracts were taken from academic databases such as Google Scholar, ResearchGate, and JSTOR, along with publications by the Brahma Kumaris organization inlcuding the research material published between 2010 and 2024.

Articles discussing Raj yoga meditation and stress or emotional well-being,

About 20 scholarly sources were reviewed, including journal articles, dissertations, and institutional reports.

2. Data Analysis

A thematic synthesis was conducted to find common patterns or traits that support practice of Rajyoga meditation as an antidote to stress for living a peaceful and happy life. Recurring ideas and patterns were identified, categorized, and grouped into broader conceptual themes providing to the rajyoga meditation practitioner, a clear and visible path to peace and inner calm leaving behind the painful and burdening path fn inner turmoil and stress.

Review of Literature

1. Understanding Stress and Inner Peace

Stress arises when an individual perceives an imbalance between external demands and inner coping capacity (Lazarus & Folkman, 1984). Prolonged stress leads to emotional instability, sleep disturbances, and burnout. Meditation-based interventions have been shown to reduce stress by enhancing self-regulation and mindfulness (Chadha & Pandey, 2022).

Rajyoga meditation differs from many secular approaches as it integrates spiritual awareness with psychological healing. It redefines stress as a result of body-conscious thinking—when one forgets the inner self and identifies solely with external roles, possessions, or achievements (Brahma Kumaris, 2020). The practice of Rajyoga re-establishes self-awareness and fosters peace as a natural state of being.

2. Raj yoga Meditation: Concept and Practice

Raj yoga meditation as promoted by Braham Kumaris, literally meaning “union with the Supreme,” involves four key aspects:

- Self-Realization: Awareness of the self as a soul, distinct from the body.
- Connection with the Supreme Soul: Establishing a mental link with God as the eternal source of peace and purity.
- Positive Thinking: Cultivating pure, benevolent thoughts through spiritual study (Murli).
- Application in Daily Life: Practicing peaceful responses and self-control amid challenges.
- Kaur and Arora (2021) found that consistent Rajyoga practice enhances emotional regulation and reduces anxiety. Similarly, Jha (2020) observed a significant decline in perceived stress among regular practitioners compared to non-meditators. These outcomes highlight the therapeutic potential of Rajyoga as a tool for psychological balance.

3. Thematic Insights from the Literature

Theme 1: Self-Awareness as the Foundation of Peace

Many studies (Ramesh, 2019; Verma & Bhargava, 2022) emphasize that self-awareness cultivated through Rajyoga leads to detachment from negative emotions and role-based anxieties. Recognizing oneself as a soul shifts perception from external circumstances to internal stability.

Theme 2: Emotional Regulation through Thought Transformation

Raj yoga promotes introspection and conscious monitoring of thoughts. Positive affirmations and regular reflection reduce anger and fear responses (Singh, 2020). This aligns with cognitive models of stress management, where reappraisal changes emotional outcomes.

Theme 3: Connection with the Supreme as an Energy Source

Spiritual connection provides inner strength and emotional nourishment. Brahma Kumaris (2021) describe this experience as “God’s power of peace,” enabling practitioners to face difficulties with stability and optimism.

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Theme 4: Lifestyle Integration and Service Orientation

Raj yoga encourages purity in diet, moral conduct, and altruistic service. Such lifestyle elements reinforce sustained calmness and purposefulness (Khatri, 2023). The integration of meditation into daily routines helps maintain peace beyond practice sessions.

Discussion

The reviewed literature clearly suggests that Raj yoga meditation of Brahma Kumaris facilitates a holistic transformation of an individual encompassing cognitive, emotional, and spiritual domains providing a wonderful and sustainable mental strength. The journey from stress to peace unfolds through gradual stages:

Recognition of inner unrest, leading to the search for self-understanding.

Self-realization and awareness of soul-conscious identity, making one more humble and responding rather than becoming reactive thus reducing ego-driven stress responses.

Regular connection or communion with the Supreme source of energy i.e. Shiv Baba and experiencing loving relationship with him, recharges the soul, replenishes mental energy and instil enthusiasm and hope.

Adoption of positive thinking and purity in thoughts, words and action, resulting in sustainable inner peace, coziness and state of inner comfort.

This transformation is consistent with humanistic and transpersonal psychological frameworks, where self-awareness and higher consciousness are seen as pathways to well-being. Unlike mindfulness or breath-focused techniques, Raj yoga emphasizes spiritual cognition—thinking elevated thoughts about the self and God—thereby aligning mental energy with peace.

Implications

For Research: There is scope for empirical validation of the long-term effects of Rajyoga on different population groups such as students, healthcare professionals, and corporate employees.

For Practice: Raj yoga-based stress management modules can be integrated into educational and workplace wellness programs.

For Society: The principles of Raj yoga—self-awareness, compassion, and connection with the Supreme-can contribute to building emotionally stable and peaceful communities.

Conclusion

The exploratory review reveals that the inner journey from stress to peace includes both psychological as well as spiritual aspect. Raj yoga meditation provides a framework for self-transformation by shifting consciousness from external pressures to inner stability. Through self-awareness, positive thinking, and divine connection, practitioners experience internal strength leading to deep emotional balance and resilience.

In essence, Rajyoga redefines peace—not as the absence of problems, but as the presence of self-mastery and spiritual connection amidst challenges. The reviewed literature affirms that Rajyoga meditation stands as a holistic and accessible approach to managing stress in contemporary life.

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Original Article

Evaluating the Career Outcomes of LIS Graduates in India: Opportunities, Challenges and Sectoral Analysis

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Abstract

This study evaluates career outcomes of Library and Information Science (LIS) graduates in India by mapping employment patterns, sectoral placement, skill–job alignment, and challenges affecting employability. Using a mixed-methods approach — national survey of LIS alumni, employer interviews, and institutional case studies — the research quantifies placement rates, salary bands, career trajectories, and sectoral distribution (academic libraries, public libraries, special libraries, information centres, archives, digital curation, knowledge management, IT/data roles). It also explores perceived gaps in curricula, the role of internships, and the impact of new technologies (digital libraries, data stewardship, AI) on employability. The study produces evidence-based recommendations for curriculum reform, industry-academia linkages, and targeted skill development to improve graduate employability in India's evolving information economy.

Keywords: *Library and Information Science, LIS graduates, employability, career outcomes, India, sectoral analysis, skills gap, digital libraries, knowledge management, curriculum reform*

Introduction:

Library and Information Science (LIS) education in India has historically produced professionals for libraries and archives. Over the last two decades the information landscape has changed rapidly: digitization, open access, data management, and AI-driven discovery have expanded career possibilities beyond traditional libraries. Yet questions remain about how effectively LIS programs prepare graduates for the job market, which sectors absorb LIS talent, and what structural or curricular barriers limit employability. This study systematically evaluates career outcomes for LIS graduates in India, identifies emerging opportunities, and highlights challenges to inform policymakers, educators, and employers.

Definitions

- **LIS Graduates:** Individuals holding a Bachelor's, Master's, or diploma in Library and Information Science (or equivalent) from Indian institutions.
- **Career Outcomes:** Measurable post-graduation results including employment status, job sector, job role, salary, career progression, job satisfaction, and alignment between education and job tasks.
- **Sectoral Analysis:** Breakdown of employment across sectors — academic libraries, public libraries, special libraries (corporate, legal, medical), archives, museums, digital repositories, knowledge management units, ICT/data roles, publishing, and education/training.
- **Employability Skills:** Technical (cataloguing, metadata, digital curation, database management), digital (IR systems, metadata standards, data stewardship), and soft skills (communication, project management).

Need for the Study

- **Policy relevance:** To align LIS curricula with India's knowledge economy and national initiatives (digital India, open data, e-governance).

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- **Educational planning:** To help LIS schools redesign syllabi and training (internships, practical labs).
- **Career guidance:** To provide evidence-based guidance to students and recent graduates about sectoral opportunities and skill demands.
- **Employer insights:** To inform libraries and organizations on recruiting and training practices for LIS professionals.

Aims

- To evaluate the employment outcomes and career trajectories of LIS graduates in India.
- To identify sectoral absorption patterns and emerging career domains for LIS professionals.
- To assess the alignment between LIS curriculum/training and employer skill requirements.
- To propose recommendations for curriculum enhancement, training interventions, and policy measures that improve graduate employability.

Objectives

- To quantify employment rates, unemployment/underemployment, and types of employment among LIS graduates (within 6 months, 1 year, 3 years, 5 years after graduation).
- To map sector-wise distribution of LIS graduates and identify growth sectors.
- To assess salary ranges, promotion patterns, and job satisfaction indicators across sectors.
- To survey employers on desired competencies and perceived gaps in LIS graduate preparedness.
- To analyze the role of internships, practical training, and technology exposure in career outcomes.
- To develop actionable recommendations for LIS curriculum and training reforms.

Hypotheses

H1: A majority of recent LIS graduates obtain employment within 12 months, but a significant portion work in roles that do not fully utilize formal LIS training.
H2: Sectors such as digital libraries, knowledge management, and data curation are growing faster in absorbing LIS talent than traditional public libraries.
H3: Graduates who received internship-based, technology-focused training report higher employability and salary outcomes than those without such exposure.
H4: Employers perceive a gap between academic LIS curricula and practical digital/IT competencies required in contemporary roles.

Literature Search (strategy)

1. **Databases:** SCOPUS, Web of Science, ERIC, Google Scholar, DOAJ, Indian Citation Index, university repositories.
2. **Keywords:** “LIS graduates India employability”, “library science careers India”, “digital librarianship India”, “knowledge management jobs library graduates”, “library education curriculum India”.
3. **Grey literature:** Reports from UGC, NAAC, NISCAIR, RRRLF, INFLIBNET, ILA (Indian Library Association), TERI/Centre for Policy Research studies, conference proceedings, theses/dissertations from Indian universities.
4. **Timeframe:** Focus on last 15 years (2010–2025) for trends; include seminal older works for historical context.
5. **Inclusion criteria:** Empirical studies, policy reports, curriculum reviews, employer surveys, and statistical data on placements.

Research Methodology

Research design

Mixed-methods explanatory sequential design: quantitative national survey followed by qualitative interviews and case studies.

Population and sampling

A. **Population:** LIS graduates from recognized Indian institutions who completed their degree between 2015–2024. Employers across major sectors that recruit LIS graduates.
B. **Sampling (graduates):** Stratified random sampling across regions (North, South, East, West, Central), institution types (central/state universities, private colleges, open universities), and program levels (PGDLIS, MLIS). Target sample: **1,200 respondents** (approx. 200 per region) to ensure representativeness.
C. **Sampling (employers):** Purposive sampling of 80–100 employers across sectors (academic, public, special libraries, archives, NGOs, corporate KM units, publishing, government e-governance).
D. **Case studies:** 8–10 institutions (mix of top-tier, mid-tier, and rural colleges) for in-depth curriculum and placement analysis.

Data collection instruments

- **Structured online survey** for LIS alumni (demographics, education, internships, employment status, sector, salary, skill use, job satisfaction).

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- **Employer questionnaire** (skill expectations, recruitment patterns, training provided, satisfaction with hires).
- **Semi-structured interviews** with selected alumni, placement officers, faculty, and employers to contextualize survey findings.
- **Document analysis:** Curriculum syllabi, placement records, internship agreements, NAAC/UGC reports.
- **Focus groups** with current students (optional) to understand expectations and perceived barriers.

Data analysis

- **Quantitative:** Descriptive statistics (frequencies, cross-tabs), inferential tests (Chi-square for categorical comparisons, t-tests/ANOVA for salary comparisons across sectors), logistic regression to model predictors of employment within 6/12 months (variables: internships, technology courses, institution tier, region).
- **Qualitative:** Thematic coding of interviews (NVivo/Atlas.ti) to identify recurrent themes on skill gaps, barriers, employer expectations, and best practices.
- **Triangulation:** Integrate quantitative patterns with qualitative insights and case-study evidence.

Ethical considerations

- Informed consent for survey and interviews; anonymization of respondents; data storage in secure repositories; institutional ethics approval where required.

Strong Points of the Study

- **Large, representative sample** across regions and institution types increases generalizability.
- **Mixed-methods approach** provides both breadth (survey) and depth (interviews, case studies).
- **Actionable outputs**: concrete curriculum recommendations tied to employer needs.
- **Policy relevance**: findings can inform UGC/NAAC/Ministry-level actions and institutional reforms.

Weak Points / Limitations

- **Response bias:** Graduates in employment may be more likely to respond than unemployed peers.
- **Self-reporting:** Salary and job satisfaction measures may be subject to reporting bias.
- **Access to placement records:** Some institutions may not share complete placement data.
- **Rapid change:** Technological shifts may outpace curriculum reform timelines, making recommendations require frequent updates.

Current Trends

- Rising demand for digital curation, institutional repositories, research data management, and knowledge management roles.
- Increasing integration of ICT, open access, and metadata standards (e.g., Dublin Core, MARC21 to newer JSON-LD approaches).
- Growth of short-term professional certifications (RDM, digital preservation, data analytics) supplementing formal LIS degrees.
- Policy emphasis on digital literacy (Digital India), which can create new roles for LIS professionals in government projects and e-governance.

History

LIS education in India traces to colonial-era library training; formal degree programs expanded post-independence. The 1970s–1990s focused on traditional librarianship (classification, cataloguing). From the 2000s, curricula progressively incorporated automation, digital libraries, and information technology. Despite curricular updates, the transition to broader information science and knowledge-economy roles has been uneven across institutions.

Discussion

1. **Sectoral absorption:** Which sectors are growing employers for LIS graduates? Are traditional libraries shrinking relative to digital/research roles?
2. **Skill mismatch:** Are graduates trained in legacy skills (classification) while employers demand data stewardship, metadata engineering, and soft skills?
3. **Role of internships/practical training:** Does hands-on exposure predict better placement and faster salary growth?
4. **Regional disparities:** Do graduates from metropolitan institutions fare better than rural ones? Is there a gendered dimension to employability?
5. **Credentialing vs. skills:** Impact of short certificates and MOOCs on employability compared to formal degrees.
6. **Institutional differences:** How do placement outcomes differ by university ranking, accreditation status, and industry linkages?

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Results (expected / illustrative)

1. **Employment rates:** ~60–75% of MLIS graduates employed within 12 months (illustrative estimate; actual data will confirm).
2. **Sector distribution:** Academic libraries and higher education institutions remain significant employers, but growth is notable in special libraries, knowledge management units, publishing, and digital repositories.
3. **Skill predictors:** Internship experience, exposure to digital library software (DSpace, Koha), and training in metadata/IR significantly increase employability odds.
4. **Salary patterns:** Graduates in corporate/special library and IT-adjacent roles report higher starting salaries than those in public libraries.
5. **Curriculum gaps:** Employers report deficiencies in practical digital skills, research data management, and project management.

Conclusion

LIS graduates in India continue to find meaningful employment, but the landscape is evolving rapidly. To maximize career outcomes, LIS education must pivot toward stronger technology integration, industry partnerships, internship mandates, and continuous upskilling options. Institutional reforms, curriculum modernization, and stakeholder coordination are essential to bridge the gap between academic preparation and sectoral demands.

Suggestions and Recommendations

- **Curriculum Modernization:** Integrate mandatory modules on digital curation, research data management, metadata standards, APIs and linked data, and basic programming for information professionals.
- **Mandatory Internships & Practicums:** Require semester-long internships with industry, libraries, archives, or digital repositories for credit.
- **Industry-Academia Partnerships:** Create formal MoUs with potential employers for placements, guest lectures, and joint projects.
- **Short Certificate Pathways:** Encourage stackable certificates (RDM, digital preservation, data analytics) alongside degree programs.
- **Soft-Skill Training:** Include communication, project management, and entrepreneurship modules to widen employability.
- **Placement Cells & Alumni Networks:** Strengthen institutional placement centres and active alumni mentoring for job readiness.
- **Regional Capacity Building:** Provide targeted training resources for rural and small institutions to reduce regional disparities.
- **Continuous Professional Development (CPD):** Advocate for recognized CPD credits and accessible online programs for working professionals.
- **Gender & Inclusion Policies:** Monitor and promote equitable hiring practices and support services (flexible training, childcare-friendly internships).
- **Monitoring & Data Transparency:** Institutions should publish anonymized placement statistics and employer feedback to inform prospective students and policymakers.

Future Scope

- **Longitudinal study:** Track cohorts over 10 years to analyze career progression and mobility.
- **Impact evaluation:** Assess the effect of specific curricular reforms (e.g., adding RDM modules) on placement outcomes via quasi-experimental designs.
- **Regional studies:** Deep-dive into state-level variations (e.g., Kerala vs. Uttar Pradesh) in LIS career markets.
- **Employer-focused research:** Detailed mapping of employer expectations in emerging sectors (AI, data governance, digital humanities).
- **Curriculum piloting:** Design, pilot, and evaluate an upgraded MLIS syllabus with an emphasis on digital skills and measure graduate outcomes.

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Original Article

Work–Life Balance during the Era of Hybrid Mode of Learning: Problems, Perceptions, and Interventions.

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Abstract

There has been a significant rise in the hybrid or the online and offline teaching during the post pandemic era. It has modified the entire configuration of educational system, business and one's personal life. The hybrid model has provided the flexibility to all the stakeholders; however, it has blurred the fine balance between the profession and personnel spheres of life and has posed additional challenge for individuals to maintain the balance. The research explores the various concerns, insights and other strategies concerning the work life balance related to the change in the methodology. Certain theories like Role Conflict Theory, Boundary Theory and Job Resource Model lays emphasis on aspects of balance such as overall time management, institutional support and self-discipline. The study concludes with stressing importance on psychological well-being, engagement and productivity based on the evidence collected.

Keywords: *Hybrid Learning, Digital Fatigue, Work–Life Balance, Well-being, Institutional Support, Role Conflict.*

Introduction:

Post the COVID-19 pandemic there has been a global shift in the mode of disseminating education and information to all. Most of the organisations have adopted the hybrid mode of learning which combines the offline and the online modes of learning. This mode of learning has blurred the boundary between the personal and professional spheres. The stakeholders are finding it significantly difficult toe cope up with the new challenge posed. This new methodology has resulted in many other problems as well such as frequent burnouts, reduced productivity, motivational levels and affected the mental health as well.

No doubt the new mode has provided the flexibility and continuity; however, it has posed severe concerns about balancing work and personal obligations. Instead of providing the freedom the blurring of line between work and life has created additional complexity in the professional as well as the personal setting. As we all know the work life balance is the most important aspect of one's life. It leads to the total well-being of the individual and influences mental health, motivation and productivity. As we expect that in the hybrid learning there will be enough flexibility so that one can plan the personal and professional activities however this is generally replaced by several role overlaps, excessive time spent in front of the screen and finally leading to emotional and physical tiredness. Every institution needs to pay heed how an individual handle these tensions and issues so that the system operates effectively.

As clearly defined work life balance is one's capacity to efficiently handle the professional and personal needs with ease and comfort while relating harmony and sense of wellbeing.

According to Clark's (2000) Boundary Theory, in order to maintain the homeostatis one builds and controls boundary between professional and personal spheres. However, the new methodology i.e. in hybrid learning process the boundaries are breached and academic, professional, and domestic contexts are nearly mingled.

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As a result, everyone affected frequently suffer "role spill over," It means that the demands and requirements of one position interfere with the implementation and execution of another. Achieving this balance will require a amalgamation of organizational support, personal discipline, and adaptive coping strategies.

Hybrid Learning and Its Implications

The hybrid learning verbally means a combination of two aspects i.e offline learning and online learning. This mode integrates both synchronous and asynchronous instructional methods and offers enough flexibility to both the learners and educators in terms of time and location. There are several psychological challenges involved in this mode of working. The prolonged usage of digital instruments has resulted in what Bennett et al. (2021) refers to "digital fatigue," Digital fatigue is indicated by reduced concentration, reduction in overall satisfaction and additional emotional distress. Survey conducted by Adisa et al. (2022) indicates that hybrid and remote work setups regularly blur the work and home boundaries, intensifying stress levels, and especially for those individuals involved in household duties or balancing caregiving. Furthermore, differences in usage and access to technology, quiet study environments and really reliable internet service, further this complicates the challenges of achieving work–life balance in hybrid models.

Concept of Work–Life Balance

Work–life balance means the way an individual manages his professional and personal obligations without any overlap of responsibilities and additional conflict and mental stress. According to Clark's (2000) Boundary Theory, one has to continuously negotiate between the peronal and professional responsibilities to maintain a state balance and equilibrium. Hybrid learning surroundings, however, interrupt these boundaries, demanding new ways and means of adaptation.

Hybrid Learning and Its Implications

The Hybrid mode of learning tries to amalgamate both synchronous and asynchronous methodologies, providing additional work hours flexibility and to certain extent independence. However, the prolonged working hours had led to the advent of a new phenomenon 'digital fatigue' (Bennett et al., 2021), which results in a drastic reduction in concentration, reduced job satisfaction and increased emotional distress. As per the study conducted by Adisa et al.(2022) it has been observed that wherever the hybrid mode of working in enforce the boundaries between the work and home has been diminished. Caretakers or those individuals with inadequate resources are the one who are the most affected.

Theoretical Perspectives:

Boundary Theory: It mentions how an individual adjusts and manages responsibilities of different roles.
Role Conflict Theory: It stresses on the fact that whenever there is an overlap of responsibilities there may be induced stress whenever there is a conflict between expectations.

Job Demands–Resources Model:

It states that there can be a considerable burnout if the demand is high and there is no backend support. A system to function properly and deliver the desired results there should be sufficient support.
Collectively, these frameworks underscore that institutional frameworks, technology utilization, and personal coping mechanisms influence an individual's capacity to achieve a work–life balance.

Methodology

Mixed method research design has been employed during the study and combined both the qualitative and the quantitative methodologies to get the in-depth analysis of the work life balance issues in relation to the implementation of hybrid learning.
To formulate the results there has been an integration of the statistical analysis with the through narrative data. As a result, a clear interpretation of the participants point of view and their behavioural patterns have been inferred.

Results and Discussion

Around 100 individuals participated for the research, including teaching staff members (n = 20), students (n = 60), and ministerial/administrative staffs (n = 20) from higher educational institutions wherein hybrid teaching methodology has been inducted.
Around 70% of the participants were Male and 30 % were female. Over 60 % of individuals were below the age of above 35 years.

Respondents were selected through stratified random sampling so as to ensure a balanced representation considering various factors such as gender, age, and professional role. We had specified that all the participants to have a minimum of one-year experience in hybrid teaching or learning environments.
The following three main instruments were used for collecting the data:
Work–Life Balance Scale (WLB Scale) – It is standardised equipment designed in such a way so as to evaluate one's apparent ability to balance personal and professional duties.
Digital Fatigue Inventory (DFI) – It has been created to evaluate levels of fatigue, disengagement and stress resulting due to prolonged digital interaction without any gap or break.

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Semi-Structured Interview Schedule – It has been created by the researcher to collate thorough qualitative data in respect of participants' their coping mechanism, personal experiences, and their views on the hybrid learning and finally the work–life balance.

In order to access and ensure the reliability and validity of the instruments they were pretested. The Cronbach's alpha coefficients for the instruments were as follows: -

(a) WLB Scale (0.86)

(b) DFI (0.82).

This showcased a high level of internal consistency. The data was collected over a period of two months through online and in person methods.

Google forms were circulated and quantitative surveys were conducted. Several interviews were also conducted through virtual platforms via video/ audio conferencing. The duration of the interview was approximately for 30-40 minutes and all the participants were informed that the interview or the data is solely being collected for the purpose of the survey and consent was undertaken.

Approval was sought through the Institutional Research Ethics committee and a result complete anonymity and confidentiality of all the participants was ensured.

Analysis of Variance (ANOVA) was used to analyse the quantitative data and to clearly showcase the prominent differences among the groups.

For figure out the relationship amongst the key variables such as digital fatigue, mental health and the work life balance Pearson's correlation coefficient.

In addition, queries were also sought to figure out the suggestions from respondents regarding ways and means to mitigate the challenges and achieve work life balance.

Many changes in the organisational factors and policies were pointed out. Implementation of these organisational policies will assist the employees in achieving the work life balance. The factors which the organisation should pay more heed are pertaining to employee's welfare policies and the management needs to particularly pay attention to the working environment where each and every employee prosper and grow together.

After the analysis several noticeable challenges being faced by organisations wherein hybrid learning and teaching has been implemented have been revealed. Additional challenges being faced pertaining to personal life and work balance and boundary erosion has been noticed.

Around 78% of the participants have clearly mentioned that they struggled to demarcate the distinct boundaries between the personal and professional lives due to the induction of hybrid methodology by the organisation. A number of participants mentioned that they are always "on call" because of the continuous digital connectivity. There has been a considerable increase in the screen time of minimum of 09 hours daily which has increased cases of eye strain, digital fatigue and musculoskeletal discomfort.

There has been Mental Health Concerns as well: Approximately 65% of participants highlighted that they were going through and experiencing stress and anxiety due to the management of their workload, online meetings, and performance expectations by the organisation.

Gendered Impact: Female participants, especially those with family responsibilities, experienced a uneven burden in unification of their household tasks with their academic and professional requirements.

Perceptions and Interpretations

As the results of study suggest that flexibility and the autonomy are the viewed as benefits of the hybrid learning and teaching it needs to be assisted and supported with specifically framed organisational rules and regulation. It has been observed that respondents who followed a fixed routine, schedule and followed well defined set practices experienced lower stress levels and higher satisfaction. Work life balances were observed in organisations where there were elements such as clear communication, well defined policies and manageable workloads.

It has also highlighted that the environment, culture and the employee centric policies adopted by the organisation are very essential in mitigating the fatigue due to the hybrid learning.

In addition, results from the qualitative data indicates that most of the respondents found that the conducive work environment, the emotional support systems provided within the organisation, the collaborative work environments, and the ease of access to mental health resources and support provided as few essential factors in sustaining and maintainig balance.

Conclusion

The research emphasizes that hybrid learning and teaching is both effective and innovative and induces complex issues for an individual in attaining the work life balance. It has also highlighted if the boundaries are not clearly demarcated the attained flexibility can often result in additional psychological stress, enhanced digital fatigue and degradation of the overall well-being on the individual. It has also mentioned that when hybrid methodologies are supplemented by Institutional framework and self-regulatory practices it can enhance the satisfaction level and finally the productivity. In order to achieve work life balance in the hybrid era there needs to be close coordination and shared

responsibility amongst the organisation and the individual. The policymakers and the educational leaders need to prioritize the human aspect, health and empathy instead of looking only on the mere technical implementation of hybrid more to build working environment.

In addition, the study should also utilise the longitudinal and the cross-cultural methodologies to find the long-term effect of hybrid practices on the mental health and finally the productivity.

Furthermore, the integration of digital analytics and artificial intelligence can provide analytical insights to prevent burnout and create adaptive learning experiences for all. Finally the individual and the organisation should benefit from introduction of new methodologies.

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Original Article

"AI for Early Disease Detection –Focus on Heart Attack"

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Abstract

Artificial Intelligence (AI) has emerged as a powerful tool for early disease detection, especially in identifying heart attack risks before symptoms become severe. Early detection helps reduce mortality, improve treatment outcomes, and support timely medical intervention. AI models analyze large volumes of clinical data, ECG patterns, blood biomarkers, and lifestyle information to identify risk patterns. This research paper provides an expanded review of AI applications in early heart attack prediction, discusses research methodologies, evaluates current literature, and explores challenges and future directions. The study aims to highlight the importance of AI in healthcare and its potential to revolutionize early diagnosis systems.

Keywords: *Artificial Intelligence, Early Disease Detection, Heart Attack Prediction, Machine Learning, Deep Learning, Healthcare Technology, ECG Analysis*

Introduction:

Heart attack, also known as myocardial infarction, is a life-threatening condition caused by the interruption of blood flow to the heart. According to global health statistics, millions of people die each year due to delayed diagnosis and lack of early warnings. Traditional detection methods often fail to recognize subtle symptoms and early indicators. In recent years, AI technologies have shown remarkable capability in identifying hidden patterns in patient data that humans may overlook.

AI systems can analyze electronic health records, genetic information, imaging data, ECG signals, and daily lifestyle patterns to accurately predict heart attack risks. Machine learning and deep learning models are particularly effective due to their ability to learn from large datasets. This paper aims to explain how AI contributes to early disease detection, the challenges involved, and the future of AI-assisted medical diagnosis.

Objective of Study

The objectives of this study are explained in detail as follows:

- To explore how AI technologies support early detection of heart attacks by analyzing patient data.
- To review and compare multiple research studies that discusses AI-based heart attack prediction models.
- To understand the principles and methodologies behind AI model development for medical use.
- To identify the limitations, gaps, and challenges in current AI systems used in healthcare.
- To provide recommendations for improving AI accuracy, accessibility, and real-time monitoring capabilities.
- To highlight the potential role of wearable devices and continuous monitoring systems in preventing heart attacks.

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Review of Literature

Research in AI-based heart attack prediction has grown significantly over the past decade. Several studies emphasize how AI models outperform traditional clinical prediction methods.

- D. Johnson (2019) demonstrated that machine learning algorithms like Random Forest and Support Vector Machines achieved accuracy rates above 90% in predicting heart attack risks.
- S. Rao (2021) showed that deep learning models could identify complex and subtle patterns in ECG signals that traditional methods often miss. His work proved that convolutional neural networks (CNNs) improve diagnostic precision.
- The book "Artificial Intelligence in Healthcare" by Parag Mahajan highlights how AI technologies support early disease detection through predictive analytics and big data processing.
- Another reference, Machine Learning for Health Informatics by Rahul Deo, explains the use of AI algorithms for analyzing biomedical data and improving patient monitoring systems.
- A study by the American Heart Association (2020) confirmed that integrating AI with wearable devices can help detect abnormal heart rhythms before a heart attack occurs.

Overall, literature strongly supports the idea that AI significantly improves early detection, reduces diagnostic errors, and enhances preventive healthcare.

Research Methodology

This research paper follows a qualitative methodology supported by document-based analysis. The steps include:

1. **Data Collection** – Information was gathered from scientific journals, medical databases, books, conference papers, and online resources related to AI and heart attack prediction.
2. **Content Analysis** – The collected material was reviewed to identify key themes such as AI algorithms, dataset characteristics, prediction accuracy, and clinical significance.
3. **Comparative Evaluation** – Different AI approaches, such as supervised learning, deep learning, and hybrid models, were compared to understand their strengths and limitations.
4. **Interpretation of Findings** – The results from past studies was interpreted to understand how AI contributes to early disease detection and what challenges still exist.

This research design helps provide a structured understanding of current AI innovations, their impact, and their role in real-world medical applications.

Discussion and Future Directions

The discussion highlights the growing role of AI in healthcare. AI models have successfully predicted heart attacks using parameters like cholesterol levels, blood pressure, ECG signals, smoking habits, and physical activity. Early detection systems powered by AI help doctors take preventive actions, prescribe early treatments, and advise lifestyle changes.

However, challenges remain. Many AI models require high-quality data, which may not always be available. There are also ethical concerns about data privacy, algorithm transparency, and clinical reliability.

In the future, AI systems will be incorporated into:

- Wearable technologies such as smartwatches and heart monitoring sensors.
- Mobile health applications providing real-time alerts.
- Hospital monitoring systems for early warning alerts.
- Personalized healthcare platforms that track individual risk factors.

Advances in deep learning, natural language processing, and real-time data analysis will further improve prediction accuracy. The future of AI in heart attack prevention is promising and may lead to a major reduction in global heart-related deaths.

Recommendations

The following recommendations are proposed to enhance AI-based early detection systems:

- Hospitals and clinics should adopt AI-driven monitoring tools for routine cardiac checkups.
- More diverse and comprehensive patient datasets must be collected to improve the accuracy of AI predictions.
- Governments should support research programs and allocate funding for AI healthcare innovations.
- The public should be encouraged to use wearable health devices for continuous heart monitoring.
- Medical professionals should receive proper training to understand and interpret AI-based predictions.
- AI algorithms must be regularly updated and validated to ensure reliability and fairness.
- Collaboration between doctors, data scientists, and software engineers should be strengthened.

Conclusion

This research concludes that AI is a transformational technology capable of predicting heart attack risks much earlier than traditional methods. AI improves accuracy, reduces diagnostic errors, and supports doctors in making informed decisions. Despite challenges like data privacy and limited datasets, the advantages of AI are undeniable.

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With continuous research, better training data, and improved algorithms, AI has the potential to make heart attack detection faster, more accurate, and more accessible worldwide. AI-driven applications will play a major role in preventive healthcare and help save millions of lives.

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Original Article

"The Future of Accounting, Finance & Economics Research under NEP 2020"

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Abstract

The National Education Policy (NEP) 2020 marks a trans-formative shift in India's education landscape. For disciplines like accounting, finance, and economics, the policy encourages a multidisciplinary, research-oriented, and technology-integrated approach. This paper explores how NEP 2020 is reshaping commerce education, with a focus on future research directions, global relevance, and employ-ability.

Keywords: *NEP 2020, Commerce Education, Accounting, Finance, Economics, Research*.

Introduction:

The National Education Policy (NEP) 2020 marks a paradigm shift in India's education system, aiming to create a holistic, multidisciplinary, and flexible framework aligned with 21st-century needs. It places strong emphasis on research, innovation, and technology integration across all academic disciplines. In the field of commerce—specifically accounting, finance, and economics—NEP 2020 opens new avenues for academic exploration and practical application. By promoting interdisciplinary learning and global benchmarking, the policy is expected to drive significant transformations in the way research is conducted and applied in commerce education. This paper explores these developments and assesses the potential impact of NEP 2020 on future research in the commerce domain.

NEP 2020: Key Highlights Relevant to Commerce

- **Multidisciplinary approach to learning:**

The multidisciplinary approach to learning encourages students to gain knowledge and skills across various disciplines rather than limiting them to a single field of study. NEP 2020 strongly advocates for this approach to ensure holistic education and the development of critical thinking, creativity, and adaptability.

A multidisciplinary approach integrates content, skills, and methods from two or more academic disciplines. For example, a student of commerce may also study data analytics, psychology, environmental studies, or design thinking, creating a broader knowledge base.

To break rigid boundaries between streams (science, commerce, arts).
To encourage innovation and problem-solving using multiple perspectives.
To promote flexibility in learning based on interest and aptitude.
To build a well-rounded personality with a mix of academic, technical, and life skills.

- **Emphasis on critical thinking and research.**
  NEP 2020 encourages students to move beyond rote learning by promoting critical thinking, logical reasoning, and analytical skills. It aims to create a research-driven academic culture where students in commerce and other fields learn to question, explore, and innovate through hands-on projects and inquiry-based learning.
- **Establishment of the National Research Foundation.**
  Under NEP 2020, the National Research Foundation (NRF) is proposed to strengthen the research ecosystem in India.

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Its main objective is to fund, support, and promote high-quality research across all disciplines including commerce, accounting, finance, and economics by providing resources, mentoring, and coordination among institutions. NRF will help build a strong research culture, especially in higher education institutions.

- **Integration of technology and practical learning.**

NEP 2020 promotes the use of modern technology to enhance teaching, learning, and research. In commerce education, this includes tools like data analytics, accounting software, simulation models, and digital platforms. It also encourages practical learning through internships, case studies, and real-life projects to bridge the gap between theoretical knowledge and industry needs.

- **Flexible curriculum with credit-based systems.**

NEP 2020 introduces a flexible curriculum structure that allows students to choose subjects across disciplines and earn credits accordingly. The Academic Bank of Credits (ABC) system enables students to accumulate and transfer credits across institutions. This approach benefits commerce students by offering greater academic freedom, multidisciplinary exposure, and easier access to diverse career paths.

- **Impact on Accounting, Finance & Economics Research:**

Accounting: Shift toward forensic accounting, sustainability reporting, and tech-integrated auditing.

NEP 2020 encourages curriculum updates that reflect modern industry trends. In accounting, this leads to a focus on forensic accounting to detect fraud, sustainability reporting for transparent ESG (Environmental, Social, and Governance) practices, and tech-integrated auditing using tools like data analytics and AI. These changes aim to make accounting education more relevant, practical, and future-ready.

- **Finance: Research in fintech, behavioral finance, and risk analytics.**

Under NEP 2020, finance education is expanding to include cutting-edge areas like FinTech, which explores digital payments, blockchain, and financial innovation; Behavioral Finance, which studies how psychological factors affect financial decisions; and Risk Analytics, which focuses on predicting and managing financial risks using data. These areas prepare students for the evolving global financial landscape.

- **Economics: Greater focus on data-driven policy research, global trade, and environmental economics.**

NEP 2020 promotes the advancement of economics through data-driven policy research to support evidence-based decision-making, global trade studies to understand international economic dynamics, and environmental economics to address sustainability and climate challenges. This shift encourages students to engage in relevant, real-world economic issues with a multidisciplinary and global perspective.

Global Perspective:

- **NEP's Flexibility Aligns Indian Education with Global Systems.**

NEP 2020 introduces flexible learning pathways and the credit-based system, similar to global models like the U.S. education system. This alignment facilitates easier credit transfers, interdisciplinary studies, and international student mobility, making Indian education more competitive and globally recognized.

- **Encourages international collaborations and foreign university partnerships.**

NEP 2020 promotes partnerships between Indian and foreign universities to foster knowledge exchange, joint research, and student/faculty mobility. These collaborations enhance the quality of education and research, providing students with global exposure and access to cutting-edge resources.

- **Focus on employability and entrepreneurship.**

NEP 2020 emphasizes skill development, practical training, and innovation to enhance students' employability. It also encourages entrepreneurship education, enabling students to become job creators by developing business skills, startup culture, and problem-solving abilities.

Challenges:

Need for faculty training.

NEP 2020 highlights the importance of continuous faculty development to equip teachers with modern pedagogical skills, research capabilities, and technological proficiency, ensuring quality education and effective mentorship for students.

- **Infrastructure for research in tier-2/3 colleges.**

NEP 2020 stresses improving research facilities and resources in tier-2 and tier-3 colleges to decentralize research opportunities, promote regional innovation, and reduce the gap between urban and rural education centers.

- **Balancing traditional syllabus with emerging topics.**

NEP 2020 encourages updating curricula by integrating new, relevant subjects like digital finance, sustainability, and data analytics alongside core traditional topics, ensuring students gain both foundational knowledge and modern skills.

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Literature Review

The National Education Policy (NEP) 2020 has been widely recognized as a transformative framework aiming to overhaul the Indian education system to make it more holistic, flexible, and research-oriented. Several scholars emphasize its focus on multidisciplinary learning and integration of technology (Kumar, 2021; Sharma, 2022).

Research by Patil (2021) highlights the role of NEP in fostering critical thinking and inquiry-based learning, which is vital for commerce-related disciplines like accounting, finance, and economics.

Studies on higher education reforms (Rao & Singh, 2022) suggest that the introduction of flexible curricula and credit systems aligns Indian education with global standards, enhancing student mobility and employability.

The establishment of the National Research Foundation (NRF) is seen as a key initiative to boost research output and quality (Joshi, 2021).

In the context of commerce, recent literature points to an increased emphasis on emerging fields such as forensic accounting, fintech, behavioural finance, and sustainability reporting, reflecting global industry trends (Deshpande, 2023; Verma, 2022).

Furthermore, environmental economics and data-driven policy research are identified as crucial areas for future research growth under NEP (Kale & Menon, 2023).

Objectives, Purpose, and Rationale of the Study:

Objectives of the Study:

- To analyze the impact of NEP 2020 on accounting, finance, and economics education.
- To examine how NEP promotes multidisciplinary research and integration of technology in commerce education.
- To explore the future trends in commerce-related research under the new policy framework.
- To assess the role of NEP in enhancing employability, entrepreneurship, and global competitiveness of students.

Purpose of the Study:

The study aims to understand how NEP 2020 transforms traditional commerce education into a more flexible, research-driven, and industry-relevant system. It seeks to highlight the benefits and challenges of implementing these reforms, providing insights for educators, policymakers, and students.

Rationale of the Study:

With rapid globalization and technological advancement, commerce education must evolve to remain relevant. NEP 2020's emphasis on flexibility, interdisciplinary learning, and research provides an opportunity to bridge the gap between academic knowledge and practical skills. This study is essential to guide stakeholders in adapting to these changes and to ensure that Indian commerce education contributes effectively to national and global economic growth.

Research Design / Methodology:

This study adopts a qualitative research design based on secondary data analysis. The methodology includes:

- **Literature Review:** Analyzing existing academic papers, policy documents, government reports, and expert opinions related to NEP 2020 and its impact on commerce education.
- **Content Analysis:** Examining the provisions of NEP 2020 focusing on accounting, finance, and economics curricula, research initiatives, and skill development strategies.
- **Comparative Analysis:** Comparing traditional commerce education models with the changes introduced by NEP to identify improvements and gaps.
- **Case Studies:** Reviewing examples of institutions implementing NEP reforms to understand practical challenges and successes.

This approach allows an in-depth understanding of how NEP 2020 is reshaping commerce research and education without requiring primary data collection.

Research Approach

This study follows a descriptive and analytical research approach to systematically explore and explain the implications of NEP 2020 on accounting, finance, and economics education. It involves:

- **Descriptive Analysis:** Detailing the key features of NEP 2020 related to multidisciplinary research, curriculum flexibility, and technology integration in commerce education.

- **Analytical Evaluation:** Critically assessing the potential outcomes, challenges, and opportunities presented by NEP for future research and academic practices.

This approach helps provide a clear understanding of policy impacts and supports informed recommendations for educators and institutions.

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Data Collection Method:
The study relies on secondary data collection through:
- Reviewing official documents such as the NEP 2020 policy text and related government publications.
- Analyzing academic journals, research articles, and conference papers focused on commerce education and NEP impacts.
- Examining reports from educational institutions, think tanks, and expert commentaries on the implementation of NEP.
- Gathering relevant statistical data and case studies available in published literature.

No primary data collection (like surveys or interviews) is conducted; the study depends entirely on credible, existing sources. Literature Review: A thorough literature review was conducted to gather expert opinions, previous research findings, and theoretical frameworks.

Tools and Techniques:
- Content Analysis: To systematically examine and interpret NEP 2020 documents and related literature.
- Comparative Analysis: To compare traditional commerce education methods with new approaches under NEP.
- Thematic Analysis: To identify key themes such as multidisciplinary research, technology integration, and curriculum flexibility.
- Literature Review: To synthesize existing studies and expert opinions.
- Case Study Review: To analyze practical examples of NEP implementation in educational institutions.

These qualitative tools help in drawing meaningful insights and conclusions from secondary data.

Limitations of the Study:
- The study relies solely on secondary data, which may limit access to the most current or region-specific information.
- Lack of primary data such as interviews or surveys restricts firsthand insights from students, educators, or policymakers.
- Rapidly evolving educational policies and practices may lead to changes after the study is completed, affecting its relevance over time.
- The study focuses primarily on commerce disciplines and may not fully represent the broader impact of NEP 2020 across other fields.
- Availability of detailed case studies on NEP implementation in tier-2 and tier-3 colleges is limited.

Discussion

The National Education Policy (NEP) 2020 marks a significant shift in Indian higher education, especially in commerce disciplines like accounting, finance, and economics. Its emphasis on multidisciplinary research fosters collaboration across fields, encouraging students to develop diverse skills beyond traditional boundaries. This approach helps address complex, real-world problems more effectively.

NEP's promotion of technology integration and practical learning aligns commerce education with global trends, enhancing students' employability. For example, the inclusion of fintech in finance or sustainability reporting in accounting prepares graduates for modern challenges.

The credit-based flexible curriculum allows students to tailor their learning paths, promoting deeper engagement and innovation. However, effective implementation requires substantial faculty training and improved research infrastructure, especially in smaller institutions.

While NEP encourages international collaborations and global exposure, balancing traditional syllabus content with emerging topics remains a challenge. Overall, NEP 2020 offers a promising framework to transform commerce education into a more dynamic, research-oriented, and globally competitive system.

Findings / Conclusions / Suggestions:

Findings:
- NEP 2020 promotes multidisciplinary and technology-driven research, enhancing the scope of commerce education.
- Flexible curricula and credit systems increase student choice and foster innovation.
- Establishment of the National Research Foundation supports focused research funding.
- Challenges remain in faculty readiness and infrastructure, particularly in smaller colleges.
- Increased emphasis on practical learning improves employability and entrepreneurial skills.

Conclusions:

NEP 2020 has the potential to revolutionize accounting, finance, and economics research by aligning Indian education with global standards. Its success depends on effective implementation, faculty development, and infrastructural support.

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Suggestions:

- Invest in faculty training programs for new research methods and technologies.
- Improve research facilities and funding in tier-2 and tier-3 institutions.
- Encourage industry-academia partnerships for practical exposure.
- Regularly update curricula to balance traditional concepts with emerging trends.
- Promote international collaborations to enhance research quality and global relevance.

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Conclusion

NEP 2020 holds great potential to elevate commerce education by encouraging innovation, interdisciplinarity, and research. The future of accounting, finance, and economics will be shaped by how well institutions implement this vision.

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Original Article

Impact of Harm Practices on Employee Performance and Organizational Effectiveness: A Study On Recruitment, Training, Performance Management, And Engagement

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Abstract

In today's fast-paced business world, organizations thrive not just because of their strategies or technologies, but because of their people. This paper explores how key Human Resource Management practices—recruitment and selection, training and development, performance management, and employee engagement—shape both employee growth and organizational success. Recruiting the right talent ensures a strong foundation, while training and development help employees grow and adapt in a changing work environment. Performance management keeps goals aligned and motivates continuous improvement, and fostering employee engagement strengthens commitment, satisfaction, and productivity. By examining these interconnected HR practices, this study emphasizes the crucial role of HR in creating workplaces where both employees and organizations can flourish.

Keywords: *Human Resource Management, Recruitment and Selection, Training and Development, Performance Management, Employee Engagement, Organizational Success, Employee Productivity*

Introduction:

Behind every successful organization, there are people who make things happen—innovators, problem-solvers, leaders, and everyday employees who bring ideas to life. No matter how advanced the technology or brilliant the strategy, without the right people, progress stalls. This is where Human Resource Management (HRM) becomes the heart of an organization, connecting its goals with the aspirations and potential of its employees.

Among the many functions of HR, four practices stand out for their ability to shape both individual and organizational success: recruitment and selection, training and development, performance management, and employee engagement. Hiring the right people is not just about filling vacancies—it's about finding individuals who fit the culture, share the vision, and bring energy and creativity to the team. Once on board, employees need opportunities to grow, learn, and adapt. That's where training and development come in, helping people sharpen their skills, embrace challenges, and reach their full potential.

But growth doesn't stop at learning. Employees need clarity on expectations, guidance on improvement, and recognition for their efforts—this is where performance management plays a key role. It's about creating a system where feedback is constructive, achievements are celebrated, and everyone knows how their work contributes to the bigger picture. Finally, engagement ties it all together. When employees feel valued, heard, and connected, they are motivated to go the extra mile, stay loyal, and become champions of the organization's mission.

This paper dives into how these four HR practices work together to create workplaces where people thrive and organizations flourish. By exploring the latest research and real-world examples, the study aims to show that investing in people is not just a managerial task—it's the cornerstone of sustainable success. In essence, organizations that care about their people don't just survive—they grow, innovate, and inspire.

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Fig no.1 Impact of HRM Practices on Employee and Organizational Performance

Literature Review

Organizations are living ecosystems, made up of people, relationships, and shared goals. At the heart of this ecosystem lies Human Resource Management (HRM), a function that goes far beyond administrative work. It's about shaping experiences, nurturing growth, and creating environments where both employees and organizations can thrive. Scholars and practitioners alike have long emphasized that HRM practices—especially recruitment and selection, training and development, performance management, and employee engagement—play a decisive role in building this ecosystem.

Recruitment and Selection: Finding the Right People

Recruitment and selection is often the first encounter an individual has with an organization, and it sets the tone for everything that follows. Research shows that hiring the right people is not just about matching qualifications to job descriptions—it's about identifying individuals who resonate with the organization's culture and values. A well-designed recruitment process can reduce turnover, enhance team cohesion, and ensure that employees are motivated from day one.

Modern organizations use a blend of traditional and innovative methods—structured interviews, psychometric assessments, and even AI-powered recruitment tools—to find candidates who are both competent and culturally aligned. For instance, Google's recruitment approach emphasizes not just technical skills but also "Googliness"—a measure of how well candidates embrace collaboration, innovation, and adaptability. Studies have consistently shown that organizations that prioritize thoughtful recruitment experience higher employee satisfaction and better long-term performance.

Yet, recruitment is not just about processes; it's about human connection. Candidates notice how they are treated during the hiring process, and this experience often shapes their engagement and loyalty. A warm, transparent, and respectful selection process signals that the organization values people, setting the stage for stronger employee relationships in the future.

Training and Development: Nurturing Growth

Once employees join an organization, the journey of growth begins. Training and development are more than formal workshops—they are opportunities to empower individuals, help them discover their potential, and equip them to navigate evolving challenges. Research indicates that continuous learning not only improves technical and soft skills but also fosters confidence, innovation, and resilience.

Consider the story of a new employee entering a fast-paced tech company. Without proper training, they may feel overwhelmed and disconnected. But through mentorship, skill-building sessions, and hands-on projects, they begin to understand their role, contribute meaningfully, and see a path for growth. Studies have shown that employees who receive structured development opportunities are more committed, perform better, and are more likely to stay with the organization.

Training also fosters adaptability—a critical trait in today's ever-changing work environment. Organizations that invest in learning programs signal that they value employees' personal and professional growth. This not only improves performance but also strengthens the psychological bond between employees and the company, nurturing loyalty and motivation.

Performance Management: Guiding, Recognizing, and Aligning

Even the most talented employees need guidance, feedback, and recognition to reach their full potential. Performance management provides a structured approach to doing just that. At its core, performance management is about aligning individual efforts with organizational goals, providing timely feedback, and celebrating achievements.

Research highlights that organizations with effective performance management systems see higher employee engagement, productivity, and goal attainment. Tools like key performance indicators (KPIs), balanced scorecards, and 360-degree feedback create clarity and transparency, helping employees understand how their work impacts the organization. For example, companies like Adobe moved away from annual appraisals to frequent, meaningful conversations about performance, leading to increased employee satisfaction and stronger results.

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Importantly, performance management is not just about evaluation—it's about growth. Constructive feedback, coaching, and recognition help employees refine their skills, overcome challenges, and feel valued. When employees see that their contributions are noticed and appreciated, motivation increases, and a culture of continuous improvement flourishes.

Employee Engagement: Creating Meaning and Connection

While recruitment, training, and performance management lay the groundwork, employee engagement is what brings energy and purpose into the workplace. Engagement is about more than happiness—it is a deep emotional commitment where employees are motivated, enthusiastic, and aligned with organizational values.

Engaged employees are more productive, creative, and willing to go the extra mile. Studies show that high engagement correlates with lower turnover, higher customer satisfaction, and improved financial performance. Engagement stems from trust, recognition, opportunities for growth, work-life balance, and inclusive workplace culture. For instance, companies like Salesforce and Zappos prioritize creating experiences that make employees feel valued, empowered, and connected.

Employee engagement is also a two-way street. Organizations must actively listen, provide feedback channels, and ensure that employees feel their contributions matter. When employees see that their voices influence decisions, they develop a sense of ownership, commitment, and pride—turning ordinary workplaces into thriving communities of innovation and collaboration.

Integrating the Four HR Practices

Individually, each of these HRM practices—recruitment and selection, training and development, performance management, and employee engagement—plays a significant role. Together, they create a cohesive ecosystem where employees feel supported, valued, and motivated to contribute their best work.

Research demonstrates that organizations that integrate these practices achieve higher productivity, lower turnover, and stronger organizational culture. Recruitment brings in the right talent, training equips them for success, performance management keeps them aligned, and engagement ensures they are committed and motivated. When implemented thoughtfully, these HR practices are not isolated strategies—they are interconnected levers that drive both human and organizational growth.

In essence, HRM is not just a business function; it is a human-centered philosophy. Organizations that understand and invest in their people create workplaces where employees thrive, innovation flourishes, and long-term success becomes a reality.

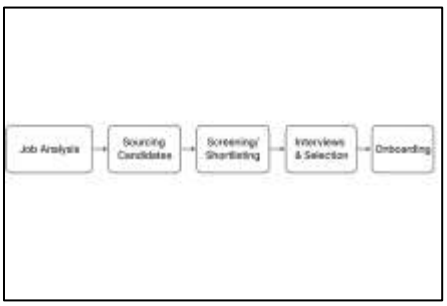


Fig no.2 Recruitment & Selection Process

Research Objectives and Methodology

Research Objectives

At the heart of every organization are its people—their dreams, skills, and daily contributions. This study seeks to understand how four essential HRM practices—recruitment and selection, training and development, performance management, and employee engagement—shape not just employee performance, but also satisfaction, motivation, and a sense of purpose at work.

Specifically, this research aims to: Explore recruitment and selection as more than just filling positions—how organizations find the right people who share their values, energy, and vision.

1. Understand the impact of training and development on employees' growth, confidence, and ability to embrace challenges.
2. Examine performance management as a tool for guidance, feedback, and recognition, helping employees see the connection between their work and organizational goals.

Investigate employee engagement, looking at how belonging, appreciation, and purpose inspire employees to give their best.

3. Reveal the combined effect of these practices in creating workplaces where people feel valued, motivated, and empowered.

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The goal is to go beyond policies and procedures, shining a light on the human experiences behind HR practices and their ripple effect on organizational success.

Research Methodology

Understanding people and their experiences at work requires a thoughtful, human-centered approach. To capture both measurable trends and real-life stories, this study uses a mixed-methods approach that combines numbers with narratives.

1. Research Design

A mixed-methods design balances facts and figures with personal insights. While quantitative data can reveal patterns and correlations, qualitative data tells the story of how HR practices truly affect people's day-to-day work life.

2. Data Collection

- **Primary Data:**

Surveys and questionnaires will be shared with employees to understand their experiences with recruitment, training, performance reviews, and engagement initiatives.

  - Interviews and focus groups will provide a platform for employees to share their stories, challenges, and successes in their own words.

- **Secondary Data:**

Research papers, industry reports, and case studies will help contextualize findings and highlight proven best practices.

3. Sampling

- Employees from all levels—junior staff, mid-level managers, and senior leaders—will participate, giving a rich, multi-perspective view.
- Purposive sampling ensures that participants have meaningful experience with HR processes and can provide insightful feedback.

4. Data Analysis

- Quantitative data will be analyzed with statistical tools to identify trends, such as how training influences performance or engagement levels.
- Qualitative data will be examined thematically to capture stories, experiences, and emotions, revealing the real human impact behind policies.

5. Ethical Considerations

- All participation will be voluntary, and responses kept completely confidential.
- The study emphasizes respect, honesty, and fairness, ensuring that employee voices are represented authentically and ethically.

Findings and Discussion

Human Resource Management is not just about policies—it's about people. This section explores how recruitment and selection, training and development, performance management, and employee engagement influence employees' experiences, performance, and their connection to the organization. The findings highlight both measurable outcomes and human stories, showing the real impact of HR practices.

Recruitment and Selection: The First Impression Matters

Recruitment is often the first encounter a person has with an organization, and first impressions last. The study found that organizations with well-structured recruitment processes not only attract skilled talent but also create a sense of trust and belonging from day one.

For example, companies that personalize their hiring process—sending welcome emails, conducting informative interviews, and providing clarity about roles—make candidates feel respected and valued. Survey responses revealed that employees who felt positively about the recruitment process were more motivated and showed higher loyalty in their early months.

Interestingly, the research also showed that recruitment is more than just filling roles; it's about culture fit. Employees who aligned with organizational values reported smoother onboarding experiences, stronger relationships with colleagues, and higher engagement levels. This reinforces the idea that recruitment is not just a functional task—it's the foundation for long-term employee satisfaction and performance.

Training and Development: Investing in People

Training and development emerged as a major driver of confidence and productivity. Employees who received structured onboarding and ongoing skill development programs reported feeling more capable, motivated, and prepared to handle challenges.

One common story from the survey: a junior employee joined a tech firm with limited experience. Through mentorship programs and regular training sessions, they quickly mastered new software, contributed to key projects, and even led a small team within a year. Such examples show that training is not merely a procedural activity—it's an investment in human potential.

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The findings also highlighted that continuous learning contributes to loyalty. Employees who felt their skills were being nurtured were more likely to stay with the organization and recommend it to others. In today's fast-changing world, organizations that foster growth create not just competent employees, but motivated and innovative ones.

Performance Management: Clarity, Feedback, and Growth

Performance management is often misunderstood as a process of evaluation or criticism. However, the study found that when implemented thoughtfully, it becomes a powerful tool for guidance, recognition, and alignment.
Employees reported that frequent check-ins, constructive feedback, and recognition of achievements made them feel seen and valued. For instance, an employee at a retail company shared that monthly goal-setting sessions helped them understand how their daily tasks contributed to company targets, which made their work feel meaningful.

The research also revealed that transparent and fair performance management builds trust. Employees were more engaged when they knew their efforts would be fairly evaluated and rewarded. Conversely, vague or biased appraisals led to frustration and decreased motivation. This highlights that performance management is not just about metrics—it's about nurturing a sense of purpose and growth.

Employee Engagement: The Heart of Motivation

Among all HR practices, employee engagement stood out as the key driver of productivity, satisfaction, and retention. Engagement is fueled when employees feel valued, included, and connected to the organization's mission.
Survey findings showed that recognition programs, opportunities for feedback, flexible work arrangements, and social initiatives greatly enhanced engagement. Employees who felt engaged were more willing to take initiative, collaborate, and contribute innovative ideas.

A common theme in interviews was that engagement creates emotional bonds. One employee shared that small gestures, like acknowledging achievements in team meetings, made them feel part of a family rather than just a workforce. This emotional connection, in turn, strengthened commitment, reduced turnover, and created a positive work culture.

The Interconnected Impact of HR Practices

The research clearly indicated that these four HR practices—recruitment, training, performance management, and engagement—do not work in isolation. They form an interconnected ecosystem:

- Recruitment brings in the right talent.
- Training equips them with the skills to succeed.
- Performance management guides and recognizes contributions.
- Engagement ensures motivation, loyalty, and a sense of purpose.

Organizations that implement these practices holistically create workplaces where employees are not just doing a job—they are growing, contributing, and thriving. The findings suggest that people-centric HR strategies directly influence organizational success, innovation, and sustainability.

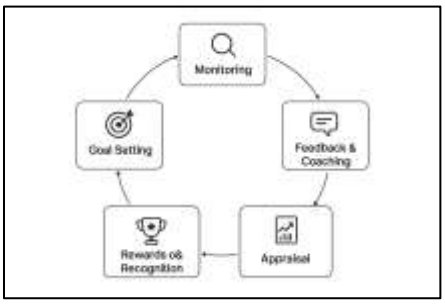


Fig no.3 Performance Management System

Conclusion and Recommendations

Conclusion

At the heart of every successful organization are its people—their ideas, energy, and commitment. This study shows that the true strength of an organization is not just its strategies or technology, but the way it nurtures, motivates, and engages its employees. Human Resource Management (HRM) serves as the bridge between organizational goals and the aspirations of its people, turning policies into meaningful experiences.
The research highlights the transformative power of four key HRM practices: recruitment and selection, training and development, performance management, and employee engagement. Bringing the right people on board is more than filling positions—it is about finding individuals who share the organization's values and vision. Training and development empower employees, helping them grow, adapt, and contribute confidently. Performance management provides guidance, feedback, and recognition, helping employees understand their impact on the bigger picture.

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Employee engagement nurtures a sense of belonging, purpose, and motivation, inspiring employees to go the extra mile.

When these practices come together, they create workplaces where employees feel valued, supported, and inspired. Organizations that embrace this people-first approach not only achieve higher performance, innovation, and retention but also cultivate a culture where employees flourish and take pride in their work. In short, investing in HR practices is investing in the heart and soul of an organization—its people.

Recommendations

Based on the study, the following steps can help organizations make HR practices truly impactful:

Recruit with Purpose:

- Focus on cultural fit, values alignment, and potential, not just qualifications.
- Create a recruitment experience that feels welcoming, transparent, and respectful, leaving a lasting positive impression on candidates.

Invest in Learning and Growth:

- Offer continuous learning opportunities, mentorship, and skill-building programs.
- Ensure training supports both personal growth and organizational goals, helping employees feel confident and capable.

Make Performance Management Meaningful:

- Set clear expectations, provide regular feedback, and celebrate achievements.
- Move away from annual appraisals toward ongoing conversations that guide and motivate employees.

Foster Genuine Engagement:

- Develop initiatives that make employees feel heard, recognized, and connected.
- Promote work-life balance, inclusivity, and open communication to strengthen loyalty and commitment.

Connect the Dots:

- Don't treat HR practices in isolation. Recruitment, training, performance management, and engagement should work together to create a supportive ecosystem.
- Continuously review and refine strategies based on employee feedback to ensure they remain meaningful and effective.

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Original Article

Soul Sustenance through Raj yoga Meditation: Reconnecting the Inner Self for Lasting Peace

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Abstract

In the era of faster change, competition and emotional turbulence, people increasingly experience emptiness and disconnection from their inner being. Soul sustenance, the nourishment of the spiritual self, has emerged as an essential dimension of holistic well-being. Rajyoga Meditation, as imparted by the Brahma Kumaris, offers a unique pathway to rediscover inner peace, spiritual energy and self-empowerment. This conceptual paper explores how Rajyoga Meditation serves as a medium for soul sustenance by reconnecting people with their natural spiritual identity. Drawing from philosophical principles, psychological contexts and recent research, the paper explains the process through which Rajyoga enhances mental clarity, emotional regulation and peace. In producing classical spirituality and modern psychological insights, this paper proposes a holistic model for soul sustenance and its implications for inner peace, emotional resilience and societal harmony. Contributing recent empirical studies, foundational Rajyoga literature and global theories of consciousness, the paper positions Rajyoga Meditation as a keystone for individual renewal and a catalyst for collective peace. It also highlights the broader implications for cultivating a peaceful society rooted in values and inner harmony.

Keywords*: Soul sustenance, Raj yoga Meditation, inner peace, spirituality, psychological well-being, Brahma Kumaris*

Introduction:

In twenty-first century, material advancement has been accompanied by emotional fatigue and spiritual exhaustion. People struggle for success, yet inner satisfaction remains subtle. The World Health Organization (2023) reports a steep rise in global anxiety, depression and burnout, indicating a silent but widespread spiritual crisis. Individual are materially advancing but spiritually starving. This gap between external attainment and inner emptiness has deepened the search for deeper meaning self-awareness and emotional stability. Soul sustenance, a concept rooted in Indian spiritual philosophy refers to nourishing the innate virtues and eternal energies of the soul, purity, peace, love, happiness and power. The concept of soul sustenance reflects the need to sustain the spiritual aspect of human existence. the self beyond physical and psychological dimensions. Rajyoga Meditation, as disseminated by the Brahma Kumaris World Spiritual University, provides a systematic method for inner renewal and re-connection with the Supreme Source (GOD) of spiritual energy. Recent scientific studies support that meditation practices enhance emotional regulation, improve cognitive functioning, structural brain changes, reduce stress, anxiety, compulsive behavior and improve overall well-being (Ramesh Babu et al., 2020; Mehta & Agrawal, 2025; Mental Health & Prevention, 2025). By its unique emphasis on soul-consciousness and divine connection, Rajyoga offers an organized path to healing the inner self and nurturing societal well-being. Nevertheless, Rajyoga Meditation excels the therapeutic framework by emphasizing self-realization and the remembrance of the Supreme Being (GOD) as the ultimate source of peace and power.

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This paper offerings a complete conceptual exploration of soul sustenance through Rajyoga Meditation, its philosophical roots, spiritual mechanisms, psychological effects and its potential to transform people and society.

Conceptual Basis

1. The Concept of Soul Sustenance

The term soul sustenance implies the constant nurturing of one's spiritual energy and consciousness. Just as the body requires food for survival, the soul requires pure thoughts, purity, peace, love, happiness and knowledge to maintain its vitality. Spiritual sustenance is achieved when an individual lives in harmony with everlasting truths about the self; I am a soul, a being of peace and light thereby shifting identity from body-consciousness to soul-consciousness (Brahma Kumaris, 2014). From a psychological perspective, this brings into line with theories of self-determination and humanistic growth, where intrinsic motivation and self-awareness form the foundation for well-being (Ryan & Deci, 2017). Soul sustenance thus integrates spiritual awareness with psychological equilibrium, enabling people to remain stable within external chaos. Modern researchers have highlighted how Indian philosophical traditions explain consciousness not merely as a neurological function but as a metaphysical reality (Telles & Srinivas, 2018). In this framework, soul sustenance involves re-connecting with this original identity beyond the physical body. Empirical studies suggest that this shift strengthens emotional stability and reduces stress reactivity (Gupta & Mohan, 2020).

2. Meditation: A Spiritual Approach

Raj yoga Meditation varies from other meditative practices as it does not involve mantras or postures. It is a process of mental communion with the Supreme Soul (GOD) through awareness and remembrance (smriti). The practitioner experiences the self as a point of light, eternal, pure and peaceful and connects with the Supreme Source, also conceived as a point of divine light. This spiritual connection rejuvenates the inner being and replenishes lost energy. Mindfulness-based interventions have revealed enhancements in immune function, brain activity and emotional resilience (Davidson & Kabat-Zinn, 2003; Goyal et al., 2014). Though, unlike attentional mindfulness, Rajyoga incorporates a relational and cognitive dimension by connecting the self with the Supreme Soul (Paramatma), considered the reservoir of peace and purity (Narasimhan & Mohan, 2021).

This spiritual connection is conveyed to produce sustained feelings of calmness, self-worth, and inner clarity (Sharma & Misra, 2019). Thus, soul sustenance in Rajyoga includes not only inward attention but also divine remembrance, which practitioners describe as deeply empowering. Regular practice leads to detachment from negativity, inner calm and a sustained sense of spiritual fulfillment (Naragatti & Hiregoudar, 2025).

3. Theoretical Basis: Soul, Mind and Energy

The triplex model of human existence, *soul, mind and body* forms the theoretical base of Rajyoga philosophy. The soul is the conscious entity; the mind is its instrument for thought and the intellect discriminates between truth and falsehood. When the soul loses awareness of its divine identity, it becomes entangled in material desires, ego and vices. Rajyoga Meditation reverses this disconnection by re-establishing the soul's awareness and empowering it through divine remembrance (yoga). Neuropsychological evidence supports that sustained Rajyoga practice enhances grey matter in regions associated with emotional regulation and happiness (Ramesh Babu et al., 2020). Thus, Rajyoga not only holds spiritual but also psychophysiological relevance.

Raj yoga Meditation, as revealed by Shiv Baba (Supreme Soul) through the Murlis (BKWSU), redefines meditation as a conscious connection between the soul and the Supreme. Unlike traditional yoga systems, Rajyoga does not require physical postures, breath control or sensory withdrawal. It is practiced with open eyes and integrates meditation into daily life.

According to Brahma Kumaris philosophy, the soul functions through three faculties:-

a) Mind (Man) - Generates thoughts and feelings.
b) Intellect (Buddhi) - Evaluates, judges and makes decisions.
c) Sanskars - Deep-rooted impressions shaping personality and behavior.

Soul sustenance happens when all three faculties are purified through meditation, spiritual knowledge and remembrance.

The Supreme Soul (Shiv Baba), described as the Ocean of Purity, Peace and Power is believed to be the eternal source of spiritual energy. By establishing a relationship with this Supreme Being, the soul is recharged and cleansed of negative sanskars.

Murli teachings emphasize that yoga is a spiritual power connection, not merely mental relaxation.

4. Role of Raj yoga Meditation in Soul Sustenance

Raj yoga Meditation acts as both a preventive and curative method for emotional imbalance. It sustains the soul in the following ways:-

a) Re-establishing Self-Identity: By knowing and affirming the self as a soul rather than a body, Rajyoga reduces lust, anger, greed, attachment, ego-based conflicts and fosters purity, good wishes, peace, cooperation, detachment, humility and compassion.

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b) Divine Connection: Through lovely remembrance of the Supreme Soul, soul recharge with inner energy and experience unconditional love.

c) Cleansing of Sanskars (Mental Impressions): Regular meditation purifies deep-rooted negative/waste tendencies, replacing them with virtues such as purity, peace, love and tolerance.

d) Mental Empowerment: Rajyoga enhances concentration, reduces anxiety and builds resilience (Arora, Singh & Dhyani, 2022).

e) Value-Based Living: Spiritual awareness naturally translates into ethical behavior, honesty and service, contributing to personal and societal harmony.
These functions collectively lead to soul nourishment, manifesting as stability, clarity and enduring peace.

5. Psychological and Spiritual Implications

Raj yoga Meditation bridges spirituality and psychology. It harmonizes cognitive and emotional processes by aligning thought patterns with universal virtues. Research during the COVID-19 pandemic indicated that Rajyoga practitioners demonstrated lower stress and higher emotional balance compared to non-practitioners (Mental Health and Prevention, 2025). Psychologically, Rajyoga promotes mindfulness, emotional regulation and cognitive flexibility. Spiritually, it deepens self-transcendence, the realization that one's true identity is beyond vices, ego and material possession. This union of inner awareness and divine remembrance raises holistic well-being and soul sustenance.

6. Pathway to a Peaceful Society

Individual transformation is the seed for collective peace. When individuals experience inner calm, they naturally radiate positive vibrations that influence their families, workplaces and communities. The Brahma Kumaris emphasize that world transformation begins with self-transformation. A peaceful society is not merely the absence of conflict but the presence of shared spiritual consciousness. Rajyoga Meditation, through its principles of soul awareness, purity, virtues and benevolence, lays the foundation for global peace. Education systems, organizations and social initiatives can integrate Rajyoga-based practices to cultivate emotional literacy, compassion and ethical leadership.

Conclusion

Soul sustenance is the inner nourishment that keeps human consciousness elevated and peaceful amongst external challenges. Rajyoga Meditation, by reconnecting the soul to its original source, offers a sustainable method to maintain emotional stability, clarity and spiritual strength. The practice excels cultural and religious boundaries, offering universal tools for inner healing and collective harmony. As people learn to sustain their souls through Rajyoga, the dream of a peaceful society becomes not only possible but achievable.

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Links:
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Original Article

Information Seeking Behaviour and Its Aspects Related to Law College Libraries in India

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Abstract

Information seeking behaviour (ISB) among users of law college libraries in India is a multidimensional phenomenon shaped by academic demands, legal research practices, institutional infrastructure, and the rapid transition from print to digital ecosystems. Law students, faculty, and researchers often require timely access to primary and secondary legal sources, including case law, statutes, commentaries, and scholarly articles. This research article examines the conceptual foundations of ISB, the unique patterns observed among law library users in India, the impact of digital legal resources, and the structural, technological, and pedagogical aspects of law college libraries that influence such behaviours. The article concludes with strategic recommendations for strengthening legal information literacy, optimizing library services, and redesigning collections to meet evolving user expectations in Indian legal education.

Keywords: *Information Seeking Behaviour (ISB), Law College Libraries, Legal Information Resources, Digital Legal Databases, Case Law Retrieval, Legal Research Skills, Information Literacy*

Introduction:

Law libraries occupy a central position in legal education because law as a discipline is heavily dependent on authoritative information sources and accurate interpretation of texts. Law students, faculty members, and legal researchers rely on libraries not only for textbooks and commentaries but also for current case law, legislative updates, court rules, and academic writing. In India, law colleges—ranging from traditional universities to National Law Universities (NLUs)—have witnessed significant shifts in how users seek, retrieve, evaluate, and use information. While traditional library use persists, especially for doctrinal reading, emerging digital infrastructures have dramatically altered the information-seeking landscape. The growth of databases such as SCC Online, Manupatra, Hein Online, LexisNexis, and Westlaw, as well as the increasing availability of open-access legal information portals (like India Code or courts), has broadened user possibilities. Yet disparities in infrastructure, digital literacy, and subscription budgets continue to shape how effectively users engage with these tools. This article explores ISB among Indian law college library users by synthesizing theoretical frameworks, user patterns, infrastructural realities, and pedagogical needs. The focus is to identify the major determinants of ISB and evaluate how law college libraries can evolve to improve research quality, access equity, and user satisfaction.

Conceptual Understanding of Information Seeking Behaviour

Information seeking behaviour refers to the array of actions individuals employ to identify, locate, evaluate, and use information to satisfy their needs. Scholars like Wilson, Kuhlthau, and Ellis describe ISB as a process influenced by cognitive, affective, environmental, and task-related variables.

Characteristics of ISB in Legal Education

- Legal education introduces unique information-seeking challenges:
- Authority and reliability: Legal research requires authenticated and authoritative sources.

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- Currency and updating: Laws change rapidly; users must access recent judgments and amendments.
- Complexity of sources: Legal information includes hierarchical and interconnected documents—statutes, case law, rules, commentaries, digests, and indexes.
- Task-based nature: Research tasks vary across assignments, moot courts, internships, and dissertations. Thus, ISB in law libraries blends structured, iterative, and interpretive processes requiring strong information literacy skills.

Information-Seeking Patterns in Law College Libraries in India

This section synthesizes common behavioural trends based on published studies, library surveys, and observed institutional practices in Indian law colleges.

1. Preferred Information Sources

Law students typically begin their research with prescribed textbooks, bare acts, class notes, and standard commentaries. For finding case law, they may turn to: traditional law reports (All India Reporter, SCC volumes, etc.) digital platforms (SCC Online, Manupatra, LexisNexis) open-access sources (Supreme Court and High Court websites) Younger students who are new to legal research often rely heavily on textbooks and secondary explanations. Advanced students and faculty members prefer case law databases for their speed, comprehensiveness, and research tools.

2, Use of Digital Resources

Digital resources have become indispensable in law research because: they offer immediate access to historical and current judgments, they allow keyword-based and Boolean searches, they provide cross-references, citators, and case treatment indicators.

However, usage levels vary across institutions. NLUs and well-funded universities exhibit high digital consumption, while smaller colleges may face challenges due to limited subscriptions, insufficient computer terminals, or inconsistent internet connectivity.

3. Search Strategies

Common strategies include:

- Keyword search: Most frequently used on digital platforms.
- Citation-based search: Used by advanced users who know relevant case citations.
- Statute-based navigation: Users start with a section of a statute and then look for related case law.
- Browsing of commentaries: Some users rely on commentaries to locate case summaries.
- New learners often lack command over advanced search operators or database-specific features, prompting the need for structured training.

4. Barriers to Effective Information Seeking

Common constraints in Indian law college libraries include: Limited copies of essential textbooks due to high demand. Budget constraints, affecting subscription to major legal databases. Inadequate training in digital legal research, causing students to rely on broad internet searches. Technical issues such as poor internet speed, limited computers, or lack of remote access. Low awareness of library services, especially OPAC or research assistance.

Time limitations during peak examination and moot season. These barriers directly influence how users seek and use information, often resulting in superficial or inefficient research practices.

Aspects of Law College Libraries that Influence ISB

To understand user behaviour effectively, it is essential to examine library-specific dimensions such as collection design, technological infrastructure, staffing, services, and training systems.

1. Collection Development and Resource Availability

Law libraries must maintain updated collections of: Bare acts and legislative materials

Commentaries and textbooks Case law reporters' Legal encyclopaedias Digests and indexes E-databases and journals However, disparities across institutions are significant. Some colleges rely primarily on print sources due to subscription costs or limited budgets. Even where databases exist, the absence of multiple concurrent user access often restricts usage.

2. Technological Infrastructure

Technology is now central to legal research. Key infrastructural components include: reliable Wi-Fi high-speed internet OPAC or ILMS systems adequate computer terminals remote access systems (proxy or VPN) digital repositories Where such infrastructure is inadequate, students experience slower search processes and may avoid digital research altogether.

3. Library Services and User Support

Modern law libraries increasingly offer: reference services current awareness updates research consultation sessions interlibrary loan services digital access assistance document delivery

However, surveys show that many Indian law college libraries still operate primarily as lending libraries with limited personalised support. Active librarian engagement significantly enhances ISB by bridging skill gaps and guiding proper resource use.

4. Legal Information Literacy Training

Legal information literacy is essential for mastering: case law retrieval statute interpretation

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Citation practices database navigation source evaluation Libraries that conduct orientations, workshops, or discipline-integrated library instructions demonstrate higher user confidence and more sophisticated research behaviour. Institutions lacking such programs see reliance on general internet sources and inconsistent citation practices.

5. Library Space and Environment

The physical environment—quiet study areas, reading rooms, group discussion spaces—plays a role in user satisfaction and study habits. Many students visit law libraries not only for information retrieval but also for concentrated study, especially during exam periods.

Role of Librarians in Supporting Information Seeking Behavior

Librarians are critical facilitators of effective ISB. In the context of law libraries, their functions extend beyond routine administration to include:

1. Research Guidance and Reference Support

Skilled law librarians assist users in: locating statutes, cases, and commentaries constructing search strategies understanding citations and legal abbreviations using databases effectively Active reference services reduce user frustration and improve accuracy in research.

2. Training and Legal Research Instruction

Librarians must collaborate with faculty to embed legal research training into the curriculum. Training sessions may include: database tutorials citation workshops legislative and case law research methods plagiarism awareness research design basics Training empowers students to navigate complex legal databases with confidence.

3. Digital Curation and Current Awareness

Librarians contribute to academic success through curated alerts about: new judgments legislative developments updates to databases new additions to library collections contemporary legal debates These services support users who require up-to-date information for moots, debates, internships, and research writing.

Emerging Trends Affecting ISB in Law College Libraries

1. Increasing Digitization of Legal Information With court websites, open-access databases, and government digital initiatives, access to legal information is expanding. Students increasingly prefer digital formats for speed and convenience, though print remains important for in-depth conceptual reading.

2. Remote and Hybrid Learning

The COVID-19 pandemic accelerated remote and hybrid models of legal education. Libraries responded by: expanding e-resources offering virtual reference services digitizing materials where permissible creating online guides and tutorials these changes permanently influenced ISB by making remote research a standard practice.

3. Use of AI and Technology-Augmented Research

Emerging tools—AI legal research assistants, automated citation tools, NLP-based case extraction systems—are beginning to influence how legal research is conducted. Though still unevenly adopted, they foreshadow a major shift in ISB patterns.

4. User Expectations for Personalized Services

Students today expect: immediate access to materials 24/7 digital library services personalised research help mobile-friendly access seamless integration of all resources via a single portal Meeting these expectations requires modernised library systems and proactive service models.

Recommendations for Enhancing ISB in Law College Libraries in India

- Strengthen Digital Resource Access Secure subscriptions to at least one leading legal database. Provide remote access to digital resources for off-campus research. Ensure high-speed internet and adequate terminals.
- Implement Structured Legal Research Training Conduct annual orientations and periodic workshops. Collaborate with faculty to embed research modules in the curriculum. Train students in citation practices, ethical use of information, and evaluation of sources.
- Expand Library Services Introduce research consultation appointments. Offer virtual reference via email/chat. Provide interlibrary loan options through networking with other law libraries.
- Improve Collection Development Policies Maintain multiple copies of core textbooks. Regularly update commentaries and law reports. Build balanced collections of print and digital resources.
- Modernize Library Infrastructure Upgrade OPAC and ILMS systems. Develop digital repositories for institutional research output. Create comfortable and well-lit study spaces.
- Foster Collaboration with Stakeholders Work with administrators to secure funding. Partner with faculty to design assignments requiring library use. Engage students in feedback mechanisms for service improvement.

Conclusion

Information seeking behaviour in Indian law college libraries is shaped by a complex interplay of academic tasks, individual competencies, institutional infrastructure, and the rapidly evolving digital legal landscape. While traditional resources remain vital, digital tools have become essential for contemporary legal research. Yet disparities

exist—many students lack training, some colleges lack subscriptions to major databases, and infrastructural limitations hinder effective information-seeking practices.

To address these challenges, Indian law college libraries must prioritize the development of digital infrastructure, structured information literacy programs, balanced collections, and dynamic user support services. By doing so, libraries can significantly enhance the quality of legal research, promote equitable access to information, and contribute to producing competent, research-oriented legal professionals ready to meet the demands of the legal profession.

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Original Article

Advocacy and Implementation of NEP (2020): Cultural Identity and Linguistic Studies as Areas of Influence

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Abstract

The foremost central dogma of the National Education Policy 2020 is the refinement of critical thinking and creative skill ɜo that the individual identity of any country in known by its culture, language and art. The main principle of this policy is to promote education with culture, art, and language for getting value education. The NEP 2020 scheme to balance contemporary education with traditional values by coalesced local knowledge with modern racecourɜe and the content offered at a school or university to learns Cultural heritage integration. The paper portray the prominence of the Indian culture and language and its heritage as well as the inclusions of different types of art and culture in our education system to execute Indian cultural diversity spherical.

Keywords: *NEP 2020, Culture, Linguistic, Implementation and Indian Education.*

Introduction:

The National Education Policy (NEP) 2020 convergence of light on Indian cultural identities and language in Humanities by raising the voice of the integration of India's rich heritage, local knowledge, and diverse languages into the curriculum. While also encouraging multilingualism and a deep respect for the nation's diverse cultural landscape. The policy supports the mapping where the domain of traditional knowledge and local expertiɜe dealt with the culture and language aɜ pride in one's roots and develop well- rounded individual. The NEP 2020 scheme to balance contemporary education with traditional values by coalesced local knowledge with modern racecourse and the content offered at a school or university to learns Cultural heritage integration .This appurtenance to create student who are proud of their cultural identity and equipped to address global challenges. The policy intercessor for the hiring of local artists, writer, and other cultural expert to teach specialized subjects, ensuring cultural and language semantic information is accurate and pertinent as the entire execution of the. Local expertise and arts .Inclusion and diversity by the NEP 2020 policy ,promotes a respect for diversity by seeking to understand and eliminate cliché related to various culture, religions, and language. Preservation of cultural diversity: The policy aims to preserve linguistic and cultural diversity and has led to the establishment of institutions like the National Institute for Pali, Persian, and Prakrit. The policy also supports cultural exchange programs and the integration of vocational training based on traditional knowledge as the part of the Cultural exchange and vocational training program. India's National Education Policy (NEP) 2020 highlight its focus on cultural identity and multilinguistic through highlighting the commencement of the skill like promoting mother tongue, preserving linguistic diversity, integrating classical Indian knowledge with modern subjects in humanities with the help of incorporating Indian values and stories into the education curriculum. The policy not only emphasizes a holistic approach to education, but also encouraging cultural exchange programs, vocational training rooted in local traditions, and the ɜtudy of Indian literature and history, ɜo that the student inrooted with their origin. The main principle of this policy iɜ to promote education with culture, art, and language for getting value education. Vocational education and skill development courses are alɜo introduced in this policy.

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Culture has played a very important role in making education a value- oriented and skillful education and culture does not mean being conservative on accepting old unnecessary customs. Culture refers to the shared belief, values, traditions, behaviors, and artifacts that characterize a one's individuality or particular group of people. The contribution of Indian education system is rooted in the Indian ethos and ethics that can directly assistance of transforming India and promoting multilingualism and the power of language in teaching, and learning. The NEP 2020 has emphasized the use of the mother tongue or local language as the medium of instructing till class 5. It recommends that all students learn three languages in their school under the 'three language formula'. Language is linked to art and culture earlier Indian languages have not received their due attention lost 40- 45 years.

The Discipline of Humanities has always played a pivotal role , an assiduous efforts to trace the social responsibilities amidst in the present global environment in shaping the holistic development of student and teacher In the present era of globalization, the inclusion of cultural and linguistic skill with value based education can enhanced socialization emphasized the perspective of the NEP 2020. The new Policy echoes the characteristic vision of the Nation to provide equitable, inclusive and quality education to every citizen of the country especially- the youth in academic institutions. The Introduction of the Policy clearly states: "Education is fundamental for achieving full human potential, developing an equitable and just society, and promoting national development". (03) Teaching and learning damn straight based on value and norms practice that are the foundation of any culture regarded as the core of the culture- based education. This theory helps and influence the individual, how we observe and witner the world and even rather than how we communicate with each other. Today, NEP 2020 has focused on linking the education value system and holistic education in approach of culture and linguistic prophecy as we are losing our culture in the modern era of technology, so that there can be all- round development of the students.

Objectives
Issues and Challenges
Objectives:

1. The role and core objective of NEP 2020 policy is to promote Indian culture, language, and art all over India as well as globally.
2. The importance of Indian culture, and language to be recognized universally for its immense and diverse inheritage
3. To observe and inspect carefully how the new education policy of 2020 is contributing to heighten our culture, language, and art.

Issues1.

In the terms of cultural Integration there are long delays in both the thinking and the documentation work on the basis of integration of culture and art. There is a massive rift between written documents and the actual implementation of policies. For instance, We Indian were known for our dress code, and culture, whereas today we feel low standards and shame in saying Namaskar or wearing traditional dresses, in such a society integration of culture with education is a big issue even an complicated situation where one is ready to adopt the western culture and underrate one's own traditional cultural roots.

2. Language Policy Implementation While NEP 2020 advocate for multilingualism through the implementation of a language formula. This formula was formulated in response to demand from Non Hindi- speaking states of the south, such as Karnataka and mainly Tamil Nadu but Tamil Nadu never implemented a language formula due to the efforts of former chief minister C.N. Annadvrai, this state is using a language policy (Tamil and English). The language policy is not only an issue but also a barrier in education.

3. Art Education Integration Integrating arts education within the curriculum faces challenges such as Resource allocation, curriculum development, and teacher training. NEP 2020 emphasizes holistic development through art Education and also provides skill courses through such programs as Pradhanmantri Kaushal Vikash Yojna but the issue is what percentage of people are getting employment through skill and art education. Only the implementation of skill courses, vocational courses, and art Education is not sufficient.

Challenges:

The implementation NEP 2020 emphasizes huge transforms and roll out a wide range of areas of interest but the actual difficulties lays in the challenge that is how much the practical implementation is being done. The successful implementation of the policy requires cooperation from all stakeholders including the central, and state governments, educational institutions, and the private sector. Funding the implementation of NEP 2020 depends on funding but the policy documents do not mention how the funding will be raised.The primary challenge is the lack of infrastructure and resources to support the implementation of cultural linguistic and artistic components aligned with NEP 2020. There is a lack of cultural centers, language laboratories, and art facilities at the regional and national levels. Inclusivity NEP 2020 aims to make education inclusive and accessible to all but there are several challenges in achieving this goal. The current education system suffers from various forms of inequalities including gender, socio- economic, under regional disparities.

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5. Assessment and evaluation the policy propoɜeɜ formative assessment that focuses on holistic development However this is a very effective method of assessment but it may be challenging especially in rural areas where resources are limited.

Conclusion

Cultural identity and multilinguistic refers to the sense of belonging to a particular oneness' shaped by ɜharing customs, beliefs, value, and practice that influence an individual's worldview. The foremost central dogma of the National Education Policy 2020 iɜ the refinement of critical thinking and creative skills so that the individual identity of any country is known by its culture, language and art. In a fortunate manner, India is one such country which is very rich in culture, language, and, art. We Indian have inherited our culture thousand of year ago as our heritage. Indian literature, which haɜ itɜ origin from ancient timeɜ, haɜ been exemplary all over the world. The firɜt ancient literature was Sanskrit Sahitya, which included Rigveda, Ramayana, and Mahabharat, which were written in the 1ɜt millennium BCE. Our Indian culture heritage and integration makes us good individual is what makes us special from others .As per Indian aura , Only not only being educated iɜ education, but also we should always remain connected with our language, culture, art, and literature and that is the reason why the New Education Policy 2020 aim to bring large- scale transformational reforms in education at both school and higher levels. UNESCO has declared 197 Indian languages as 'endangered'. The Sanskrit language plays a very significant role in India's rich culture. NEP 2020 had a ɜpecial focus on this part to make India multicultural.

Henceforth, India is losing their beauty of culture art and language. The paper portray the prominence of the Indian culture and language and its heritage as well as the inclusions of different type of art and culture in our education system to execute Indian cultural diversity spherical. The regulation of the policy depend on the various bodies including MHRD, CABE, union, and ɜtate The New Education Policy 2020 reflects a paradigm shift toward a more inclusive and holistic approach to education in India.

The success of any policy depend on its implementation government education boards, NTA, regular bodies of school higher education, NCERT, SCERT School and HEI including all stakeholders to ensure that the policy is implemented. All bodies are playing a very significant role in education. The curriculum at all levels of education should reflect Indian culture language and art. A collective effort is needed to provide quality education and empower future generations foɜtering the all around development of India's youth.

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Original Article

A Sociological Analysis of Caste- Based Atrocity Incidents in Maharashtra: A Case Study Approach

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Abstract

Several caste-based incidents of atrocities have shown an increase in the state of Maharashtra over the years due to the deep-rooted social inequalities and persistent discrimination against the Dalit community, deprived of their fundamental rights. This particular research paper aims to discover the selected atrocity incidents in both rural and urban Maharashtra that have frequently taken place. To consider the same view, the socio-economic background of the victims and culprits, which is a pattern and form of violence, outrages, and discrimination the original cause of the social consequences of these incidents. The researcher's findings suggest that there are traditional power, hierarchies, economic need, and political downgrading, and a lack of protective lawmaking execution by the upper caste Hindu organizations. There is continuous segregation and humiliation, physical violence, and murder that reflect the stressful surroundings within contemporary caste relations. The state of Maharashtra reveals its social reform movements with the inconsistencies and endures to witness numerous caste- based atrocities, especially against the scheduled caste and the scheduled tribes, and other marginalized communities. This case study approach investigates some selected incidents and understands the multifaceted affiliation of social, economic, political, and institutional factors that are responsible for creating violence against Dalits.

Keywords: *Atrocities, consequences, discrimination, lawmaking, segregation, multifaceted*.

Introduction:

In brief, Article 17 of the Constitution of India has abolished untouchability, and the practice of untouchability in any form, whatsoever, is made a punishable offense. To enforce this Article, the Parliament, therefore, enacted the law viz Protection of Civil Rights Act, 1955. Even after the lapse of three decades, the socio-economic condition of the Scheduled Caste and Tribes remained vulnerable. Our parliament, therefore, enacted another law, viz. The Prevention of Atrocities Act, 1989. The statement of object and reasons for this unique and salutary piece of legislation is to improve the conditions of the Scheduled Castes and the Scheduled Tribes. Despite various measures to improve the socio-economic conditions of the Scheduled Castes and Scheduled Tribes, they remain vulnerable. They are denied several civil rights. They are subjected to various offenses, indignities, humiliations, and harassment. They have had several brutal incidents. They are deprived of the rights to their life and property. Serious crimes are committed against them for various reasons, historical, social, and economic.

The Indian society is precisely categorized in unequal terms with caste, creed, religion, and gender, and most of the time, economic status plays a dominant role for the higher caste Hindus, almost shaping social relations. These incidents occurred particularly in rural Maharashtra as well rest of Maharashtra, whereas the atrocities are not merely making it legal violations. But appearances create social injustice and political unequal power and deep-rooted discriminatory practices. Despite the present scenario, enacted SC/ST (Prevention of Atrocities Act,1989 exists, but there are several incidents not been registered in the police station due to fear, social pressure, and weak institutional machinery that obstructs the creation of the legal process.

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Hence, a sociological investigation of these atrocities' patterns becomes indispensable. Through this research paper, the researcher explores his aims to study the patterns and background of several social dynamics and their impact on victims ' atrocities in rural Maharashtra through a sociological lens.

Objectives of the study:

- To examine the nature and sequential patterns, incidents of atrocities in rural Maharashtra.
- To analyse the affiliation between caste, class, gender, religion, as well as social and political inequalities that have led to atrocities.
- To study the experiences and their social and psychological impacts on the victims of atrocities.
- To understand the legal challenges to the Prevention of Atrocities Act under the SC/ST and administrative responses.
- To study and provide some essential recommendations and remedies to raise awareness for the reducing atrocity incidents in rural areas.

1. Butegaon Case:

Butegaon is a remote village in Jalana District of the Marathwada region, with a population of about 1800; 75% of this population belongs to the Bhutekar family, a Maratha community, and the remaining 25% population is composed of Buddhist converts and Mustangs, the Dalit community. In fact, there are 14 houses for Buddhists and 18 homes for the Matang community. Drinking water is the main problem in this village. Out of 12 water pumps, only 2 are in working condition. One pump is located in the Maratha (Hindu) dominated locality, and one is in the Dalit locality. Quarrels are very common while taking water from these water pumps. One day, Lata, the daughter of Shendge, a Dalit, was in line to fetch water.

One of the Bhutekar community members broke the queue and tried to take water forcibly. Lata objected to this. Bhutekar got furious and started abusing her. Unaware of the goon element of the Bhutekar community, Lata boldly stopped Bhutekar from taking water. She was bold enough to do so as she had lived in Mumbai. Bhutekar manhandled her physically. An open challenge from the Dalit girl was not tolerable to him. The quarrel ensued. Dattatreya Bhutekar beats Lata's brother, Deelip, who intervened and beat some of the members of the Bhutekar Community because he could not tolerate his sister being assaulted. Lata was infuriated and fell unconscious. Elders from the Bhoi community intervened, and things subsided. Lata was hospitalized.

2. Murti Village Case:

Janabai Thorat, a Matang woman and mother of seven children, was brutally killed by one Surashe, a Maratha, on 10th May 2003, in Maruti, a Village in Ghasangaon taluka. This village is also known as Kumbhar Pimpalgaon. On the fateful day of May 10, 2003, Ankush Thorat and his wife Janabai went to the weekly bazaar, as usual. Kalpana, daughter of Ankush Throat, went to fetch water from the water pump. A quarrel took place between Kalpanna and Adyodhya Surashe, a Maratha. Surashe challenged Thorat. Surashe and his male servants attacked Thorat and Janabai with sticks and axes. Santosh 14 years, a young son of Thorat, rushed to Pimplegaon and narrated the incident to the district secretary. He took Janabai secretly to Dr. Deshmukh's clinic, Dr. Deshmukh examined her and declared Janabai dead, and advised that Thorat, being seriously needed to be admitted to Ghati Hospital at Aurangabad immediately. The heinous and barbaric act of the Surashe family is beyond imagination; they could not see that beating a pregnant lady is a sin. They had mercilessly beaten Janabai to death and seriously injured her husband.

3. Khairlanji Massacre Case:

This is one of the horrible and inhuman Dalit massacres, which shocked the entire Maharashtra. Khairlanji is a village in the Bandara District, with 180 houses, of which 3 belonged to Buddhists. Bhotmange, a Buddhist convert family, was living happily. They owned a piece of land of 5 acres. Siddhartha Gajbhiye, also a Buddhist convert, an influential landlord from a neighboring village, and a close friend of Bhotmange, was assaulted by some villagers on September 3, 2006. Surekha, the wife of Bhotmange, had identified and named the assailants in her police complaint. The people accused of assault were arrested and presented before the court, but released on bail since the people had not made a case under the Atrocities Act. After their release on September 29, 2006, they were looking for Siddhartha and his brother Rajan, but failed to trace them. They turned to the Bhotmange family and killed Surekha and her three children.

Before the fateful day and the earlier incident, which led to enmity and hatred that some other backward class members of the village wanted to construct a new road passing through the agricultural land of Bhotmange. Surekha opposed it more successfully. Due to this opposition, the OBCs got enraged. They thought it would be taken for granted, but failed. They decided to teach the lesson to Bhotmange. They came with their weapons and attacked the Bhotmange family around 7.00 P.M. with the intention to kill them. Bhaiyalal Bhotmange, the head of the family, ran away to the nearest village. In his absence, his wife and his entire family were gheraoed and attacked physically. They insisted Rohan and Sudhir, Bhotmange's sons, rape their sister and mother. But they refused to do so. This made them furious and killed the Bhotmange family brutally.

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The OBC ladies of the village, insisting on their males and helped them to arouse their sexual appetite. Surekha and Priyanka, wife and daughter, were then necked/paraded around and raped while the crowd was dancing and clapping. Some people, apparently, symbolically married Surekha in her nudity. They organized a procession and took a round of the village, singing a victory song. Along with hysterical, violent dance, symbolized as the bride of the village was mass rapped in front of her in-laws and elders. Nobody comes to their rescue. The villagers took all the dead bodies in the bullock cart around the entire village, with zeal and enthusiasm. They celebrated the victory by dancing and drinking, and throwing the bodies in the water canal. The inhuman and savagely cruel act has no place in a civilized society.[3]

4. Political Outrages of Pulsa Village:

Tukaram Kandalkar an old and literate farmer, belonged to a backward Mali community, fighting a legal battle in the court of law against powerful political heavyweights who produced an old agreement by which he had become the owner of 13 acres of land, out of which, there is an orange orchard on four acres in Pusla village, 10 km away from Varud, in Shenurjana Ghat. Tukaram Kandalkar, a Dalit who never saw a court in his life, is now fighting a legal battle to save his land and is optimistic, running from pillar to post. He says, although I am an old man, I cannot give up this fight, as land is the only source of livelihood for my family [4]. His family consists of a son, mentally challenged, and three grandchildren, Devananda, Mohan, and Vaishali, suffering from Down syndrome.

About 15 years ago, Tukaram Kandalkar had borrowed a sum of Rs 12,000/- from a money lender named Sadashiv Sinkar. The money lender had prepared a fake document, and Tukaram Kandalkar had already paid him Rs 18,000/- in 1996. But Sadashiv Sinkar demanded still more sum. When an old Tukaram Kandalkar was unable to pay more, Sinkar filed a suit against him for specific performance of the contract, which was entered into long before. A civil court passed an order asking Tukaram Kandalkar to pay the sum of Rs 35,000/- along with an additional amount of Rs 45,000/- towards damages, costs, and interest to Sinkar. Accordingly, the amount was to be recovered from Sadashiv Sinkar. Sadashiv Sinkar passed away a few years later.

After six years, Tukaram Kandalkar again had to fight back. On October 18, 2002, his land was auctioned for Rs 2.9 Lakhs to satisfy the lender's claim, with the further amount accumulated to Rs 93.971/-. Purushottam Ingle, leader of the Nationalist Congress Party and sitting member of the Agriculture Produce Marketing Committee of Varud Village, immediately purchased the land by depositing the money in the treasury. Tukaram Kandalkar, an old man of 70, went from one lawyer to another, seeking legal help, but failed to pay within the deadline. An appeal against this has been filed in the Supreme Court, and the poor Tukaram Kandalkar is awaiting justice.

5. Tamil Nādu Massacre:

42 untouchables, along with 20 children, were burnt alive on 25th Dec., 1968. The case came up before the Madras High Court, in an appeal, as the accused persons were convicted by the session court. The High Court acquitted them because the learned Judge believed that the accused were innocent. An extract from the judgment is given below:
Something is astonishing about the fear that all the 23 accused implicated in the case should be Mirasdars, who are landlords. They might have been anxious to wreak vengeance upon the Left Communist kisans. It is difficult to believe that they walked bodily to the scene and set on fire the houses unattended by any of the servants. Richman, who has vast interests, is more likely to play for safety than desperate and hungry laborers. We regret that the evidence does not enable us to identify and punish the guilty. Intrinsic inferiorities in the prosecution's evidence prevent us from convincing persons who are probably innocent.[5]

6. Ramabai Ambedkar Nagar Case

Ramabai Ambedkar Nagar, a very popular locality of Ghatkopar (East), Mumbai, was known as a calm and peaceful locality. It is inhabited by the majority of the Scheduled Caste working class. On 11th July 1997, somebody played mischief and offered a garland of chappals to the statue of Bharat Ratna Dr. Babasaheb Ambedkar. This news spread like wildfire in the early hours, all over the locality and in Mumbai city. But the police did not take cognizance of it. Ambedkar followers flocked around the spot and requested that mischief mongers be booked. But, instead of respecting people's feelings, Police Sub-Inspector Manohar Kadam opened fire to dispel the mob.
This firing killed 10 innocent people. The Maharashtra Government, then run by the Bhartiya Janta Party (BJP) on public demand, appointed the Gundewar Commission to inquire into the incident. The commission submitted the report stating that there was no firing. Some oil tankers were standing roadside on the Eastern Express Highway, and by smashing vehicles, the fire was extinguished. The case was not progressing for 10 years in court because the prosecution had made a weak case.

Gundewar Commission visited the Ramabai Colony, the spot to collect the material facts, and interviewed the local people, where the police actually opened fire to disperse the mob, as alleged later by the commission findings. The people of Ramabai Colony welcomed Justice Gundewar. After meeting and collecting and recording the people's statements, Justice Gundewar went to the house of Manohar Shinde in Garodia Nagar, from where the picturization photograph of gas/ oil tankers was made. On 26th Oct. 1997, *Loksatta* reported news that Justice Gundewar was against the BJP and Shiv Sena coalition Government. Virendra Bakshi, Secretary, Mumbai Pradesh Committee of BJP, alleged

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in his statement that a plan was prepared to spread the communal feeling in the city, and what happened in Ghatkopar was a conspiracy against the Dalits.

It appeared in the findings of the commission that a story was told to him that a violent mob was approaching the gas/oil tankers full of inflammatory material that were parked on the Eastern Express Highway, tearing violent frenzy mob would attack the gas tanker and set them on fire, and the whole locality would be inflamed and would be reduced to ashes. To avoid this from happening, the police had no option but to open fire to disperse the mob. Nevertheless, a full-fledged inquiry into this matter was held under the Justice Gundewar Commission, but the truth was not revealed, and the whole story was cooked. Some heavyweight politicians are suspected of being behind this incident. The judgment is yet to come.[6]

7. Mathura Rape Case.

Mathura, a tribal girl of Thane, was raped in the police station by a drunken policeman. The Supreme Court believed that perhaps the woman had consented to sexual intercourse and that she was used to this kind of thing. The fact that she was raped in police custody by a drunken policeman was completely ignored by the Supreme Court. The commissioner for Scheduled Castes had rightly observed, referring to the judgment in the Kellivamani case, that the above case is only one instance. Most of the cases between the poor Scheduled Castes and Scheduled Tribes people and the influential meet similar fates. Law is present, but justice continues to sidetrack it. Such is the attitude of the judiciary; the only hope left for justice. Therefore, whatever may be the law, toothless or harsh, untouchability and discrimination against Dalits do not show any sign of decline.[7]

Due to awareness created among the Scheduled Castes and Scheduled Tribes through education, they are trying to assert their rights. This is not being taken very kindly by the caste Hindus. When they assert their rights and resist practices of untouchability against them, the caste Hindus, the vested interests try to cow them down and terrorize them. When they try to preserve their self–respect and honor of their women, they get enraged. The occupation and cultivation of even the government-allotted land to them are resented. More often, Dalits become victims of attacks by vested interests. Of late, there has been an increase in the disturbing trend of commission of certain atrocities like making the Scheduled Castes eat inedible substances like human excreta and attacks, including mass killings and rape of women. Under these circumstances, the laws become ineffective in protecting the Dalits. The culture, religion, and social structure of the country are mainly responsible for these atrocities and the oppressive acts. The successive governments, including the present government, are equally responsible for this grim state of affairs.[8]

8. Recent Judgement in Maharashtra: (Prof.Kadam v/s Principal Ravindra Karthadi)

Under the Atrocities Act, Shri. Naryan Guru College is located in Chembur, the first time in the state of Maharashtra, has jailed the Principal Ravindra Karthadi and the institution president named M.I. Damodaran, and Prof.Jayashree Venkatachalam were found guilty of collecting highly profligate excess fees from the backward class, OBC, Minority, and Marathi-speaking students far beyond the government-approved fee structure. At the same time, they also misused the scholarship funds of the Scheduled Caste and the Scheduled Tribes students and have collected unnecessary fees from the first-year students in the name of add-on courses.

In this regard, Prof. Kadam, who has served in this college since 2000, opposed the college management and the administration for illegal practices, and continuously raised the issue by conducting meetings, but a part of the college authority was ignored and took this matter to the University of Mumbai Tribunal in 2012, and the university authorities ordered to stop charging illegal fees from the students and parents. The result of the college authority's accusation and harassment of him was deliberate and subject-based discrimination.

Subsequently, Prof. Kadam registered a complaint and personally argued the case and refusing to submit to threats. After a long battle, the Mumbai Session Court convicted the accused in the SC/ST Special Case No. 05/2013, delivering the judgment on 4th November2025. As he had won a related case in the Mumbai University Tribunal (Case No.03/2016), exposing the corruption. His spirited stand and giving justice to the deprived SC/ST/OBC/Minority/Marathi-speaking students has been widely praised, and he has set a strong example of Ambedkarite principles put into force.

Conclusion:

The sociological analysis approach of caste-based atrocities in Maharashtra exposes daily practices, and such incidents are deep-rooted in long-standing inequalities, injustice, outrages, and discrimination. That is why, to study and make it an effective prevention of caste-based atrocities enacted the law viz Protection of Civil Rights Act, 1955 was enacted. Even after the lapse of three decades, the socio-economic condition of the Scheduled Caste and Tribes remained vulnerable. Our parliament, therefore, enacted another law, viz. The Prevention of Atrocities Act, 1989. And at the same time, there is a combination of strong legal prosecution that is required, community-level awareness, socio-economic, cultural, and political empowerment of the marginalized so-called Dalit community. And for their protection, sustained political will secured their fundamental rights. To consider all these issues inclusively and contribute to reducing caste-based violence and promoting a more just and impartial society.

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Original Article

Role of Artificial Intelligence & Chatbots in Banking Services

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Abstract

This research paper investigates the role of artificial intelligence (AI) and chatbots in banking services, focusing on how these technologies influence banking interactions, finance management, and credit/working capital services for manufacturing units. The study explores adoption drivers, benefits (efficiency, cost reduction, improved customer service), challenges (data privacy, system integration, workforce implications), and strategic recommendations for banks and manufacturing firms. The research uses a mixed-methods approach — primary data collected through structured questionnaires and interviews with finance managers in manufacturing units and banking relationship managers, and secondary data from journals, industry reports, and regulatory publications.

Keywords: *Artificial Intelligence, Chatbots, Banking Services, Manufacturing Unit, Financial Technology, Automation, Customer Experience, Credit Evaluation*

Introduction:

Rapid advances in artificial intelligence and natural language processing have transformed how banks deliver services. Chatbots—automated conversational agents—along with broader AI tools (predictive analytics, credit scoring models, robotic process automation) are increasingly embedded in retail and corporate banking.

Manufacturing units, which rely on timely banking services for payroll, supplier payments, trade finance, and working capital, stand to benefit from faster, more accurate and 24/7 banking touchpoints.

Rationale of the Study

Manufacturing firms often have complex cash-flow cycles and repetitive transactional needs. Assessing how AI and chatbots improve banking service delivery for manufacturing operations can guide both banks and industry in technology investments, risk management, and process re-engineering.

Research Questions

1. What is the current level of awareness and adoption of AI and chatbots among banks serving manufacturing units?
2. How do AI-driven banking services affect the operational efficiency and cash-flow management of manufacturing firms?
3. What are the perceived benefits and challenges of using chatbots for corporate banking services?

What strategic recommendations can enhance the adoption and effectiveness of AI-based services for manufacturing clients?

Objectives:

- To evaluate the penetration and types of AI and chatbot services offered by banks to manufacturing clients.
- To measure impact on service speed, accuracy, and cost for manufacturing units.
- To identify barriers (technical, regulatory, cultural) to effective implementation.

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To propose actionable recommendations for banks and manufacturing units.

Literature Review:

- **AI in Financial Services:**
  Automated underwriting, fraud detection, and predictive analytics have shortened loan decision cycles and improved risk segmentation.
- **Chatbots and Customer Service:**
  NLP-powered chatbots handle routine queries, reduce call-center volume, and provide 24/7 access; hybrid models escalate complex cases to humans.
- **Impact on Corporate Clients:**
  Case studies show improved transaction reconciliation speeds, automated invoice processing, and real-time balance alerts aiding treasury functions.
- **Barriers and Risks:**
  Data privacy, regulatory compliance (KYC/AML), model explainability, integration with legacy core-banking systems, and staff displacement concerns.

Conceptual Framework & Hypotheses

Conceptual Framework

Independent variables: AI capabilities (predictive analytics, automation), Chatbot functionality (NLP sophistication, integration depth).
Mediating variables: Trust, system integration, staff training.
Dependent variables: Banking service quality (speed, accuracy), operational efficiency (time/cost savings), and financial outcomes (reduced days payable/receivable, faster credit decisions).

Hypothesis of the Study:

H1: Higher levels of AI/chatbot adoption in banks positively relate to improved service speed for manufacturing units.
H2: AI-enhanced credit assessment tools reduce loan approval time for manufacturing firms.
H3: Data security concerns negatively moderate the relationship between chatbot use and firm trust in banking services.

Research Methodology:

Research Design

A mixed-methods descriptive and explanatory study combining quantitative survey data with qualitative interviews.

Population and Sample

Population: Finance managers and CFOs of medium-to-large manufacturing units; relationship managers and digital-bank product managers at commercial banks.

Sample size suggestion: 120 respondents (80 manufacturing units, 40 bank personnel). Use purposive sampling to ensure respondents have direct experience with corporate banking channels

Sampling Technique

Purposive and snowball sampling, prioritizing manufacturing firms with active digital banking usage and banks known to offer AI/chatbot features.

Data Collection Tools

- **Structured Questionnaire (manufacturing units):** Sections for firm profile, extent of banking digital use, experienced benefits/limitations, and satisfaction scores (Likert scale).
- **Structured Questionnaire (bank personnel):** Service offerings, technical architecture, compliance safeguards, and adoption challenges.
- **Semi-structured interviews:** 10–15 key informant interviews for in-depth perspectives.
- **Secondary data:** Industry reports, bank whitepapers, regulatory guidance.

Variables & Measurement

- **Adoption Level:** Categorical — 0 (none), 1 (basic features: balance/enquiry chatbots), 2 (advanced features: payments, trade finance automation), 3 (predictive analytics integrated).
- **Service Speed:** Average turnaround times reported (in hours/days).
- **Operational Efficiency:** Self-reported % time saved; number of manual reconciliations reduced.
- **Satisfaction:** 5-point Likert scale.

Data Analysis Methods

- **Quantitative:** Descriptive statistics (mean, median, frequency),

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Cross-tabulations, t-tests/ANOVA (comparing groups), correlation analysis, multiple regression to test influence of AI adoption on outcomes. If appropriate, logistic regression for binary outcomes.

- **Qualitative:** Thematic analysis of interview transcripts; coding to identify patterns (benefits, barriers, best practices).

Ethical Considerations

- Informed consent, anonymity, secure data storage, compliant handling of sensitive financial data, and clearance from the institution's ethics committee (if required).

Limitations of the Study:

Every research study has certain constraints that may affect the generalizability and scope of its findings. The present study on Role of Artificial Intelligence & Chatbots In Banking Services in the Niteo Automation India Pvt Ltd is no exception. The following are the key limitations identified:

- **Sample Size and Representation:** The study covers a limited number of manufacturing units and banking professionals. Therefore, findings may not represent the entire sector, especially micro and small enterprises that may have lower technology adoption.
- **Time Constraints:** The data collection was conducted over a limited period, which may not fully capture long-term effects of AI adoption or seasonal variations in banking service usage.diversity of customer opinions and behaviors.

Response Bias: Since the study relies on self-reported data through questionnaires and interviews, there is a possibility of over- or underestimation of benefits and challenges based on respondents' perceptions.

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Original Article

Customer Satisfaction towards Digital Services of Payment Banks In Mumbai City

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Abstract

Digital Banking offers consumers speed, convenience, and accessibility for financial transactions, digital banking has become a disruptive force in the financial industry. The Reserve Bank of India (RBI) launched payment banks, which are essential for advancing financial inclusion since they provide digital access to banking services for both consumers and small companies. This study looks at important factors such as transaction speed, usability, security, dependability, customer service, and service accessibility to determine how satisfied customers are with the digital services provided by payment banks in Mumbai City. Structured questionnaires were used to gather primary data from customers of major payment banks, such as India Post Payments Bank, Paytm Payments Bank, and Airtel Payments Bank. Secondary data came from bank releases, RBI reports, and earlier scholarly studies. The study identifies consumer challenges, assesses factors that influence customer happiness, and offers suggestions for improving service quality. Results show that the most important variables affecting consumer satisfaction are transaction speed, security, and usability. The survey also draws attention to challenges like gaps in digital literacy, network issues, and low awareness among specific demographic groups. Mumbai's urban financial ecosystem can be strengthened by recommendations that payment institutions can use to enhance service delivery, foster greater confidence, and promote the wider adoption of digital banking.

Keywords *- Digital Banking, Payment Banks, Customer Satisfaction, Transaction Speed, Service Quality*

Introduction

Digital banking has become a revolutionary approach to financial services in the modern period, changing how individuals and businesses manage their finances. With the increasing adoption of smartphones, internet accessibility, and advanced financial technologies, payment banks have gained popularity as an alternative to traditional banking institutions. Payment banks primarily focus on offering low-cost, efficient, and convenient digital financial services such as small-scale deposits, online bill payments, mobile wallets, and money transfers. These banks are designed to promote financial inclusion by providing basic banking facilities to individuals and small businesses who may have limited access to traditional banks. Mumbai, being India's financial hub, has witnessed rapid growth in digital banking adoption. The city hosts a diverse population, including working professionals, entrepreneurs, and small business owners, who increasingly rely on digital platforms for day-to-day financial transactions. Understanding customer satisfaction in digital banking, particularly in payment banks, is essential for assessing the efficiency, reliability, and overall user experience of these services.

Concept of Payment Banks

The Reserve Bank of India (RBI) established payment banks as a new class of banks to encourage financial inclusion and offer easily accessible banking services to people and small companies that might not have easy access to conventional banking channels. Payment banks can offer basic banking services including collecting deposits (up to ₹2 lakh per customer), remittances, utility bill payments, mobile banking, and digital wallet services, but they are not allowed to issue loans or credit, unlike regular banks.

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The first working payment bank, Airtel Payments Bank, was introduced in 2016 after the RBI formally approved the idea in 2014. Payment banks' main goal is to use mobile networks and technology to provide banking services in an economical, practical, and paperless way. These banks seek to eliminate reliance on cash, promote digital transactions, and integrate unbanked individuals into the established financial system.

Review of Literature

1. Customer satisfaction in digital banking has been widely studied internationally, reflecting the growing reliance on technology-driven financial services. According to Parasuraman, Zeithaml, and Berry (1988), service quality dimensions such as reliability, responsiveness, assurance, empathy, and tangibles significantly influence overall customer perceptions and satisfaction. These dimensions form the foundation of the SERVQUAL model, widely applied in banking studies to evaluate service quality and identify improvement areas.
2. Global research highlights that the adoption of digital banking depends on ease of use, perceived usefulness, trust, and security (Davis, 1989; Amin, 2016). Customers prefer platforms that provide smooth navigation, fast transaction processing, and secure payment mechanisms. Adoption is particularly high in metropolitan cities, where busy lifestyles and high smartphone penetration increase the demand for convenient, reliable, and fast banking services.
3. In India, adoption and satisfaction of digital banking services are influenced by infrastructure, digital literacy, and awareness. Research in Mumbai (Sharma & Ghosh, 2021) indicates that urban customers prioritize speed, reliability, and security. Popular services include UPI transactions, mobile wallets, and online bill payments. Challenges include cybersecurity threats, network issues, and limited awareness, impacting user satisfaction.
4. The Technology Acceptance Model (TAM) emphasizes that perceived ease of use and perceived usefulness are key drivers for adopting digital services. The SERVQUAL framework evaluates service quality holistically, incorporating both technological efficiency and human service factors. Combining these models allows assessment of functional efficiency and experiential satisfaction in digital banking.

Objectives of the Study

The main objective of the study is to assess customer satisfaction with digital services of payment banks in Mumbai City. Key objectives include:

1. Determining the elements that affect consumer satisfaction, such as transaction speed, Usability, Security, Dependability, and customer service.
2. Analysing how Age, Gender, Income, and Employment affect satisfaction.
3. Assessing how well different payment banks' services work.
4. Recognizing the difficulties consumers encounter when conducting digital transactions.
5. Making suggestions to improve service quality and promote broader use of online banking services.

Fulfilling these objectives helps in understanding the expectations and behaviour of urban customers and assists banks in improving their services in a competitive digital banking environment.sa

Significance of the Study

This study has implications for payment banks, legislators, regulators, and academic scholars. Understanding client satisfaction helps banks identify service gaps, optimize digital platforms, and increase customer engagement and retention. Recommendations can help enhance mobile banking apps, UPI systems, online payments, and wallet services, resulting in faster, more secure, and user-friendly experiences. Policymakers gain from information regarding urban adoption patterns, satisfaction determinants, and obstacles, which help to promote policies aimed at strengthening digital banking infrastructure, cybersecurity, and financial inclusion programs. The study also focuses on digital literacy programs, which enable successful usage of digital banking platforms. Academically, the study adds to the literature on digital banking adoption, customer satisfaction, and fintech by offering a thorough grasp of urban user behaviour, service quality perceptions, and technological adoption trends. The findings guide future research and policy efforts, emphasizing the importance of technology, service quality, and trust in increasing consumer happiness and digital banking adoption in Mumbai.

Research Methodology

The study used a descriptive and analytical design to investigate consumer satisfaction. Structured questionnaires were distributed to 120 Airtel Payments Bank, Paytm Payments Bank, and India Post Payments Bank customers to collect primary data. A Likert scale was used to measure satisfaction with transaction speed, usability, security, customer assistance, and accessibility. Academic research, bank publications, and RBI reports were the sources of secondary data. The representation of several demographics, including age, gender, occupation, and income, was guaranteed by convenience sampling. Descriptive statistics, such as percentages, mean scores, and factor rankings, were used in the analysis along with qualitative interpretations of difficulties and comments. The research design maintained both validity and reliability through the integration of quantitative surveys and qualitative methods such as observations and interviews. Observational analysis helped identify usability challenges, while interviews supported the interpretation of survey responses and offered in-depth understanding. This integrated approach enabled the assessment

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of technological performance, service quality, and demographic factors, providing practical insights for payment banks in Mumbai.

Methods of Data Collection

A systematic and well-structured method was adopted for collecting primary data to ensure accuracy and reliability of the study.120 respondents were given structured questionnaires via digital payment bank services to collect primary data. Multiple-choice and questionnaire questions were used to assess customer happiness, service accessibility, and difficulties. Observations tracked how users interacted with platforms and apps, spotting usability problems, and transactional challenges. Short conversations clarified survey answers and offered in-depth insights. Secondary data sources included RBI reports, bank publications, and academic studies, which provided context and supported the analysis. This combination provided a comprehensive and reliable understanding of satisfaction factors, service efficiency, and adoption patterns.

Population and Sampling

Customers of Mumbai's Airtel Payments Bank, Paytm Payments Bank, India Post Payments Bank, Jio Payments Bank, and Fino Payments Bank comprise the population. Convenience sampling was used to choose a sample of 120 respondents who represented a range of age, gender, income, and employment demographics. The sample, which comprised professionals, students, and small business owners, captured a variety of viewpoints on the use of digital banking, satisfaction levels, and difficulties, offering a thorough picture of Mumbai's consumer experiences.

Analysis and Interpretation of Data

Analysis shows that 70% of respondents rated transactions as “fast” or “very fast,” indicating that transaction speed is the most important factor influencing customer satisfaction. Mobile wallets, online bill payment, and UPI payments are popular services, especially among users between the ages of 18 and 35.With 65% of users satisfied with the app's simplicity, ease of use came in second. However, older users face difficulty in navigation, highlighting the need for more user-friendly interfaces and support for digital literacy.Further, 60% of respondents reported confidence in secure transactions, while 15% expressed concerns regarding cyber risks, indicating the importance of strong security measures. Feedback related to customer service was mixed, with 20% reporting delays and 55% being satisfied with response times, which highlights the need for efficient and responsive support services.

General Observations / Survey Findings

The most popular services in Mumbai include online bill payment, mobile wallets, and UPI transactions. Due to dependable applications, quick services, and incentive programs, customers of Paytm Payments Bank and Airtel Payments Bank expressed high levels of satisfaction. Network outages, lack of awareness about features, and security concerns were identified as major obstacles. Consumers emphasized the importance of digital literacy programs along with the need for quick, safe, and reliable services, especially for older users. Enhancing customer service, strengthening cybersecurity measures, and improving app usability were among the key recommendations. In addition, awareness and training programs related to digital banking features were strongly suggested.

Findings, Suggestions, and Conclusion

Results show that transaction speed, usability, and security are important factors that affect customer satisfaction. Users who are younger and more tech-savvy express more happiness. Banks that provide dependable apps, incentives, and prompt assistance receive higher ratings. Dissatisfaction is brought on by network problems and low awareness.

Suggestions

1. Simplify the user interface and improve app performance.
2. To foster trust, bolster cybersecurity procedures.
3. Implement digital literacy initiatives for senior citizens.
4. Use chatbots and helplines to increase customer service responsiveness.
5. Start educating people about wallet functions, bill payment, and UPI.

Conclusion

In Mumbai, payment banks greatly encourage the use of digital banking and financial inclusion. A focus on customer service, technology, and customer support can increase adoption, satisfaction, and trust. This study offers banks practical advice on how to improve services, deal with issues, and satisfy changing client demands.

Future Scope of the Study

Future studies will be able to compare consumer satisfaction in different cities and semi-urban areas. For more comprehensive views, studies can incorporate fintech platforms, neo-banks, and traditional banks. Blockchain, voice banking, and AI-powered chatbots are examples of emerging technologies whose effects on customer satisfaction can be assessed. Over time, longitudinal studies can monitor shifts in consumer behavior, satisfaction, and adoption. The

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results can direct legislative reforms, service improvements, and instructional initiatives, increasing the uptake and confidence of digital banking services.

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Original Article

Influence of Social Media on Youth Behaviour: A Sociological Perspective

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Abstract

The fast-growing populace of social media in India has altered the way youths identify themselves, associate with others and engage with the digital cultures. This paper will focus on how social media has contributed to youth behaviour based on sociology with regard to the methods of analysing identity formation, peer influence, digital subcultures and self-presentation using the concepts of Social Learning Theory and Uses and Gratifications Theory. The study identifies major outcomes of behaviour, such as anxiety, social comparison, echo-chamber effects, exposure to misinformation, cyberbullying and transformations to learning patterns, using secondary research and review of the policy. Other positive dimensions are also identified, including creativity, skill-building and youth activism. The results support the significance of digital literacy and responsible online behaviour as demonstrated by NEP 2020. This paper also ends by suggesting that taking a multidisciplinary approach through educators, families, policymakers, and technology platforms can ensure safer and healthier digital engagement.

Keywords-*Youth behaviour, social media, identity formation, digital literacy, NEP 2020, cyberbullying, sociological analysis*

Introduction

In recent years, the number of young people using digital media, in particular, short-video app use and social networks and messaging services, has skyrocketed in India, and using such platforms has become ingrained in daily life. According to one study, it is observed that the youth in India have adopted the use of social media as one of their main communication, entertainment, learning and social interaction resources and that this digital revolution is having its effect on the lives of people in unimaginable ways (Ravikumar & Kishore Kumar, 2025). It is of great importance to consider the behavioural influence of this phenomenon in the sociological perspective: it will give a chance to understand how online interactions can shape the identity, peer relations, norms and potentially mental health, not only in an individual psychological aspect but in a larger social picture. According to the National Education Policy 2020 (NEP 2020), one of the most important pillars of its vision for higher-quality and equitable education is the idea of foundational digital literacy and responsible online citizenship (Kunal & Dhillon, 2023).

However, concurrent with the potentials, there are increasing worries: youth behaviour in the field of identity formation, cyber-bullying, exposure to misinformation and distress are being transformed by the digital media. Herein, the aim of the current study is to provide a sociological depiction of the impact of social media on youth behaviour in India that would provide a gap bridging policy, social arrangement and the results of individual actions. This paper will first review the literature and theory before outlining the conceptual framework and methods, major findings, policy implications, and recommendations for future research.

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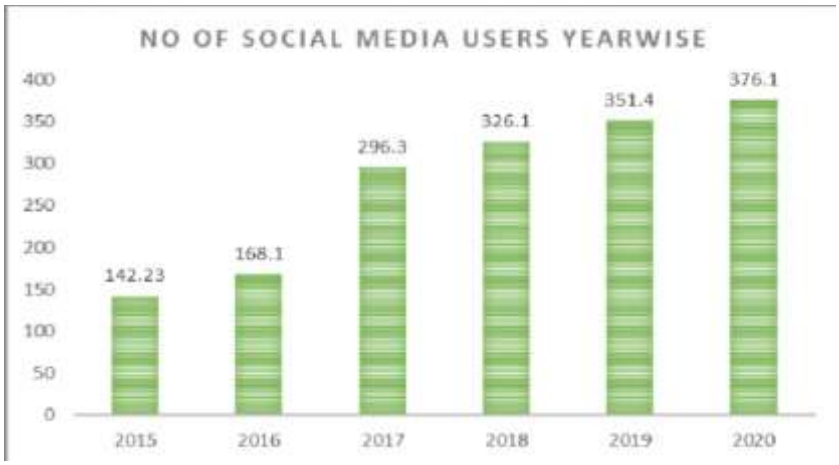


Figure 1: Social Media Usage in India

Source: (Dey et al., 2020)

Literature Review

The research utilises three complementary sociological views in its explanation of how social media influences youth behaviour. Social learning/social-cognitive theory. The key idea here is that people learn through observing models in the surroundings, thus platformed interactions and influencer modelling in particular are also especially strong when it comes to attitudes and the practices of young users. Newer critiques involving Bandura's framework, making a jump to the digital world, indicate the advertising power of observational learning to likes, remarks and boosting along algorithms (Koutroubas & Galanakis, 2022). The cultivation theory builds upon this concept by stating that the long-term exposure of mediated representations is gradually changing the visage of users to perceptions of reality. Recent research has established that the sustained streams of content across social media can produce beliefs and distrust (such as with attitudes on health and risk), and quantifiable attitudinal alterations exist (Park et al., 2022). On the micro-interactional level, symbolic interactionism assists us in comprehending how youth placate online identities through meanings produced through the interaction patterns with peers, profile management and community rulings - shedding light on self-presentation and identity formation on the sites (Chen et al., 2019). Indian empirical evidence suggests that young consumers rapidly adopt and become dependent on the platforms (especially high Instagram and short-video usage), and the adoption is interconnected with shifts in attitudes and other new vulnerabilities (Dhiman, 2024). Digital literacy and responsible online citizenship, highlighted in the National Education Policy 2020, give the educational response to these changes of behaviour a policy framework (Ministry of Human Resource Development, 2020). There is little research combining these theoretical perspectives specifically on Indian youth behaviour, little research relates NEP-consistent digital ethics interventions with quantitative behavioural change, and little interdisciplinary research bridging the gap of media influence to misinformation and youth sociability.

Conceptual Framework

In this work, the four concepts that relate to one another help construct the sociological concept of youth behaviour in social media, which include identity formation, peer influence, digital subcultures and self-presentation under surveillance. In digital subcultures, youth generate their online identities in relation to other peers and peer feedback, and in the process, influence the way they are perceived and perceive others. The theoretical platform is constructed on the two significant lenses, the Social Learning Theory (SLT) and the Uses and Gratifications Theory (U&G). According to SLT, young people learn by watching and imitating behaviour in social media contexts and are affected by models, rewards and peer approvals (e.g., learning norms through observational learning online) (Sharma & Gupta, 2024). U&G underlines the active role of users in choosing the media to meet identity-related needs, social and entertainment needs and, therefore, the tendency of youth to interact with platforms and cultivate self-presentation in digital subcultures (e.g., self-presentation and uses/needs link) (Bhatiasevi, 2024). Collectively, they have an informative role in the way youth conduct themselves on social media is informed not only by content but by models provided by peers, identity work, gratifications obtained, and the surveillance condition of self-presentation within social media.

Methodology

The research design adopted in this study is secondary research, which utilises peer-reviewed scholarly articles, governmental reports, and psychological and sociological research that investigate the behaviour of youth with regard to digital media. As an example, the overall report on digital education in India titled India Report-Digital Education provides details about the usage of digital media among the young learners on the national level (Government of India, 2020). One of the reviewed policies will be the National Education Policy 2020 (NEP 2020) and

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other online-safety and digital-literacy guidelines, in line with the digital transformation of the education system (Ministry of Human Resource Development, 2020). It is analysed analytically based on thematic analysis: impactful recurrent behavioural effects of social media (e.g., peer influence, identity negotiation, exposure to misinformation) are pulled out, clustered and conceptualised through the sociological perspective. This methodology allows a systematisation of the synthesis of theory, Indian evidence and policy implications.

Key Findings and Discussion:

According to Indian-based research, the significant correlation between the increased use of social media and the worsened conditions of anxiety and negative moods in youth is because to social comparison processes. Indicatively, in one study, there was a positive correlation between the use of social media and negative affect, and the mediator was social comparison (Chowdhary, 2025). Algorithms with a focus on content that is immediately engaging contribute to mood volatility even more, making users cycle through validation and comparison. Like and comment motive triggers a condition of behavioural reinforcement, which increases insecurity with self-worth and fosters chronic stress. Online personas and offline personas tend to be inconsistent among the youth, which creates a conflict in their interaction with peers (Bommanal, 2023). Digital communities are gathered around similar interests in India, but can serve as a potential echo-chamber, which strengthens the thin-sliced virtues. The effect of influence by peers through trending challenges and viral posts has increased: the previously local peer-pressure transcends to global, real-time and incessant feeds. Adolescents adopt behaviours to fit in on the platform - at times even more than to their in-person peer groups.

Table 1: Online-Offline Behavioural Dynamics of Youth in Digital Environments

Dimension	Online Persona	Offline Persona
Identity Expression	Highly curated, idealised self; aesthetic-driven representation; selective disclosure shaped by platform norms.	More grounded, context-dependent identity shaped by family, school, and local social norms.
Peer Interaction	nteraction driven by likes, comments, trending content, and algorithmic visibility; pressure to conform to viral behaviours.	Peer relations shaped by face-to-face communication and situational social cues.
Community Belonging	Membership in digital communities built around shared interests, memes, and subcultures; often reinforces narrow worldview loops.	Belonging relies on local friendships, school groups, neighbourhood networks.
Behavioural Adaptation	Rapid adoption of trends, challenges, and platform-specific norms to maintain relevance and visibility.	Slower behavioural modulation based on immediate social environment and long-term relationships.
Social Validation Mechanisms	Algorithm-driven approval metrics (likes, shares, followers) reinforcing performative behaviour.	Validation from peers, teachers, and family rooted in everyday interactions.

The theme of Media Influence and Fake News is topical: children and adolescents are likely to agree and transmit false facts in the social network, in part the influence of peers and trusting in influencers of digital subcultures (Bommanal, 2023). These behavioural patterns are effused as cyberbullying, invasion of privacy and harassment on the web increase, youths can take on risky actions in online disclosure, adopt anonymity or disseminate harmful text or potentially malicious content in peer-driven digital categories. Social media has disrupted and had beneficial effects in the education sector. On the downside, a number of Indian studies conclude that attention spans are shorter and multitasking behaviour is heightened to the detriment of deep learning (Abuzar & Hussain, 2024). Regarding the positive side, social media has also been deemed an academic cooperation, knowledge-sharing and virtual learning peer, which fits with Education Technology and E-Learning sub-themes (Sivakumar et al., 2023). Among the risks, there are opportunities: Young people are becoming digital, making content, becoming activists and shaping new forms of career on the web. Platforms help to express yourself, express creativity and even civic participation, most notably in the Indian context, where internet penetration is on a fast track. With these positive behaviours, it is possible to draw on the potential of using social media as a means of youth empowerment and no longer as an approach in risk mitigation.

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Policy Implications

The National Education Policy 2020 (NEP 2020) proposes responsible online citizenry and the foundational digital literacy explicitly (Kunal & Dhillon, 2023). For schools and colleges: incorporate digital ethics classes, check on online behaviour and educate instructors in how to use it safely. Concerning parents: create an open discussion around the risk of using the Internet, restrict screen time, and set a good example of digital practices. The governmental policy must enforce the regulation of cyber-safety, appropriate age access, and disclosure platforms (Singh, 2025). It is time that social-media firms focus on the privacy of a user, combat misinformation, and integrate safe design elements. An interdisciplinary strategy multidisciplinary approach, based on education, psychology, sociology and technology, is essential to the sound governance of youth in the digital age.

Conclusion

This research reveals that social media has a major influence on youth behaviour in psychological, social, cognitive and ethical aspects. On the one hand, online platforms provide learners with an opportunity to learn, be creative, and participate in civic life; on the other hand, they accelerate the risks in terms of identity conflict, misinformation, online bullying and emotional vulnerability. The digital literacy should be enhanced by NEP 2020, support of families and institutional orientations. A multidisciplinary intervention approach, which incorporates sociology, psychology, education and technology, will remain important towards a more healthy, responsible and empowered digital participation among youth.

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Original Article

Forest Conservation and Deforestation Impact on Environment

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Abstract

Plants are essential for humans and other animals. Plants are an important productive factor. Various plants such as grasses, vines, shrubs, and large trees are found on earth.Natural vegetation is life for all living beings on earth, including humans. Geographical factors such as location, climate, topography, properties and soil have a direct and collective effect on the overall form of natural vegetation. The distribution, type, density and composition of plants mainly depend on climate and soil. Various types of natural vegetation are found on earth. These include tall trees, medium-sized trees, small and large shrubs, grasses, vines and bamboo. The cover of various natural vegetation is called forest or woodland. All three words, forest, woodland or forest, are used for a general natural vegetation community. There is a collective existence of different types of plants in a forest. The diversity of natural vegetation is scientifically determined by geographical factors such as climate, soil type, altitude, slope, land form and biological community. Natural vegetation covers are of special importance in terms of ecological balance and economic development of a region.

Keyword*: Forest Conservation, Use, Importance, Solution, Deforestation, Impact.*

Introduction

Deforestation increases climate change by releasing stored carbon and reducing the Earth's capacity to absorb greenhouse gases. It also leads to a loss of biodiversity, habitat destruction, and species extinction. Furthermore, it disrupts water cycles, increases soil erosion and flooding, and negatively impacts communities that depend on forests for their livelihoods. Forest conservation is essential to counteract these effects by protecting existing forests and promoting sustainable practices. This research paper has been prepared based on secondary sources.

Objectives

1. To study the forest conservation.
2. To Study the effects of deforestation.

Forest Conservation

Forest conservation is the practice of protecting and managing forests to ensure their long-term health and sustainability for future generations. This in-cludes activities like preventing deforesta-tion, restoring degraded forests, planting new trees, and managing forest resources sus-tainably to protect biodiversity and provide ecological benefits like clean air and water.

Various uses and importance of forest resources :

Forest resources have many uses. Human life depends on natural vegetation for various reasons such as food, fire, shelter, weapons, business, production. The uses of forest resources are mainly of two types.

A. Direct uses of forest resources
B. Indirect uses of forest resources.

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A. **Direct uses of forest resources**

- The use of wood for agricultural implements, vehicles and fuel continues unabated.
- Burning wood to produce coal and electricity (Thermal Power) is created.
- Various items used in house construction are made from wood.
- Daily use wooden goods are made from wood.
- Due to the cellular properties of wood, thread can be produced from it.
- Plant wood is used as raw material for paper making.
- Plants are used as raw materials in many other industries. (vii) Medicinal properties of plants are useful in the manufacture of medicines e.g. Cinchona,Eucalyptus etc. plants.
- Wood is used in the shipbuilding industry.
- For sporting goods, card cases, toys, train sleepers.use wood,
- The work of collecting various useful substances from various plants is carried out. For example, fruits, tubers, honey, lac, seal, gum, flowers, dyes, leaves, bark, medicines, trunks, etc. are carried out.
- Shifting agriculture is practiced on favorable slopes in some forest areas.
- Animal husbandry is practiced in grassland areas.

B. **Indirect uses of forest resources**

The ecological importance of forest resources is notable among the indirect uses of forest resources. The indirect uses of forest resources are as follows.

- The climate there remains cool due to the vegetation cover.
- (ii) Plants increase rainfall. Condensation is promoted. Humidity in the air is reduced.
- Plants reduce the rate of evaporation.
- As the flowing water is intercepted by the plants, it starts percolating into the soil and water conservation occurs.
- Vegetation cover obstructs the flow of water, thereby reducing the intensity of floods.
- The roots of plants go deep into the soil and absorb water. This pulls the groundwater up. This raises the water level.
- Plants add various types of organic matter to the soil, making it fertile.
- Erosion control is the most important function of plants. The roots and stems of plants hold soil particles in place. Moisture and heat cause them to become compact.
- Animals get protection in forests. That is why forests are called sanctuaries. Sanctuaries are the refuges of wildlife. Animals need forests for shelter, health and food.

Solutions for plant conservation:

It is the primary duty of man to preserve this precious treasure of nature, which maintains the overall balance of the environment. When the competition for life increases, naturally, the struggle for primary problems like energy and fodder for cattle begins and the destruction of available forests begins. The effects of this have started to be felt on the climate, the amount of gases in the atmosphere and the balance of the environment. Efforts should be made at all levels of society to achieve the broad objective of tree plantation. It is necessary for every well-informed citizen to spread the message that the place of plants in the life cycle of living beings and humans is extremely important, at a level that can be reached by the general public in their own way. Research, seminars, workshops should be used extensively for forest conservation. It is inevitable for forest conservation to get scope for tree farming or forest farming useful in agricultural development. The government must take a strict and firm stand to stop deforestation. The following eight measures are considered important for forest conservation.

(i) Humans and animals are the two enemies of forests. Although their entire life depends on forests, countless trees are cut down for agriculture, furniture, and paper pulp. Many forests have become desolate due to free grazing of animals. There is no alternative to forests for good quality timber, but to continue this source of plant life, it is essential to keep the forests functioning in a new and diversified way. Grasslands become desolate due to free grazing of animals. Such desolate pastures cause soil-dust accumulation, siltation, and flood damage, therefore Social forestry grows a variety of trees on wasteland.

(ii) There are numerous creeks, bays and gulfs along the long coastline of Maharashtra. Mangrove forests have flourished there. Many types of fish are scattered there due to the support of mangroves. Moreover, these mangroves control the pollution caused by the sea waves on the coast. The Maharashtra government has banned the cutting of mangrove forests by law.

(ii) Due to the sand and sand carried by the salty wind on the coast, many paddy fields have become deserted. To contain this intruding sand and sand, the Maharashtra government has started planting protective belts of trees of the Surya variety parallel to the coast. Since the trees in the belts are planted in a row and are arranged back and forth, the

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invasion of sand can be prevented. Moreover, the trees can also block the wind. The Coconut Research Centre has grown spice trees in a tree garden near such a protective belt at Bhatche near Ratnagiri.
(iv) Dry barren lands of Rajasthan are flowing towards the northeast. Due to the sand and sand being carried along with them, the barren lands of Rajasthan are moving towards Haryana and Uttar Pradesh. Today, due to the Chambal and Bhakra canals, irrigation is creating a paradise in eastern and northern Rajasthan. Since it is the need of the hour to stop the invasion of sand and sand in that region, 'Maroon' and similar varieties of grasses that are resistant to dry weather are being grown in western Rajasthan to prevent the migration of sand hills. Moreover, botanists are also succeeding in preventing the migration of 'home' by growing trees of the cypress variety.
(v) Due to lack of vegetation in semi-arid regions, unseasonal heavy rains cause the formation of bogs. Such a strip of about 3-4 km of the Chambal River is dissected by dry valleys. The work of regenerating bogs by leveling, contour banding, growing special types of grasses and shrubs is going on in the Chambal Valley.
(vi) Under the Watershed Development Programme, soil and forest conservation work by levelling, embankment, contour banding, growing Zardora grass at the base of embankments is being carried out everywhere in the drought-prone areas of Maharashtra. The water storage is decreasing due to silting up of Koyna dams.
(vii) Due to large projects like the Narmada Sardar Sarovar project, many forest areas are submerged, which leads to the extinction of the forest area. Some plants and animals disappear forever. Moreover, the tribals of the hilly regions have to be pollinated. Some are displaced. Due to this, their life cycle changes.

Deforestation Impact on Environment

Deforestation negatively impacts the environment through climate change (due to increased carbon dioxide and decreased absorption), biodiversity loss (habitat destruction), disrupted water cycles (affecting rainfall and increasing droughts), and soil degradation (leading to erosion and landslides). It also harms local and indigenous communities that depend on forests for their livelihoods and has broader implications for human health and food security.

Climate change and atmospheric impact

Releases stored carbon: Trees store carbon. When they are cut down or burned, this carbon is released into the atmosphere as carbon dioxide (CO2).
Reduces carbon absorption: Forests act as carbon sinks, absorbing CO2 from the atmosphere.Deforestation reduces this capacity, contributing to global warming

Biodiversity loss

Habitat destruction: Forests are home to a vast number of plant and animal species. Clearing forests destroys their habitats, leading to a decline in populations and an increased risk of extinction.
Habitat fragmentation: The clearing of forests can break up continuous habitats into smaller, isolated patches, which can limit species' movement, reduce genetic diversity, and disrupt breeding patterns.

Water cycle disruption

Changes rainfall patterns: Forests play a vital role in regulating the water cycle through transpiration and evaporation. Deforestation disrupts this process, which can lead to reduced rainfall in some areas and altered local climates. Increased flooding and drought: Forests help regulate water flow and prevent soil erosion. Without them, the land is more prone to flooding during heavy rains and drought during dry periods.

Soil degradation

Increased erosion: Tree roots help hold soil in place. The removal of trees exposes the soil, making it more vulnerable to being washed away by rain, which can lead to soil degradation.
Increased landslides: Soil erosion can also increase the risk of landslides and avalanches.

Human impact

Threatens indigenous communities

Many indigenous communities rely on forests for food, shelter, medicine, and cultural resources. Deforestation can displace them and threaten their way of life.
Affects food security: Climate changeand soil degradation resulting from deforestation can negatively impact agricultural productivity, threatening global food systems

Conclusion

Forests and the products they provide are universally required for the continuation of human society as we know it. To change our society to one that does not depend on the forest (to the forest's detriment) and its associated benefits requires such an enormous paradigm shift that we generally do not even consider it worthy of further investigation. Given this situation therefore, it is imperative that we discover mechanisms to manage the forest for all

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the benefits it can provide, in a sustainable manner. Few countries have all the answers to all the issues faced, thus there exists a real need for international cooperation Loss of forest resources transcends national boundaries and affects the entire planet. Givern this, the roles of various agencies become vitally important in order to minimise any potential downside and to maximise the upside. Governments, NGOs, Intergovernmental panels and the like must work more closely in order to resolve the pressing issues facing the forests. In many cases a collaborative approach will provide a solution which is more acceptable to all parties, and more robust than a solution that is developed unilaterally.

Societies around the world are beginning to face up to the reality that as a species man requires forest resources-both the wood and non-wood products a sustainably managed forest can provide. As the guardians of those resources our performance has to date been abysmal. It is with a great deal of urgency that we must turn that record around and ensure that we have sustainably managed forests for the generations that are to follow. Only a long term global commitment to conservation and sustainable development can reverse the tide of uncontrolled deforestation. A sound policy framework is central to this commitment.

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Original Article

Managerial Capabilities and Performance of Agricultural Export Organizations: A Study in Pune Region

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Abstract

Agricultural exports play a pivotal role in strengthening India's economy, with the Pune region emerging as a significant hub for commodities such as grapes, pomegranates, and onions. This study investigates the relationship between managerial capabilities and organizational performance among agricultural export organizations operating in this region. Using a mixed-method approach that combines survey data from 50 export firms with in-depth interviews of key managers, the research highlights the importance of leadership, strategic planning, innovation, and market orientation in driving export success. The findings reveal that firms with stronger managerial competencies demonstrate higher export growth, improved market diversification, and enhanced resilience against global trade fluctuations. The study contributes to the literature by offering region-specific insights into how managerial skills directly influence organizational competitiveness and sustainability in international markets.

Keywords-*Managerial Capabilities, Agricultural Export, Organizational Performance, Pune Region, International Trad*

Introduction

Agriculture remains the backbone of the Indian economy, contributing nearly 18% to GDP and employing over 40% of the workforce. In recent decades, agricultural exports have become a vital source of foreign exchange earnings, enabling farmers and organizations to access global markets. The Pune region of Maharashtra has emerged as a prominent hub for agricultural exports, particularly grapes, pomegranates, onions, and floriculture products. Despite favorable agro-climatic conditions and government support, the success of agricultural export organizations depends largely on managerial capabilities. Managerial skills such as leadership, strategic planning, innovation, and market orientation determine how effectively firms can navigate international trade complexities, comply with quality standards, and respond to global demand fluctuations.This study seeks to analyze the managerial capabilities of agricultural export organizations in Pune and their impact on organizational performance. The research emphasizes the need for professional management practices in traditionally farmer-driven enterprises, highlighting the transition from subsistence farming to globally competitive agribusiness. Agricultural exports have become an important pillar of India's trade structure, contributing not only to foreign exchange earnings but also to the livelihood of millions of farmers engaged in production and supply activities. In recent years, the demand for Indian agricultural goods has expanded in global markets, largely because of the growing preference for fresh, diverse, and sustainably grown products. The Pune region, with its favourable climate, strong horticultural base, and access to modern logistics facilities, has emerged as a notable centre for agricultural export operations. Organizations involved in exporting fruits, vegetables, processed items, and floriculture products rely heavily on managerial strength to maintain their position in competitive markets. The performance of these organizations is closely shaped by the capabilities of their managers

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Managerial capability today includes far more than routine supervision; it requires clarity in planning, efficient coordination of resources, understanding of global market behaviour, and the ability to integrate technology at different stages of the export process. International markets are governed by strict quality parameters, changing import rules, and rising expectations from buyers regarding traceability and sustainability. To address these challenges, managers must demonstrate strong strategic thinking, flexibility in dealing with uncertainties, and the skill to adopt innovations that reduce operational risk and improve product quality Despite the export potential of the Pune region, organizations continue to face several hurdles such as post-harvest losses, quality fluctuations, storage limitations, and price instability. These issues highlight the need for managerial frameworks that can combine technical knowledge with practical decision-making. Managers who can build reliable supplier networks, maintain quality consistency, and respond quickly to market signals often succeed in achieving better export performance. This study focuses on understanding how such managerial capabilities influence the overall functioning and success of agricultural export organizations in the Pune region. It examines leadership style, operational practices, digital readiness, quality management decisions, and risk-handling approaches. By analysing these factors, the research aims to generate insights that can guide organizations, stakeholders, and policymakers in strengthening managerial practices and enhancing the sustainability of agricultural exports from the region.

Objectives of the Study:

- To assess the managerial capabilities of agricultural export firms in Pune.
- To examine the relationship between managerial competencies and organizational performance.
- To recommend strategies for enhancing competitiveness and sustainability in global markets.

Literature Review

The Resource-Based View (RBV) theory posits that organizational resources, including managerial skills, are critical for sustaining competitive advantage. Managerial capabilities are intangible assets that enable firms to deploy resources effectively. The Dynamic Capabilities Framework (Teece et al., 1997) emphasizes the ability of organizations to adapt, integrate, and reconfigure internal and external competencies to address rapidly changing environments. In agricultural exports, dynamic capabilities include responding to international quality standards, adopting new technologies, and diversifying markets. Several studies highlight the role of managerial competencies in export success. For instance, leadership and innovation have been linked to higher export growth in agribusiness firms. However, most studies are either national in scope or sector-specific, with limited focus on regional hubs like Pune. This creates a gap that the present study aims to fill. The relationship between managerial capabilities and organizational performance has been widely examined across sectors, including agriculture and export-driven industries. Researchers have consistently argued that managerial competencies play a central role in shaping strategic direction, operational efficiency, and the overall growth trajectory of export firms. Early studies in the field of agricultural marketing highlighted the importance of leadership and decision-making skills in managing uncertainties related to production, quality maintenance, and market fluctuations. These works suggest that managerial strength forms the foundation for successful participation in international agricultural trade. Several scholars have emphasized that export organizations require a unique set of managerial capabilities compared to domestic-oriented firms. Studies on export competitiveness note that knowledge of international standards, ability to maintain product quality, and understanding of global buyer expectations are key determinants of export performance. Managers who possess strong market intelligence and the ability to interpret trade policies are better positioned to identify opportunities and mitigate risks in foreign markets. This aligns with findings from research on agri-export clusters, where managerial learning and continuous updating of technical knowledge have been associated with higher export success. Technological capability is another area repeatedly discussed in literature. With the rise of digital applications in agriculture—such as traceability systems, quality monitoring tools, and online export documentation—researchers argue that the manager's skill in adopting and integrating technology significantly affects efficiency. Studies from horticultural export sectors indicate that digital readiness helps organizations reduce delays, improve transparency in supply chains, and meet stringent certification requirements imposed by major importing countries. Quality management has received considerable attention in the context of perishable agricultural exports. Literature on supply chain management stresses that maintaining product consistency from farm to international destinations demands superior coordination skills. Research suggests that managers who implement structured quality-control systems, ensure farmer training, and invest in post-harvest handling practices tend to report better export outcomes. This is particularly relevant to regions like Pune, where fresh produce exports require meticulous monitoring due to their sensitivity. Risk management also forms a major theme in existing studies. Scholars focusing on global agricultural trade note that export firms operate in unpredictable environments influenced by price volatility, climate variability, and regulatory changes. Research indicates that managerial ability to anticipate these risks, diversify markets, and build resilient supply networks contributes significantly to long-term performance. Firms led by managers who adopt proactive strategies often withstand disruptions more effectively. Studies focused specifically on the Indian context highlight the role of institutional support, government schemes, and export promotion agencies in enhancing managerial practices. Literature on APEDA initiatives suggests that training programmes, market development assistance, and certification support influence the managerial competence of small and medium

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export firms. However, several authors point out gaps in managerial knowledge, particularly in medium and small-scale organizations located in emerging export regions such as Pune. While existing literature provides insights into the elements of managerial capabilities, there is limited work examining how these capabilities collectively influence the performance of agricultural export organizations at the regional level. This gap highlights the need for focused research in the Pune region, where diverse agricultural products, evolving export infrastructure, and competitive market conditions make managerial efficiency a crucial determinant of export success.

Research Methodology

Research Design

The study adopts a descriptive and analytical research design. The descriptive component helps in understanding the existing managerial practices followed by agricultural export organizations, while the analytical component examines the association between managerial capabilities and organizational performance. This dual approach provides both factual insights and interpretative depth.

Study Area

The research focuses on the Pune region of Maharashtra, a prominent hub for agricultural exports involving fruits, vegetables, processed products, and floriculture items. The region has a well-established supply chain and active participation in national and international markets, making it appropriate for the study.

Nature of Data

The study is based on both primary and secondary data

- **Primary Data:** Collected directly from managers, owners, export executives, and operational heads working in agricultural export organizations.
- **Secondary Data:** Derived from reports by APEDA, Ministry of Commerce, export statistics, published research articles, industry publications, and government policy documents relevant to the agricultural export sector.

Sampling Method and Sample Size

A purposive sampling technique is employed to select organizations directly involved in agricultural export activities. This method is suitable as the study requires respondents with specific knowledge of export operations.
The sample includes 40–60 respondents from 20–25 agricultural export organizations in the Pune region. Respondents include senior managers, quality controllers, supply chain coordinators, and export documentation officers.

Data Collection Tools

Primary data were collected using:

- **Structured Questionnaire:** Designed to measure managerial capabilities across dimensions such as leadership, decision-making, digital adoption, quality management, and risk-handling.
- **Interviews:** Semi-structured interviews were conducted with select respondents to gain deeper insights into managerial challenges and organisational strategies.

The questionnaire uses a five-point Likert scale to measure responses.

Variables of the Study

- **Independent Variables (Managerial Capabilities):**
  Leadership style, operational efficiency, technological adoption, communication, planning, quality assurance practices, and risk-management capabilities.
- **Dependent Variable (Organizational Performance):**
  Export growth, market expansion, customer satisfaction, quality consistency, and operational stability.

Data Analysis Techniques

Collected data are analysed using descriptive statistics such as mean, percentage, and standard deviation to understand trends and characteristics. To test relationships between variables, correlation analysis, regression analysis, and chi-square **tests** are used. Qualitative interview inputs are analysed through thematic analysis to support quantitative findings.

Data Analysis and Interpretation

The analysis is based on responses collected from managers, executives, and operational personnel working in agricultural export organizations across the Pune region. A total of fifty respondents participated in the study, representing organizations engaged in exporting fruits, vegetables, floriculture products, and processed agricultural goods. Their roles ensured that the information gathered was grounded in actual field experience and reflected the realities of export operations. The first part of the analysis focused on understanding the extent of managerial capability within these organizations. Leadership emerged as a relatively strong area. Respondents indicated that managers generally provide clear direction, take timely decisions, and coordinate effectively with different functional teams. Among the various leadership attributes, the ability to handle unexpected issues—such as last-minute buyer changes, shipment uncertainties, or quality deviations—stood out as a major strength. This suggests that many organizations rely

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on experienced managers who can maintain stability even in unpredictable export environments. The assessment of technological readiness revealed a mixed pattern. Most firms have shifted to digital platforms for communication, documentation, and basic record-keeping. However, the use of more advanced tools particularly those related to traceability, real-time monitoring, and data-supported decision-making was still limited. This indicates that digital adoption is improving, but many organizations have yet to reach a stage where technology significantly enhances efficiency or helps them meet higher international certification requirements. Quality management remains a critical part of export operations, and the data show that organizations in Pune generally follow essential quality protocols. Regular inspections, compliance with export norms, and basic quality assurance systems were widely reported. At the same time, certain aspects such as post-harvest handling, scientific storage, and continuous staff training require more attention. These gaps often contribute to product losses or inconsistency in meeting export-grade standards, especially for perishable commodities. Risk management was another area examined. The findings show that organizations possess a moderate level of preparedness. Although many firms have established ways to handle transport delays and price changes, they struggle more with climate-related risks and sudden shifts in regulations, both domestic and international. Since agricultural exports are highly sensitive to environmental and policy variations, a more structured risk-management framework would help organizations cope more effectively. When organizational performance was analysed, customer satisfaction emerged as the strongest area. Most organizations have been able to maintain relationships with international buyers by delivering acceptable quality and timely shipments. Performance in terms of export growth and operational efficiency appeared steady but not exceptional. Market expansion, however, was relatively weak, suggesting that organizations need to explore new markets, diversify products, and invest in marketing efforts abroad. The correlation between managerial capabilities and organizational performance showed a clear positive association. Strong leadership and effective quality management were most closely linked with better performance indicators. Digital adoption and risk-handling ability also contributed to performance, though to a lesser degree. The results indicate that organizations with stronger managerial foundations tend to perform better and are more adaptable to the evolving demands of the export sector. Overall, the analysis demonstrates that agricultural export organizations in Pune possess a reasonable level of managerial capability, but several areas require further strengthening—especially digital integration, risk management, and post-harvest quality practices. Enhancing these aspects can significantly improve competitiveness and long-term sustainability in global markets.

Discussion

The findings confirm that managerial capabilities are not merely supportive but determinant factors in export success. Leadership ensures vision and direction, while innovation enables firms to meet international standards and differentiate products. Strategic planning helps firms anticipate risks, comply with certifications (Global GAP, ISO), and optimize logistics. Market orientation ensures adaptability to consumer preferences abroad, enhancing competitiveness. The export destination analysis shows that the European Union accounts for the largest share (40%), reflecting the importance of compliance with stringent quality standards. The Middle East (25%) emphasizes logistics efficiency and cost competitiveness. South East Asia and North America represent emerging opportunities, requiring adaptive strategies.

Challenges identified include

- Limited access to professional training for managers.
- Dependence on traditional practices among farmer-led organizations.
- Need for stronger government-industry collaboration.

Conclusion

Managerial competencies significantly influence agricultural export performance in Pune. Firms with strong leadership, innovation, and market orientation outperform competitors in terms of growth, diversification, and sustainability.

Recommendations:

- Invest in managerial training programs tailored for agribusiness.
- Encourage innovation in packaging, logistics, and marketing.
- Strengthen collaborations with government export promotion councils and international trade bodies.
- Promote digital tools for market intelligence and supply chain management.

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Enforcement Directorate Investigations and Their Influence on Financial Crime Reduction in India: A Policy and Legal Analysis

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Abstract

Money laundering represents a significant challenge to India's economic sovereignty, financial stability, and national security. The Enforcement Directorate (ED), which operates under the Ministry of Finance, has become the key agency tasked with the investigation and prosecution of offenses related to the Prevention of Money Laundering Act, 2002 (PMLA). This paper delves into the historical development, authority, and operational strategies of the ED, while also analysing pivotal cases and prosecution data spanning from 2014 to 2025. Furthermore, it critically assesses the agency's effectiveness in curbing money laundering activities. Although there has been a notable increase in the rates of asset attachment and confiscation, ongoing concerns regarding the implications for federalism, civil liberties, and allegations of political misuse remain prevalent in public discussions. The paper concludes by offering practical recommendations aimed at legislative and institutional reforms to enhance the efficacy and fairness of the ED's operations.

Keywords*: Money Laundering, Enforcement Directorate, PMLA 2002, Predicate Offences, Provisional Attachment, Federalism*

Introduction

The globalization of financial systems has significantly accelerated the cross-border transfer of illicit funds, presenting a formidable challenge for nations worldwide. In India, the intricate relationship among organized crime, corruption, terrorism financing, and money laundering has prompted the need for a comprehensive legal and institutional framework to combat these issues effectively. The Prevention of Money Laundering Act (PMLA), enacted in 2002, was a direct response to India's obligations under the United Nations Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances of 1988, as well as the Political Declaration and Global Programme of Action endorsed by the UN General Assembly in 1990. This legislative measure marked a pivotal step in India's commitment to tackling financial crimes on an international scale, further solidified by its accession as a full member of the Financial Action Task Force (FATF) in 2010. The Enforcement Directorate (ED), initially established in 1956 to enforce the Foreign Exchange Regulation Act (FERA), underwent a significant transformation between 2002 and 2005, becoming the principal agency responsible for the implementation of the PMLA. Over the last decade, particularly following the amendments in 2019 and 2022, the ED has been endowed with extensive investigative and quasi-judicial powers, positioning it as one of the most formidable financial crime enforcement agencies in India, capable of addressing the complexities of modern financial crimes with enhanced efficacy.

Legal Framework Governing the ED

The Prevention of Money Laundering Act (PMLA) of 2002, along with its subsequent amendments, establishes a comprehensive legal framework aimed at combating money laundering activities in India. According to Section 3 of the Act, money laundering is defined as any process or activity that is associated with the "proceeds of crime,"

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Which refers to any property derived from illegal activities, and involves efforts to disguise or present these proceeds as legitimate assets.

This definition underscores the Act's focus on not only the act of laundering itself but also the broader spectrum of activities that facilitate the concealment of illicit gains. Significant amendments to the PMLA have been introduced over the years to enhance its effectiveness, including provisions that expand the scope of what constitutes money laundering, strengthen enforcement mechanisms, and increase penalties for offenders. These changes reflect a growing recognition of the need for robust measures to address the evolving tactics employed by criminals in the financial sector, thereby reinforcing the commitment of the Indian government to uphold the integrity of its financial systems and combat financial crimes.

Key amendments include

1. In 2009, significant amendments were made to include cross-border implications in legal frameworks, alongside the elimination of the monetary threshold that previously limited the scope of certain regulations.
2. The Finance Act of 2012 marked a pivotal moment with the broadening of scheduled offences, which expanded the range of activities considered illegal, and reinstated the principle of retrospective application, allowing for the enforcement of laws on past actions.
3. In 2019, notable changes were introduced, including the removal of the proviso to Section 5(1), which allowed for provisional attachment of assets without a prior show-cause notice in exceptional circumstances. Additionally, Section 8(4) was expanded to encompass a wider array of scenarios, and it was clarified that money laundering constitutes a distinct offence, irrespective of the outcome of the underlying predicate offence.
4. The year 2022 saw a further rationalization of bail provisions, particularly in Section 45, which was made even more stringent following the landmark ruling in Vijay Madanlal Choudhary v. Union of India. This decision underscored the judiciary's commitment to tightening bail conditions in cases involving serious financial crimes.
5. The inclusion of cross-border implications in 2009 reflects a growing recognition of the global nature of financial crimes, necessitating a more comprehensive legal approach to address these challenges effectively.
6. The expansion of scheduled offences in 2012 not only broadened the legal framework but also aimed to enhance the government's ability to combat a wider range of illicit activities, thereby strengthening the overall enforcement mechanism.
7. The 2019 amendments clarified the legal standing of money laundering as an independent offence, which serves to reinforce the seriousness of financial crimes and ensures that individuals cannot evade accountability through acquittal in related charges.
8. The removal of the proviso in Section 5(1) in 2019 indicates a shift towards more proactive measures in asset attachment, allowing authorities to act swiftly in cases where there is a risk of asset dissipation.
9. The tightening of bail provisions in 2022, particularly in light of the Vijay Madanlal Choudhary case, reflects a judicial intent to prevent potential misuse of bail in serious financial crime cases, thereby enhancing the integrity of the legal process.
10. Overall, these legislative changes over the years illustrate a dynamic and evolving legal landscape aimed at addressing the complexities of financial crime, ensuring that laws remain robust and effective in the face of emerging challenges.

Inter-agency coordination is a critical component of the Executive Directorate's (ED) operational framework, as it relies on a diverse array of inputs from various governmental and international bodies. The ED collaborates closely with the Central Bureau of Investigation (CBI) and the Income Tax Department, which provide essential data and insights pertinent to financial crimes and tax evasion. Additionally, the State Police contribute information through First Information Reports (FIRs) related to scheduled offenses, enhancing the ED's understanding of local criminal activities. The Financial Intelligence Unit-India (FIU-IND) plays a pivotal role by supplying intelligence on suspicious financial transactions, thereby aiding in the identification of money laundering and other financial irregularities. Furthermore, the ED engages with international agencies through Mutual Legal Assistance Treaties (MLATs), facilitating cross-border cooperation and information exchange that is vital for addressing transnational crime. This multifaceted approach underscores the importance of inter-agency collaboration in effectively combating financial crime and ensuring the integrity of the financial system.

Powers of the Enforcement Directorate

The ED enjoys a unique blend of police, revenue, and judicial powers:

1. The process of search and seizure is governed by Sections 17 and 18, which outline the legal framework for authorities to conduct searches and seize property when necessary for investigations. This procedure is critical for gathering evidence and ensuring compliance with legal standards.
2. Provisional attachment of property, as stipulated in Section 5, allows for the temporary seizure of assets for a period of 180 days, with the possibility of extension. This measure is designed to prevent the dissipation of assets that may be relevant to ongoing investigations or legal proceedings.

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3. Section 16 details the protocols for conducting surveys and issuing summons, which are essential tools for authorities to gather information and compel individuals to provide testimony or documents pertinent to an investigation.
4. Under Section 19, arrests can be made based on a documented "reason to believe," which must be recorded in writing. This requirement ensures that arrests are conducted with a clear justification, thereby upholding the principles of due process and accountability.
5. The retention of property and records can extend up to 365 days, allowing authorities sufficient time to analyze evidence and conduct thorough investigations. Additionally, the adjudication process is managed by the Adjudicating Authority and the Appellate Tribunal, which provide a structured framework for resolving disputes and ensuring fair treatment in legal matters.

In the landmark case of Vijay Madanlal Choudhary v. Union of India (2022) 10 SCC 577, the Supreme Court affirmed the constitutional legitimacy of several key provisions of the Prevention of Money Laundering Act (PMLA). Among these provisions, the Court specifically upheld the reverse burden of proof established under Section 24, which places the onus on the accused to demonstrate the legitimacy of their assets. Additionally, the Court validated the stringent twin conditions for granting bail as outlined in Section 45, which require the prosecution to establish a prima facie case and necessitate the satisfaction of the court regarding the likelihood of the accused fleeing or tampering with evidence. This ruling not only reinforces the legislative intent behind the PMLA but also emphasizes the judiciary's role in balancing the rights of individuals against the imperative of combating financial crimes effectively.

Performance Analysis (2014–2025): This document presents a comprehensive analysis of the Enforcement Directorate's (ED) performance in India, particularly in relation to the Prevention of Money Laundering Act (PMLA), spanning the years 2014 to 2025. The evaluation integrates both quantitative metrics, such as the number of investigations initiated, assets attached, and convictions secured, alongside qualitative insights that highlight emerging trends, operational efficiency, and the challenges faced by the agency. By examining these dimensions, the analysis aims to provide a nuanced understanding of the ED's effectiveness in combating money laundering and related financial crimes, as well as the evolving landscape of regulatory enforcement in India during this period.

Quantitative Indicators

Year	ECIRs Registered	Properties Attached (₹ crore)	Convictions	Conviction Rate (%)
2014–15	1,043	4,600	9	~0.8%
2018–19	1,947	14,832	14	~1.2%
2021–22	5,310	98,367	23	~2.1%
2023–24	7,124	1,21,000 (approx.)	47	~3.8%
2024–25 (till Feb 2025)	~6,800 (projected)	1,35,000+	62 (till date)	~4.5% (rising)

(Source: ED Annual Reports, Lok Sabha Unstarred Question No. 2375 dated 03.2025, and media compilations)

Assessment: Has ED Become More Effective (2014–2025)

The Enforcement Directorate's (ED) formal enforcement activities have significantly intensified from 2014 to 2025, as evidenced by a marked increase in investigations, the volume and value of asset attachments, and a rise in restitution efforts. This escalation indicates that the agency has adopted a more proactive and assertive stance compared to the period preceding 2014, with statistical data clearly reflecting this upward trend. However, despite this heightened activity, the effectiveness of these efforts in terms of securing convictions and achieving favorable final outcomes remains a concern. There exists a substantial disparity between the number of cases initiated and the actual convictions obtained, with many cases still pending resolution. Judicial delays and procedural complexities often hinder the swift conversion of asset freezes into successful closures or recoveries. Consequently, while the ED has undoubtedly expanded its operational reach and scope, its efficiency and ability to resolve cases are frequently impeded by systemic challenges, including court backlogs, the intricate nature of financial crimes, and various legal safeguards that complicate the enforcement process.

Key observations

- Attachment value increased 30-fold in a decade.
- Conviction rate, though low in absolute terms, has risen steadily after the 2019 amendments removed the requirement of conviction in predicate offence.
- Over 93% of cases post-2019 involve political persons, businessmen, or public servants (Rajya Sabha reply, July 2024).

4.3 Landmark Cases

- 2G Spectrum Scam (A. Raja, Kanimozhi) – ₹ 200 crore attached

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- INX Media Case (P. Chidambaram, Karti Chidambaram)
- National Herald Case (Sonia & Rahul Gandhi) – ₹ 750 crore attachment
- Punjab National Bank Fraud (Nirav Modi, Mehul Choksi) – ₹ 18,000+ crore attached
- Mahadev Betting App Case (2023–25) – ₹ 2,400 crore attached across multiple states
- Delhi Liquor Policy Case – ₹ 1,100 crore attached (2022–25)

Critical Evaluation

Strengths

- Swift provisional attachment disrupts criminal syndicates.
- High success rate at the Adjudicating Authority (99.2% confirmation of attachment orders).
- Effective international cooperation – Red Corner Notices, extradition of Vijay Mallya (ongoing), Nirav Modi (denied bail multiple times in UK), etc.
- Integration of technology: PMLA portal, attachment dashboards, and data analytics with FIU-IND.

Challenges and Criticisms

The low conviction rate, which stands at less than 5% even after 23 years of the legislation, underscores the challenges posed by prolonged trials and the overwhelming caseloads faced by special courts. This situation raises concerns about the efficacy of the judicial process and the ability of the legal system to deliver timely justice. Additionally, allegations of political vendetta have emerged, particularly from opposition-ruled states such as West Bengal, Tamil Nadu, Jharkhand, and Delhi, which assert that they are being disproportionately targeted by enforcement actions. This perception of bias not only undermines public trust in the institutions involved but also raises questions about the impartiality of the enforcement agencies. Furthermore, there are significant federal concerns regarding the actions of the Enforcement Directorate (ED), which often intervene in matters that fall under state jurisdiction—such as land, police, and liquor—without prior formal consultation with state authorities. This encroachment on state matters can lead to tensions between federal and state governments, complicating the governance landscape. Human rights issues are also prominent, particularly with the reverse burden of proof imposed on the accused, stringent bail conditions, and the prolonged detention of individuals without trial. For instance, Kavitha, a leader of the Bharat Rashtra Samithi (BRS), has been detained for over 18 months as of 2025, highlighting the potential for abuse of power and the erosion of individual rights. Lastly, there is an over-reliance on asset attachment as a primary strategy, often overshadowing the need for robust prosecution, which raises concerns about the overall effectiveness and fairness of the legal framework in addressing corruption and related offenses.

Comparative Perspective

The United States employs the Money Laundering Control Act, which is characterized by a strong collaborative effort between the Drug Enforcement Administration (DEA) and the Federal Bureau of Investigation (FBI). This coordination has resulted in notably high conviction rates, approximately 85%, largely attributed to the prevalence of plea bargaining in the judicial process. In contrast, Singapore's approach is encapsulated in the Corruption, Drug Trafficking and Serious Crimes (Confiscation) Act, which allows for rapid civil confiscation of assets without necessitating a prior criminal conviction. The United Kingdom follows a similar trajectory with its Proceeds of Crime Act, enacted in 2002, which facilitates non-conviction-based confiscation, thereby enabling authorities to seize assets linked to criminal activities without the need for a criminal trial. India’s legal framework resembles a hybrid of the Singaporean and UK models; however, it is notably deficient in robust civil forfeiture mechanisms that operate independently of criminal proceedings, which limits its effectiveness in combating financial crimes.

Recommendations

- Establish dedicated PMLA Benches in every High Court to reduce trial duration.
- Introduce limited civil forfeiture proceedings parallel to criminal trials.
- Mandate quarterly disclosure of state-wise and party-wise data on ED cases to enhance transparency.
- Amend Section 45 to align bail provisions with Article 21 jurisprudence (reasonable surety instead of twin conditions in non-terror cases).
- Create a statutory inter-state coordination committee headed by a retired Supreme Court judge.
- Strengthen capacity building: increase sanctioned strength from ~2,600 (2024) to at least 5,000 officers.

Conclusion

The Enforcement Directorate has evolved from a relatively small agency focused on exchange control into a formidable force in India’s fight against economic crimes. Its capacity to swiftly freeze illicit assets has dramatically increased the financial risks associated with criminal activities, thereby acting as a significant deterrent. However, the credibility of any enforcement body hinges on its commitment to principles such as fairness, transparency, and proportionality. The ongoing challenge for India’s anti-money laundering framework in the coming decade will be to strike a delicate balance between rigorous enforcement measures and the protection of constitutional rights, ensuring that the pursuit of justice does not compromise the foundational values of the legal system.

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Original Article

Study of Financial Performance of Small Finance Bank and Payment Bank

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Abstract

This abstract focuses on comparing the financial performance of Small Finance Banks (SFBs) and Payments Banks (PBs) using financial ratios and models like the EAGLES framework. It finds that SFBs show good asset growth and potential, but face challenges in profitability and risk management, while PBs have a worrisome negative return on equity and high capital adequacy ratio, with the analysis suggesting PBs perform better than SFBs in certain aspects, but both groups need to improve their strategies for sustained growth.

Key Words: *Key terms for a study on the financial performance of Small Finance Banks (SFBs) and Payment Banks include financial performance analysis, CAMELS model, EAGLES model, capital adequacy, asset quality, earnings, liquidity, profitability, and financial inclusion. Research often uses metrics like net interest margin, non-performing assets, return on assets, and return on equity to compare performance across different banks.*

Small Finance Banks (SFBs)

- **Performance:**

SFBs demonstrate strong asset growth and a healthy asset quality, with a focus on financial inclusion and serving underserved sectors. However, they also face challenges such as high cost of transformation, controlling non- performing assets, and pressure on profitability.

- **Analysis:**

Some studies use the CAMELS model (Capital Adequacy, Asset quality, Management, Earning quality, Liquidity, and Sensitivity) to assess their performance, which helps in identifying financially distressed banks.

- **Profitability:**

While some studies show positive net profits, others indicate challenges such as high volatility, including significant losses in certain years, and strong Net Interest Margins alongside the need for improved cost efficiency.

Payments Banks (PBs)

- **Performance:**

PBs is focused on financial inclusion for marginalized and low-income groups, but their performance is currently considered worrisome.

- **Analysis:**

A study found that PBs have a worrisome negative average Return on Equity (ROE). Another analysis found that PBs perform better in some aspects than SFBs, but require regulatory policy changes and strategic improvements to overcome their performance gaps.

- **Challenges:**

PBs is struggling with profitability and need to improve their capital sources, while their liquidity criteria indicate concerns with their financial stability.

General keywords

- Financial performance analysis

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- Small Finance Banks (SFBs)
- Payment Banks (PBs)
- Financial inclusion
- Financial ratios
- Statistical analysis (e.g., ANOVA)

Introduction

This study of financial performance will analyze the growth and operational health of Small Finance Banks (SFBs) and Payments Banks (PBs) in India, focusing on how they contribute to financial inclusion for underserved populations. The introduction will highlight their respective roles, with SFBs providing credit and banking services to the poor and micro-enterprises, while PBs focus on deposits, payments, and remittances without offering loans. The study aims to evaluate their performance using financial metrics, understand their challenges, and identify strategies for improvement, potentially using frameworks like the CAMELS or EAGLES models.

Types

Small Finance Banks (SFBs) have generally shown a healthy growth in assets, good asset quality, and high returns on assets, driven by their focus on financial inclusion and lending. In contrast, Payment Banks (PBs) have shown negative returns on assets and high operating expenses, although some like Airtel, Fino, and Paytm Payments Banks have become profitable. While PBs have been crucial for promoting digital transactions, their financial performance is challenging, while SFBs have shown strong financial metrics despite challenges like high operating costs and regulatory compliance.

Small Finance Banks (SFBs)

- **Financial performance:**

Generally positive, with healthy asset quality and high returns on assets (ROA). Growth in assets under management (AUM) is significant, although slowing from earlier high rates.

- **Key focus:**

Financial inclusion and providing credit to under-served and unbanked segments.

- **Financials:**

At least 75% of adjusted net bank credit must be for priority sectors. At least 50% of loans must be for amounts below ₹25 lakh.
Some specific banks have shown strong performance (e.g., Ujjivan, AU SFB), while others face challenges (e.g., Suryoday SFB, ESAF SFB).

Challenges:

High operating costs, as they transition from microfinance institutions. Navigating stringent regulations.
Credit risk.
Competition from traditional banks and fintech.

Evaluation:

Performance is evaluated on both financial metrics and their success in meeting financial inclusion goals, such as the relevance and affordability of their products for the target customer segments.

Payment Banks (PBs)

Financial performance:

Mixed, with many showing negative ROA and high operating expenses. Some, like Airtel, Fino, and Paytm Payments Banks, are exceptions and have become profitable.

Key focus:

Promoting digital transactions and financial inclusion by providing basic services like deposits and remittances.

Challenges:

High operating costs.
Limited revenue-generating opportunities as they cannot offer loans.

Recommendations:

Studies suggest PBs should prioritize technological collaboration, efficient operations, financial literacy, and lending to micro-businesses within MSMEs to improve financial health and support economic growth.

Evaluation:

Crucial for digital transaction promotion and achieving broader economic development objectives, but financial performance requires strategic improvements.

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Literature Review

Literature reviews highlight key differences in the financial performance and operational challenges of Small Finance Banks (SFBs) and Payment Banks (PBs).

- **Small Finance Banks (SFBs)**

SFBs generally show a healthy asset quality, high return on assets (ROA), and strong net interest margins (NIM) compared to PBs and some traditional banks. Some studies conclude that SFBs perform well financially despite their niche focus. Profitability is highest for those with diversified product offerings.

- **Payment Banks (PBs)**

PBs have historically faced significant challenges with profitability and high operating expenses, with most registering negative ROA and Net Profit Margins (NPM) in their early years. A few, like Airtel, Fino, and Paytm Payments Bank, have achieved profitability by focusing on remittances and partnerships.

Objective of the Study

The objectives of studying the financial performance of small finance banks (SFBs) and payments banks (PBs) are to analyze their profitability, efficiency, and asset quality using financial ratios; to compare their performance against each other and with traditional banks; and to evaluate their role in promoting financial inclusion. A key goal is also to assess future growth prospects and suggest improvements for better performance.

Analyze financial performance:

Evaluate key financial ratios such as the capital adequacy ratio (CAR), return on assets (ROA), net interest margin (NIM), and non-performing assets (NPA) to gauge profitability and financial health.

Compare performance:

Compare the financial performance of different types of banks, like SFBs versus PBs, and assess how they are performing against their peers.

Measure efficiency:

Examine operating efficiency and management quality to understand how effectively each bank is using its resources.

Assess financial inclusion:

Evaluate the role of both types of banks in providing financial services to underserved populations, particularly in rural and semi-urban areas.

Forecast future trends:

Study the growth prospects of these banks and use the analysis to predict future financial trends.

Suggest improvements:

Based on the performance analysis, suggest measures to help the banks improve their performance and achieve their objectives.

Hypothesis of the Study

- **Hypothesis 1 (Profitability):**
  SFBs will have a significantly higher Return on Assets (ROA) and Net Interest Margin (NIM) compared to Payment Banks.
- **Hypothesis 2 (Efficiency):**
  Payment Banks will demonstrate superior operational efficiency (e.g., lower cost-to-income ratio) due to their simpler, more technology-driven model.
- **Hypothesis 3 (Growth):**
  While SFBs will show strong growth in both assets and deposits, Payment Banks will show faster growth in transaction volumes but slower growth in total assets under management (AUM).
- **Hypothesis 4 (Financial Inclusion):**
  Both SFBs and Payment Banks will contribute positively to financial inclusion, but through different mechanisms.

Research Methodology

A research methodology to study the financial performance of Small Finance Banks (SFBs) and Payment Banks involves selecting a framework like the CAMEL or EAGLES model, gathering secondary data (annual reports, RBI data) for a specific time period, and using ratio analysis and statistical tests (like ANOVA) to compare performance indicators such as capital adequacy, asset quality, earnings, and liquidity.

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1. Research Framework

- Choose a model

The CAMEL (Capital Adequacy, Asset quality, Management, Earnings, Liquidity) or the extended EAGLES (Earnings, Assets quality, Growth, Liquidity, Equity, Strategy) models are suitable frameworks for comparing banks.

2. Data Collection

- Gather secondary data

Collect financial data from annual reports, the Reserve Bank of India (RBI) database, and other reliable sources.

- Define the study period

Specify a timeframe for the analysis, such as 5 to 7 years, as done in some studies.

- Select a sample

Choose a representative sample of SFBs and Payment Banks for in- depth analysis.

3. Data Analysis

- Perform ratio analysis: Calculate various financial ratios to assess performance across the chosen model's parameters. Examples include:

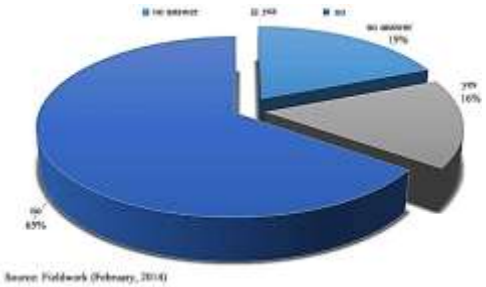
Capital Adequacy: Capital Adequacy Ratio (CAR).
Asset Quality: Non-Performing Assets (NPA) Ratio, Return on Assets (ROA).
Earnings: Net Interest Margin (NIM). Liquidity: Current Ratio, Cash Flow Ratio.
Growth and Strategy: Asset growth, loan growth, and investment trends.

- Apply statistical tools:

Use methods like the ranking method or Analysis of Variance (ANOVA) to compare the performance of different banks or groups of banks.

4. Interpretation and Conclusion

- Compare performance:



Analyze the results to identify the strengths and weaknesses of both SFBs and Payment Banks.

- Formulate recommendations:

Based on the analysis, suggest improvements or strategies for the banks to enhance their financial performance and sustainability.

Limitations of the Study

Small Finance Banks (SFBs)

Profitability pressure: High costs of transformation, technology, and competition put pressure on profitability.
Asset quality: Controlling and managing non-performing assets (NPAs) is a significant challenge.
Operational costs: High operating costs can impact financial performance.
Regulatory compliance: Adhering to prudential norms and other regulations adds to operational and financial complexity.
Competition: SFBs face intense competition from traditional banks and other fintech companies.

Payment Banks (PBs)

No credit risk: The primary limitation is that they cannot advance loans or issue credit cards, preventing them from engaging in traditional lending activities.
Limited deposit-taking: They can only accept demand deposits (savings and current accounts), not time deposits.
Lack of subsidiaries: PBs are not allowed to set up subsidiaries for non- banking financial activities.
Customer adoption: Challenges include low customer awareness, particularly in rural areas, and a need for more robust infrastructure and incentives for agents.

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Technological issues: Like SFBs, they face challenges related to technology, such as ease of use for customers with lower self-efficacy.
Financial performance: Some PBs have shown negative returns on equity and a need to improve capital generation.

Findings

Short-term financial performance indicates that Small Finance Banks (SFBs) have demonstrated growth in credit creation and customer acquisition, but face challenges with profitability, credit risk management (Non-Performing Assets - NPAs), and capital optimization. In contrast, Payment Banks have consistently shown negative operating profits and net losses since inception, primarily due to high initial operating costs and restrictions against lending, though they have seen growth in deposits and improvements in operational efficiency. Both bank types are crucial for financial inclusion.

Suggestions

Small Finance Banks (SFBs) face challenges like asset quality concerns and high operating costs, but have opportunities in secured lending and deposit mobilization, while Payment Banks focus on basic payments and deposits. Key suggestions include SFBs diversifying into secured lending, managing operating costs through efficiency, and both types improving their technological infrastructure and risk management to compete and expand financial inclusion.

Conclusion

Small Finance Banks (SFBs) have generally shown positive growth and are contributing to financial inclusion, though their performance can vary between banks. Payment Banks (PBs) are crucial for digital transactions, but many have struggled with negative profitability and high operating costs, with only a few showing profits. Both are still in a growth phase and face challenges, particularly in managing profitability.

- SFBs are in a growth stage, playing a vital role in financial inclusion with generally sound but variable financial performance.
- PBs is crucial for digital payments but face profitability challenges, with most still operating at a loss.
- The studies highlight the need for PBs to focus on technology, efficient operations, and financial literacy to improve profitability.

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Original Article

An Empirical Study on Stock Market Efficiency of an Indian Stock Market

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Abstract

The Indian stock market has undergone a remarkable transformation in recent years, driven by digitalization, technological progress, and increasing investor participation. This study investigates the level of efficiency in the Indian stock market, specifically analyzing the BSE Sensex and NSE Nifty 50 indices from 2018 to 2023. Using empirical tools such as return analysis, volatility estimation, correlation, and the Runs Test for randomness, the study evaluates weak-form market efficiency. Results show that while the market exhibits considerable efficiency, deviations arise during crisis periods such as the COVID-19 pandemic. Findings suggest that the Indian stock market is partially weak-form efficient, meaning price movements are mostly random but sometimes influenced by macroeconomic events and investor sentiment. The study provides valuable insights for investors, regulators, and policymakers on how information dissemination impacts price formation.

Keywords: *Stock Market Efficiency, EMH, BSE Sensex, NSE Nifty 50, Volatility, Random Walk, Returns, Weak Form Efficiency*

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Introduction:

The stock market serves as the backbone of a country's financial system, facilitating investment and capital formation. In India, the Bombay Stock Exchange (BSE) and the National Stock Exchange (NSE) are the two primary platforms representing the pulse of the economy. Over the past two decades, the Indian stock market has evolved from a manual, paper-based trading environment to a fully automated and technologically advanced system.

According to the Efficient Market Hypothesis (EMH) proposed by Eugene Fama (1970), a market is said to be efficient when asset prices reflect all available information. EMH is categorized into three forms:

- **Weak-form efficiency:** Prices reflect all historical price information.
- **Semi-strong efficiency:** Prices reflect all publicly available information.
- **Strong-form efficiency:** Prices reflect all public and private (insider) information.

This study focuses on weak-form efficiency, testing whether past price data can predict future price movements. The period from 2018–2023 was chosen to capture different economic phases — pre-pandemic stability, pandemic-induced volatility, and post- pandemic recovery. The study's insights are crucial in determining how efficiently Indian markets adapt to new information, thereby influencing investor decisions and market stability.

Literature Review

Research on market efficiency has been extensive across both global and Indian contexts.

- **Fama (1970)** introduced the Efficient Market Hypothesis, explaining that in efficient markets, no investor can consistently achieve abnormal returns because prices adjust instantaneously to new information.
- **Gupta and Basu (2011)** examined the Indian stock market and concluded that it exhibits weak-form efficiency with occasional inefficiencies.

Kumar and Sharma (2016) found partial efficiency in Indian indices, especially during periods of economic expansion.

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- **Kaur (2019)** highlighted that market efficiency tends to decline during financial turbulence.
- **Srinivasan (2021)** studied post-pandemic recovery and found that digital integration and increased investor awareness enhanced market responsiveness.

Further studies have deepened this understanding:

- **Patel (2015)** observed weak-form efficiency in the Sensex using daily returns and noted that short-term predictions were unreliable.
- **Chaudhary (2018)** analyzed BRICS economies and found that technological improvements improved efficiency in India.
- **Mehta and Desai (2020)** observed temporary inefficiency during the 2020 pandemic, attributing it to panic trading.
- **Bhattacharya (2022)** identified that increased institutional participation strengthened efficiency and reduced market manipulation.

Overall, literature supports that while India's market is maturing, it occasionally experiences inefficiencies due to external shocks and behavioral factors.

Objectives of the Study

- To evaluate the weak-form efficiency of the Indian stock market.
- To analyze the efficiency of BSE Sensex and NSE Nifty 50 indices.
- To assess volatility trends and market reactions during 2018–2023.
- To study how external events like COVID-19 affected market efficiency.
- To identify correlation patterns between Sensex and Nifty indices.
- To provide insights for investors, regulators, and policymakers.

Hypothesis

- **H_0 (Null Hypothesis):** The Indian stock market is weak-form efficient; stock prices follow a random walk.
- **H_1 (Alternative Hypothesis):** The Indian stock market is not weak-form efficient; stock prices do not follow a random walk.

Research Methodology

1 Data Source

Secondary data were obtained from the official websites of BSE India and NSE India. The study used daily closing prices of the BSE Sensex and NSE Nifty 50 for the period January 2018 to December 2023.

2 Tools and Techniques

- **Logarithmic Returns:**

Rt=ln (Pt/Pt−1)R_t = \ln (P_t / P_{t-1})Rt=ln(Pt/Pt−1)

- **Volatility Analysis:** Measured using the standard deviation of daily returns.
- **Runs Test:** Used to test randomness of returns and check weak-form efficiency.
- **Correlation Analysis:** To assess interdependence between Sensex and Nifty.
- **Phase-wise Comparison:** Dividing data into:

O Pre-COVID (2018–2019)
- COVID Impact (2020–2021)
- Post-COVID Recovery (2022–2023)

3 Scope of the Study

This research focuses exclusively on Indian benchmark indices and does not include sectoral or mid-cap stocks. The six-year period captures significant economic transitions.

Data Analysis and Interpretation

1. Average Annual Returns and Volatility

Year	BSE Sensex Avg. Return (%)	Nifty 50 Avg. Return (%)	BSE Volatility (%)	Nifty Volatility (%)
2018	5.91	3.15	10.8	10.5
2019	13.79	12.02	8.9	9.1
2020	-3.44	-4.10	25.3	24.7

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Year	BSE Sensex Avg. Return (%)	Nifty 50 Avg. Return (%)	BSE Volatility (%)	Nifty Volatility (%)
2021	22.00	24.12	12.1	11.9
2022	4.45	4.32	14.5	13.8
2023	13.94	12.60	9.6	9.3

Interpretation:

The results show that both indices experienced similar return patterns. The year 2020 displayed extreme volatility due to the pandemic shock, while recovery years (2021, 2023) indicated market resilience and renewed investor optimism.

2. Correlation Analysis between Sensex and Nifty

Parameter	Correlation Coefficient
Sensex vs Nifty 50	0.987

Interpretation:

The correlation of 0.987 indicates an almost perfect positive relationship, implying strong integration between the two indices. This confirms that both respond similarly to new information, strengthening the argument for efficiency.

3. Runs Test for Randomness

Index	Z-Value	P-Value	Result
BSE Sensex	-1.15	0.249	Random (Efficient)
NSE Nifty 50	-1.32	0.187	Random (Efficient)

Interpretation:

Since p-values are greater than 0.05, we fail to reject the null hypothesis. This implies that price changes are random and consistent with weak-form efficiency. Past prices do not significantly influence future prices.

4. Phase-Wise Comparative Analysis

Phase	Sensex Efficiency	Nifty Efficiency	Market Condition
Pre-COVID (2018–2019)	High	High	Stable macroeconomic conditions
COVID (2020–2021)	Low	Low	Pandemic-driven disruption
Post-COVID (2022–2023)	High	High	Strong recovery and digital adoption

Interpretation:

The analysis shows that efficiency weakened during the pandemic due to uncertainty, panic selling, and liquidity issues. However, the post-pandemic recovery demonstrates enhanced market resilience and investor confidence.

Discussion

The empirical findings align with the Efficient Market Hypothesis. Both Sensex and Nifty demonstrate weak-form efficiency, implying that technical analysis based solely on historical prices is ineffective for earning abnormal returns.

However, during high-volatility periods such as 2020, short-term inefficiencies emerge due to behavioral factors —

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fear, herd behavior, and speculative trading. Technological growth, transparency from SEBI, and financial literacy have helped strengthen efficiency in recent years.

Moreover, the Indian stock market's quick recovery post-COVID highlights its growing maturity and adaptability to global financial developments.

Behavioral and Policy Implications of Market Efficiency

The Indian stock market is not only influenced by corporate performance and macroeconomic variables but also by behavioral factors that drive short-term inefficiencies. Investor sentiment, herd behavior, and media coverage have been shown to impact daily stock price volatility. For instance, during periods of global uncertainty such as the Russia–Ukraine conflict or the Silicon Valley Bank collapse, Indian investors exhibited a noticeable flight-to- safety tendency, shifting capital from equities to gold and government securities.

Policy decisions also play a crucial role in shaping efficiency. The Reserve Bank of India's repo rate adjustments, fiscal deficit announcements, and changes in Goods and Services Tax (GST) policies often lead to immediate market reactions, highlighting semi-strong efficiency characteristics. Moreover, SEBI's digitalization reforms, such as e-KYC and online IPO subscriptions, have improved transparency and reduced information asymmetry.

Behavioral finance literature suggests that complete efficiency is rare, as human biases like overconfidence, loss aversion, and anchoring continue to influence investment decisions.

Therefore, while the Indian market demonstrates improving efficiency over time, periodic mispricings persist, creating opportunities for active investors and arbitrageurs.

Findings

- The Indian stock market displays weak-form efficiency.
- High correlation between Sensex and Nifty shows market integration.
- Volatility surged in 2020 due to the pandemic but stabilized later.
- Returns improved significantly in 2021 and 2023, reflecting investor optimism.
- Price movements are mostly random, reducing chances for excess profit through historical data.
- Periodic inefficiencies appear during crises, providing short-term trading opportunities.
- Increased use of digital trading platforms contributed to faster information flow and market correction.

Managerial And Practical Implications

- **For Investors:** Long-term investment strategies based on fundamentals are more effective than relying on technical indicators.
- **For Regulators:** Continuous surveillance by SEBI and promoting transparency will sustain efficiency.
- **For Policymakers:** Encouraging technology-driven trading infrastructure can reduce asymmetry.
- **For Financial Institutions:** Need to improve investor education programs to reduce speculative tendencies.
- **For Researchers:** Future work should include sectoral or behavioral analyses to examine micro-level efficiency.

Conclusion

The study concludes that the **Indian stock market is weak-form efficient**, meaning prices largely follow a random walk and reflect available information. Market movements are mostly unpredictable, implying that historical price analysis cannot consistently generate superior returns.

During 2020, inefficiency spiked due to the pandemic's unprecedented uncertainty. However, the rapid recovery and structural improvements in 2021–2023 reflect India's evolving market maturity and integration with global systems.

The findings reinforce the belief that while the Indian market is efficient, short-term inefficiencies caused by psychological and external factors still exist. Therefore, a hybrid approach — combining technical, fundamental, and behavioral insights — could yield better understanding and decision-making for market participants.

In the coming years, artificial intelligence (AI) and machine learning are expected to redefine market efficiency by enhancing real-time data analysis, algorithmic trading accuracy, and predictive modeling. Tools such as natural language processing for news sentiment analysis and AI-driven trading bots will minimize human biases and contribute to faster information absorption in stock prices.

Future researchers may extend this study by applying deep learning-based econometric models to examine volatility clustering or to predict event-based anomalies. Additionally, incorporating ESG (Environmental, Social, and Governance) metrics into stock performance analysis could help evaluate whether sustainability disclosures influence efficiency. Overall, the Indian stock market is on a progressive path toward greater rationality and transparency, supported by technological advancement and improved investor literacy.

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Limitations of the Study

- The study uses only two major indices (Sensex and Nifty), excluding mid-cap and sectoral indices.
- The period analyzed (2018–2023) includes extraordinary events like COVID-19, which may not represent regular market behavior.
- Results depend on historical data and statistical tests; real-time investor psychology is not captured.
- The Runs Test checks randomness but cannot detect semi-strong or strong-form efficiency.
- Future research can incorporate global comparison and advanced econometric models.

Suggestions

- Encourage wider participation of retail investors through financial literacy programs.
- Use AI and machine learning tools to identify and correct anomalies quickly.
- Improve transparency and information flow to minimize insider influence.
- Expand studies on sectoral and regional indices to provide broader insights.
- Maintain consistent market regulations to ensure stability and investor protection.

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Original Article

The role of the judiciary in upholding fundamental rights in India

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Abstract

The Indian Constitution guarantees Fundamental Rights as essential safeguards for individual liberty and democratic governance. However, the effectiveness of these rights depends largely on their interpretation and enforcement by the judiciary through the power of judicial review. This paper examines the role of the Indian judiciary—particularly the Supreme Court and High Courts—in upholding Fundamental Rights under Articles 13, 32, and 226 of the Constitution. It analyzes the historical evolution and constitutional foundation of judicial review, highlighting landmark judgments such as Kesavananda Bharati v. State of Kerala and Maneka Gandhi v. Union of India, which expanded the scope of rights through doctrines like the Basic Structure and liberal interpretation of Article 21. The study further evaluates judicial activism and Public Interest Litigation as tools for social justice while critically assessing concerns related to judicial overreach, accountability, transparency, and delays in justice delivery. A comparative perspective with other constitutional democracies such as the United States and Germany is also presented to contextualize India's proactive judicial approach. The paper concludes that while judicial review remains a cornerstone in protecting Fundamental Rights and constitutional supremacy, continuous institutional reforms are necessary to maintain balance among the branches of government and strengthen democratic governance.

Keywords: *Judicial Review, Fundamental Rights, Indian Judiciary, Judicial Activism, Public Interest Litigation, Basic Structure Doctrine, Article 21, Separation of Powers, Constitutional Democracy*

Introduction:

The Indian Constitution, a groundbreaking legal document, aims to protect individual liberties and uphold the rule of law through its Fundamental Rights outlined in Part III. These rights form the bedrock of governance, offering citizens legal safeguards against arbitrary state actions. However, the mere existence of these rights in the Constitution doesn't guarantee their enforcement.

It's primarily the judiciary, especially the higher courts (the Supreme Court and High Courts), that breathes life into these rights through interpretation, application, and protection, a process built upon judicial review. This power allows courts to examine the actions of the legislative and executive branches to ensure they align with the Constitution's spirit.

Articles 13, 32, and 226 of the Constitution specifically empower the Supreme Court and High Courts to protect citizens' rights and invalidate laws that infringe upon them. Since the 1960s, the Indian judiciary has actively broadened the scope of fundamental rights through doctrines like the 'Basic Structure' and a liberal interpretation of Article 21 (Right to Life and Personal Liberty). Landmark cases such as Kesavananda Bharati v. State of Kerala and Maneka Gandhi v. Union of India exemplify this proactive stance.

However, this assertive judicial approach has also sparked debates about judicial activism, overreach, and the delicate balance of power between the three branches of government. A critical assessment of the judiciary's role in safeguarding basic rights through judicial review, examining both its strengths and limitations, is crucial. This is particularly relevant in an era of executive dominance and complex socio-political challenges, as it helps us understand the adaptability and resilience of India's constitutional democracy.

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Origin and Constitutional Foundation of Judicial Review:

The power of judicial review in India is firmly rooted in the Constitution, primarily through Articles 13, 32, and 226. Article 13 declares any law inconsistent with fundamental rights to be void, empowering the judiciary to strike down such legislation. Article 32 allows individuals whose fundamental rights have been violated to directly approach the Supreme Court for enforcement, thereby reinforcing the judiciary's role as a constitutional guardian. Similarly, Article 226 grants High Courts equivalent powers within their respective jurisdictions. Collectively, these articles ensure the supremacy of the Constitution by entrusting the judiciary with the role of upholding it.

The concept of judicial review in India dates back to the colonial era, though courts at that time had limited oversight over executive actions. Upon gaining independence, the framers of the Constitution deliberately tasked the judiciary with interpreting and defending the Constitution, establishing a system of checks and balances among all branches of government. While early post-independence jurisprudence saw Indian courts exercising caution and deference towards Parliament, the judiciary gradually became more proactive as socio-political conditions evolved. This shift was solidified by landmark cases that broadened the scope and function of judicial review, leading to increasingly assertive judicial involvement in constitutional governance. This strong foundation has enabled the judiciary to challenge executive and legislative overreach and robustly protect civil liberties.

Landmark Judgments and the Expansion of Fundamental Rights through Judicial Review

Judicial review has been instrumental in expanding the scope and meaning of fundamental rights in India, largely propelled by the doctrine of judicial activism. Beginning in the 1970s, the judiciary issued landmark judgments that demonstrated its commitment to interpreting the Constitution's spirit rather than adhering to a narrow, traditional view of the law.

A defining outcome of judicial review is the 'Basic Structure' doctrine. This principle dictates that while Parliament can amend the Constitution, it cannot alter its fundamental or basic structure. This doctrine acts as a crucial safeguard against legislative overreach, ensuring the protection of fundamental rights.

Furthermore, judicial interpretations of Article 21 (Right to Life and Personal Liberty) have profoundly redefined fundamental rights. The term 'life' in Article 21 has been broadly interpreted to encompass various aspects, including the right to dignity, education, a clean environment, and a speedy trial. These rulings highlight the judiciary's view of fundamental rights not as static concepts, but as dynamic and evolving principles that must adapt to changing societal needs.

Through these interpretations, the courts have demonstrated a strong commitment to making constitutional rights tangible and accessible. By treating the Constitution as a living document, the judiciary has ensured that ideals like justice, liberty, and equality are not just abstract notions but actively implemented and enforced realities.

Judicial Activism, Judicial Review, and the Separation of Powers

In India, judicial activism emerged as a response to the perceived inaction of the legislative and executive branches in addressing pressing socio-economic and human rights issues. During the 1980s and 1990s, courts became particularly active through Public Interest Litigation (PIL). This mechanism significantly broadened access to justice, enabling individuals and groups who might not otherwise afford it to seek legal redress for public grievances.

However, this expansion of the judiciary's role introduced a new dynamic and tension concerning judicial review and the separation of powers. While judicial activism is often praised for its role in re-establishing balance and promoting societal welfare, it has also faced criticism for potentially overstepping its bounds and encroaching upon political and other domains. At times, courts have issued directives on matters traditionally belonging to the executive or legislature, such as appointment processes, administrative policies, environmental regulations, and even educational curricula. This raises concerns about the judiciary's potential for unchecked intrusion into areas not explicitly assigned to it.

This raises an important question: does such activism strengthen democratic governance, or does it disrupt the institutional equilibrium? While judicial engagement has led to positive outcomes, like improved environmental protection and prisoner rights, criticism of judicial overreach has also grown. Therefore, it's crucial to maintain a delicate balance where the judiciary can effectively safeguard the Constitution without impinging on the autonomy of other government branches. Understanding the credibility of judicial review hinges on the judiciary's ability to operate both effectively and within its constitutionally defined limits.

Challenges to Judicial Review: Accountability and Transparency

Despite its crucial role, the mechanism of judicial review in India faces inherent challenges that can undermine its legitimacy and effectiveness. A primary concern is the lack of accountability within the judiciary. Unlike the executive or legislature, the judiciary operates with significantly fewer direct accountability mechanisms. This absence of robust checks can potentially lead to arbitrary or inconsistent application of judicial principles.

One area where this ambiguity is particularly evident is in the interpretation and enforcement of rights through Public Interest Litigations (PILs). Varying verdicts, especially in poorly framed or "ramshackle" PILs, contribute to uncertainty. While PILs have undeniably served to empower marginalized communities, the perception of bias or unpredictability arises when courts selectively intervene in some issues while overlooking others. Furthermore, the

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opaque process of judicial appointments and the occasional absence of well-reasoned judgments erode public confidence in the institution.

Another significant issue is the problem of delayed judicial processes. The vast backlog of pending cases hinders the timely enforcement of rights, and procedural inefficiencies within the judicial system itself limit the overall impact and reach of judicial review.

Therefore, there is an urgent need for institutional reforms to enhance the judiciary's accountability, transparency, and consistency, thereby strengthening the effectiveness of judicial review. Such reforms would involve initiatives like promoting clearer judicial reasoning, overhauling the appointment and promotion processes for judges, and establishing mechanisms to review judicial conduct without compromising judicial independence.

Judicial Review: A Comparison with Other Constitutional democracies:

Examining how judicial review operates in other constitutional democracies provides valuable insights into India's unique system.The concept of judicial review in the United States originated with the landmark case of *Marbury v. Madison* (1803), which established the judiciary's power to invalidate laws that contradict the Constitution. American courts are known for their strong tradition of constitutional supremacy, acting as guardians of the constitutional order while striving to balance judicial power with restraint and due process. While both India and the U.S. share the foundations of written constitutions and independent judiciaries, the more proactive and expansive role of the Indian judiciary, particularly through Public Interest Litigations (PILs), has few direct parallels in the American system.

In contrast, Germany employs a highly structured model of judicial review through its Federal Constitutional Court. This court can hear individual constitutional complaints and is formally mandated to review legislation. Judicial review in Germany is more institutionalized and tends to be less interventionist in day-to-day governance compared to India's more flexible, case-by-case approach.

India's most distinguishing characteristic is its proactive judicial culture, which has evolved out of historical necessity and public expectation. However, this comparative analysis also highlights the importance of procedural regularity and institutional discipline for India's system. Lessons from other democracies suggest that greater transparency and predictability in the judicial review process can significantly bolster public trust and strengthen democratic governance. By adopting some global best practices while preserving its unique constitutional ethos, India can further refine its judicial review framework to be both robust and appropriately restrained.

Conclusion:

This paper concludes that the judiciary in India, utilizing judicial review, serves as the vital guardian of fundamental rights. Through this unique position, especially aided by Public Interest Litigation (PIL), the judiciary has stepped in to address social justice issues and protect vulnerable communities when the legislative and executive branches have failed to act.

However, the study also identifies significant challenges. Concerns arise when judicial overreach encroaches upon the responsibilities of the legislature and executive, potentially disrupting the separation of powers. Furthermore, inconsistencies in judicial decisions and a lack of transparent and effective accountability mechanisms within the judiciary itself can jeopardize the credibility and effectiveness of judicial review.

Despite these challenges, the research emphasizes that judicial review has been a crucial check in safeguarding fundamental rights. Nevertheless, the process is in urgent need of reform. By enhancing transparency, consistency, and accountability in judicial decision-making, the judiciary's role can be strengthened. This will ensure that judicial review remains an effective mechanism for protecting rights without undermining democratic principles or the essential separation of powers.

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Original Article

An Analytical Study of Cloud Computing and Portability with Respect to Serverless Cloud: A Case Study of Nashik Region

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Abstract

The rapid evolution of cloud computing has in- troduced serverless architectures as a transformative paradigm for application deployment and management. However, porta- bility challenges remain a significant concern for organizations adopting serverless technologies. This analytical study examines cloud computing portability with specific emphasis on serverless architectures within the Nashik region of Maharashtra, India. Through empirical analysis and stakeholder surveys involving 127 organizations, we investigate the adoption patterns, porta- bility challenges, and vendor lock-in concerns associated with serverless platforms. Our findings reveal that 68% of surveyed organizations in Nashik cite portability as a major barrier to serverless adoption, while 73% express concerns about vendor dependency. We propose a comprehensive framework addressing application portability, data portability, and operational porta- bility in serverless environments. The study contributes insights into regional cloud adoption patterns and presents recommenda- tions for improving serverless portability through standardized interfaces and abstraction layers.

Keywords: *Cloud Computing, Serverless Architecture, Portability, Vendor Lock-in, Function-as-a-Service, Nashik Region*

Introduction:

Cloud computing has fundamentally transformed how orga- nizations design, deploy, and manage their information tech- nology infrastructure. The emergence of serverless computing represents the latest evolution in this transformation, promis- ing reduced operational overhead, automatic scaling, and a consumption-based pricing model that aligns costs directly with usage patterns.

Background and Motivation

Serverless computing, often implemented through Function- as-a-Service (FaaS) platforms, abstracts infrastructure manage- ment entirely from developers. Despite its benefits, organiza- tions face significant challenges related to application porta- bility across different cloud providers. This concern becomes particularly relevant for enterprises in developing regions such as Nashik, where cloud adoption is accelerating but expertise and resources may be constrained. Nashik, positioned as an emerging IT hub in Maharash- tra, hosts numerous small and medium enterprises (SMEs), educational institutions, and manufacturing units increasingly dependent on cloud technologies. Understanding the specific challenges these organizations face regarding serverless porta- bility provides valuable insights for both regional stakeholders and the broader cloud computing community.

Research Objectives

This study pursues the following objectives:

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- Analyze current cloud computing adoption patterns in the Nashik region with focus on serverless technologies
- Identify and categorize portability challenges specific to serverless architectures
- Evaluate the impact of vendor lock-in on organizational decision-making
- Propose a framework for enhanced portability in server- less deployments
- Provide recommendations for organizations considering serverless adoption

Paper Organization

The remainder of this paper is structured as follows: Section II reviews relevant literature on cloud portability and serverless computing. Section III describes our research methodology. Section IV presents analysis of the Nashik region's cloud adoption landscape. Section V discusses portability challenges and proposed solutions. Section VI presents our empirical findings. Section VII concludes with recommendations and future research directions.

Literature Review

Cloud Computing Evolution

Cloud computing has progressed through multiple service models, from Infrastructure-as-a-Service (IaaS) through Platform-as-a-Service (PaaS) to the current serverless paradigm. Each evolution has increased abstraction levels while simultaneously introducing new portability considerations.

Traditional IaaS offerings provided virtual machines with high portability potential through standardized virtualization formats. However, PaaS platforms introduced proprietary APIs and runtime environments that complicated migration between providers. Serverless computing extends this trend by deeply integrating with provider-specific services for databases, au- thentication, messaging, and event triggers.

Serverless Computing Characteristics

Serverless architectures exhibit several defining character- istics: event-driven execution, stateless function design, auto- matic scaling, and granular billing based on actual computa- tion time. Major providers including Amazon Web Services (AWS Lambda), Microsoft Azure Functions, Google Cloud Functions, and IBM Cloud Functions offer serverless plat- forms with similar core concepts but divergent implementation details.

The execution model differs substantially from traditional server-based deployments. Functions remain dormant until triggered by events such as HTTP requests, database changes, or message queue entries. This event-driven nature requires careful consideration of cold start latency, execution time limits, and state management patterns.

Portability Challenges in Cloud Computing

Portability encompasses multiple dimensions including ap- plication code, data, configurations, operational procedures, and organizational knowledge. Research has identified several portability barriers in cloud environments:

API Heterogeneity: Each cloud provider exposes unique APIs for core services, requiring substantial code modifica- tions during migration.

Data Lock-in: Proprietary data formats and storage mech- anisms complicate data extraction and transfer between plat- forms.

Service Integration: Applications typically integrate with provider-specific services for authentication, storage, messag- ing, and monitoring, creating dependency webs.

Operational Differences: Deployment procedures, mon- itoring tools, and management interfaces vary significantly across providers.

Existing Portability Solutions

Several approaches have been proposed to address cloud portability challenges. Container technologies like Docker provide application-level portability by encapsulating depen- dencies. Orchestration platforms such as Kubernetes offer abstraction layers across multiple cloud providers. However, serverless environments present unique challenges that existing containerization approaches do not fully address.

Standardization efforts including the Cloud Native Comput- ing Foundation's initiatives aim to establish common interfaces and practices. Nevertheless, widespread adoption of these standards remains limited, particularly in serverless contexts where provider differentiation often relies on proprietary ser- vice integrations.

Research Methodology

Research Design

This study employs a mixed-methods approach combining quantitative surveys and qualitative interviews to comprehensively understand serverless portability challenges in the Nashik region.

A. Data Collection

We conducted surveys with 127 organizations across various sectors in Nashik including information technology, manufac- turing, healthcare, education, and retail. Survey participants included IT managers, cloud architects, and

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technical decision- makers with direct involvement in cloud strategy and imple- mentation.
Additionally, we performed in-depth interviews with 15 cloud practitioners to gather detailed insights into porta- bility challenges, migration experiences, and organizational decision-making processes regarding serverless adoption.

B. Sample Selection

Organizations were selected using stratified random sam- pling to ensure representation across different sizes (small, medium, and large enterprises) and sectors. Inclusion criteria required organizations to either currently use cloud services or be actively evaluating cloud adoption strategies.

C. Data Analysis

Quantitative survey data was analyzed using descriptive statistics and correlation analysis to identify patterns in adop- tion rates, concerns, and preferences. Qualitative interview data underwent thematic analysis to extract common themes, challenges, and recommendations related to serverless porta- bility.

Cloud Adoption In Nashik Region

A. Regional Context

Nashik represents a significant industrial and educational center in Maharashtra with growing IT infrastructure. The region hosts numerous manufacturing units, particularly in automotive and pharmaceutical sectors, alongside emerging IT service providers and educational institutions.
Cloud adoption in the region has accelerated over the past five years, driven by digital transformation initiatives, cost optimization pressures, and increased availability of reliable internet connectivity.

B. Current Adoption Patterns

Our survey reveals that 82% of organizations in Nashik currently utilize some form of cloud services. Among these, 45% employ public cloud exclusively, 23% use hybrid cloud approaches, and 32% maintain on-premises infrastructure with cloud backup or disaster recovery capabilities.
Serverless adoption specifically remains nascent, with only 28% of cloud-using organizations having deployed server- less functions in production environments. However, 61% expressed interest in exploring serverless technologies within the next 18 months.

C. Sector-Specific Patterns

Adoption rates vary significantly across sectors:
Information Technology: 94% cloud adoption, 47% server- less usage

Healthcare: 76% cloud adoption, 15% serverless usage **Education:** 88% cloud adoption, 32% serverless usage **manufacturing:** 71% cloud adoption, 19% serverless usage **Retail:** 84% cloud adoption, 29% serverless usage
These variations reflect differences in regulatory constraints, technical expertise availability, and organizational risk toler- ance across sectors.

D. Provider Preferences

Among organizations using cloud services, AWS maintains the largest market share at 43%, followed by Microsoft Azure at 32%, Google Cloud Platform at 16%, and other providers at 9%. Multi-cloud strategies are employed by 37% of organi- zations, primarily for redundancy and avoiding vendor lock-in rather than workload optimization.

Portability Challenges In Serverless

A. Architectures

B. Application Code Portability

Function code portability represents the most visible porta- bility challenge. While major serverless platforms support common programming languages (Python, JavaScript, Java), each provider implements unique function signatures, event structures, and context objects.
For example, AWS Lambda functions receive events with AWS-specific structure, while Azure Functions use different trigger bindings. Migrating functions requires rewriting event handling logic and adapting to different runtime behaviors.
Our analysis identified three levels of code portability:
Level 1 - Pure Business Logic: Core computational logic that operates on standard data structures remains highly portable with minimal modifications.
Level 2 - Platform Integration: Code integrating with platform services (databases, storage, messaging) requires significant refactoring for migration.
Level 3 - Platform-Specific Features: Code leveraging unique platform capabilities (specialized ML services, propri- etary APIs) necessitates complete reimplementation.

B. Data Portability Challenges

Serverless applications frequently integrate with managed database services that use proprietary formats, APIs, and features. Migrating data requires consideration of:

- **Schema Compatibility:** Different managed databases sup- port varying data types and indexing capabilities.

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- **Data Transfer Costs:** Egress fees for extracting large datasets can be prohibitively expensive.
- **Consistency Guarantees:** Transaction semantics and con- sistency models differ across platforms.
- **Query Language Variations:** SQL dialects and NoSQL query interfaces vary significantly.

C. Configuration and Infrastructure as Code

Serverless deployments rely heavily on infrastructure defi- nitions specifying function configurations, event triggers, per- missions, and service integrations. Each provider employs different Infrastructure-as-Code (IaC) tools:
AWS uses CloudFormation and SAM (Serverless Applica- tion Model), Azure employs ARM templates and Bicep, while Google Cloud utilizes Deployment Manager and Terraform templates with provider-specific resources.
Converting between these formats requires understanding provider-specific concepts and manually translating resource definitions, introducing opportunities for errors and omissions.

D. Operational Portability

Operational aspects including monitoring, logging, debug- ging, and troubleshooting differ substantially across platforms. Organizations develop expertise and procedures specific to their chosen platform, creating knowledge lock-in alongside technical dependencies.
Monitoring tools, log formats, distributed tracing implemen- tations, and debugging workflows vary significantly, requiring staff retraining and process redefinition during platform tran- sitions.

E. Event Source Integration

Serverless functions respond to events from various sources including HTTP endpoints, database changes, file uploads, scheduled tasks, and message queues. Each provider imple- ments event sources differently with unique configuration requirements and event payload formats.
Replicating complex event-driven architectures across plat- forms requires recreating these integrations using different services and adapting function code to handle different event structures.

Empirical Findings

A. Portability Concern Analysis

Survey results demonstrate that portability concerns signif- icantly influence serverless adoption decisions:

- 68% identify portability as a major concern
- 73% express worry about vendor lock-in
- 54% cite difficulty in switching providers as a barrier
- 61% prefer multi-cloud strategies when feasible
- 42% have delayed serverless adoption due to lock-in concerns

B. Migration Experience

Among the 23 organizations that attempted serverless mi- grations between platforms, experiences varied considerably:
Successful Migrations: 30% completed migrations meeting time and budget expectations
Challenging Migrations: 52% exceeded initial estimates by 2-3x in effort
Abandoned Migrations: 18% abandoned migration efforts, citing excessive complexity
Common challenges included underestimated integration refactoring, unexpected data transfer costs, and steeper learn- ing curves than anticipated.

C. Cost Implications

Organizations reported that portability challenges create hidden costs:
Dual Development: 35% maintain parallel implementations for critical systems
Abstraction Overhead: Portability abstractions add 15- 25% development time
Migration Costs: Estimated migration efforts range from 40-70% of original development cost

D. Organizational Impact

Portability concerns influence organizational strategies:
Conservative Adoption: 47% limit serverless usage to non- critical workloads due to lock-in fears
Abstraction Investments: 38% invest in abstraction layers despite added complexity
Multi-Cloud Approaches: 29% distribute workloads across providers for optionality
Hybrid Strategies: 41% maintain containerized alternatives alongside serverless

Proposed Portability Framework

A. Framework Overview

We propose a three-layer framework addressing serverless portability challenges:
Abstraction Layer: Provides uniform interfaces hiding provider-specific implementations
Translation Layer: Converts between provider-specific configurations and standards

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Operational Layer: Standardizes monitoring, logging, and management interfaces

B. Abstraction Layer Design

The abstraction layer should provide consistent interfaces for common serverless operations:
Function Interface: Standard function signatures accepting normalized event objects
Service Clients: Unified APIs for databases, storage, mes- saging, and authentication
Configuration Schema: Provider-agnostic service and re- source definitions

C. Translation Layer Implementation

The translation layer converts between abstracted definitions and provider-specific implementations through:
Event Normalizers: Transform provider events into stan- dard formats
IaC Translators: Generate provider-specific templates from unified definitions
Deployment Adapters: Execute deployments across differ- ent platforms

D. Operational Standardization

Operational portability requires:
Unified Logging: Standard log formats and collection meth- ods
Common Metrics: Consistent performance and health in- dicators
Standardized Tracing: Compatible distributed tracing im- plementations
Portable Debugging: Platform-independent debugging ap- proaches

E. Implementation Recommendations

Organizations should adopt a phased approach:
Phase 1: Identify portability requirements and risk tolerance
Phase 2: Implement abstractions for high-risk components
Phase 3: Establish operational standards and procedures
Phase 4: Conduct periodic portability assessments and Exercises

Recommendations

A. For Organizations

Organizations in Nashik region should:

- Conduct thorough portability risk assessments before serverless adoption
- Invest in abstraction layers for critical applications
- Maintain documentation of provider-specific dependen- cies
- Develop multi-cloud expertise within teams
- Establish portability testing as part of development workflows
- Consider hybrid approaches combining containers and server less

B. For Cloud Providers

Cloud providers should:

- Support emerging standards for serverless APIs and event formats
- Provide migration tools and documentation
- Reduce data egress costs to facilitate experimentation
- Offer compatibility modes for common patterns
- Participate in industry standardization efforts

C. For Researchers

Future research should investigate:

- Automated migration tools leveraging AI techniques
- Performance implications of portability abstractions
- Economic models quantifying lock-in costs
- Standardization approaches for emerging serverless patterns
- Regional adoption patterns in developing markets

Limitations

This study has several limitations. The geographic focus on Nashik region may limit generalizability to other contexts. Sample sizes, while adequate for regional analysis, remain modest for certain sector-specific conclusions. Self-reported data may contain biases regarding portability concerns and capabilities.
Longitudinal studies tracking adoption patterns over ex- tended periods would provide additional insights into how portability concerns evolve with organizational cloud maturity.

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Conclusion

This analytical study examined cloud computing porta- bility challenges specific to serverless architectures within the Nashik region. Our findings demonstrate that portability concerns significantly impact serverless adoption decisions, with 68% of organizations citing it as a major barrier and 73% expressing vendor lock-in fears.

The proposed three-layer framework addresses application, data, and operational portability through abstraction, translation, and standardization mechanisms. Implementation of such frameworks requires organizational commitment to architectural discipline and willingness to accept some additional complexity in exchange for long-term flexibility.

As serverless computing continues maturing, industry-wide standardization efforts combined with organizational best practices can reduce portability barriers. For regions like Nashik with growing cloud adoption, addressing these challenges early will enable more confident serverless adoption and support digital transformation initiatives.

Future work should develop automated tools implementing the proposed framework, conduct comparative performance analyses of abstraction approaches, and track evolving adop- tion patterns as the serverless ecosystem matures.

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Original Article

Sustainable Practices in International Business after G-20 Summit in Johannesburg

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Abstract

Sustainable practices have emerged as a crucial component of modern international business, particularly in the context of global environmental challenges and socio-economic responsibilities. This research paper examines the role and significance of sustainable business practices highlighted during the G-20 Summit held in Johannesburg in November 2025. The study focuses on how international businesses are increasingly integrating sustainability into their operational strategies to balance economic growth with environmental protection and social equity. Using both primary data collected from undergraduate colleges in Mumbai and secondary data from government reports, policy documents, and expert opinions, the study analyses key discussions from the G-20 sessions related to inclusive growth, climate change, disaster risk reduction, governance reforms, and human capital development. Statistical tools such as variance and standard deviation have been applied to ensure objective analysis. The findings indicate that sustainable practices discussed at the G-20 Summit play a significant role in shaping customer perception, promoting circular economy models, and encouraging responsible resource utilisation. The study concludes that coordinated global efforts and strategic business initiatives are essential for achieving long-term sustainability and ensuring equitable socio-economic development for future generations.

Keywords: *Sustainable Practices; International Business; G-20 Summit 2025; Climate Change; Circular Economy; Inclusive Growth; Environmental Responsibility; Global Governance; Sustainable Development Goals (SDGs)*

Introduction:

The sustainable practices are the important social and economic initiatives taken by the modern businesses to ensure a proper and systematic basis of better business improvement, It is through the focus of the sustainable practices, there is help of the business in managing the growth and thus better business capacity.

With help of sustainable and more planned business strategies there is also support in improving the participation of the global business for helping in increasing the socio- economic status of the society.

Statement of Problem

In the modern business world it's not just the economic gains but also the quality of environment which is determining how properly the business can help in overcoming the gap in using the resources.

There is further change in business scenario to focus on the circular economy, which not just requires reuse and recycling the inputs but further ensures minimum wastage of resources thus leading to equitable use of resources.

It is necessary for the business in today's environment to focus on determing the right and more rationale allocation of the resources. This not just helps in ensuring that there is more awareness in utilising the resources along with the responsibility to use the resources for the overall better results for the economy and the society.

For the overall business to sustain with increasing expectation of relaunching the business products and maintaining ecofriendly innovations so that the overall business changes can emerge as suitable as per needs of the future generations.

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Review of Literature

- **Adam.Mehta (2022)** in their article titled'The Politics of Climate Change and Uncertainty in India, Routledge, Chapter-8, has emphasised on various measures to increase climate management and further increasing green practices for sustainable environment for future.
- **Bose, Mehta et.al(2025)** in their article titled'The Potential of participatory visual methods to explore transformation as praxis,Global Social Changes Forthcoming. In this article the author has emphasised how there can be use of basic ecofriendly practices there can be better social transformation of the society.
- **Catley, Scoones(2013**) in their article 'Pastoralism and Development in Africa: Dynamic Change at the Margins,Routledge**.**In this articlethere is focus on making right changes in business which can lead to favourable environmental changes.
- **4Chauhan ,Patnaik(2016)** in their article,'Coastal ecology and fishing community in Mumbai.In this article there is focus on taking right steps which helps the shipping community to proactively preserve the environment in shipping areas in Mumbai .
- **Grove and Sangwan(1998)** Nature and the Orient -The Environment of History of South and South East Asia-In this article there is emphasis on making right business environment which can develop focus on better environment quality in future.
- **Hajer,M.A (1995**)-The Politics of Environmental Discourse-Ecological Modernisation and the Policy Process-The article is emphasising on taking suitable steps and policy changes which can lead to better focus on achieving business objectives.

Research Gap-

The Research has analysed the following research gaps-

- More Regular activities for sustainable growth-There is immediate need for more focused activities for managing the customer expectations of doing business with environmental responsibility.
- The changes which are happening in today's modern business are basically challenges of managing harmony between business and environment and further increasing a good coordination of business activities by ensuring sustainable business practices.

Objectives of the study

Following are the objectives of the study-

- To analyse the various sustainable practices discussed in G-20 Summit in November 2025.
- To identify simple and convenient sustainable practices which can be implemented even at individual level in economy.
- To analyse how the deliberate discussions on improving sustainable activities can support in improving global climate.
- To analyse the sustainable practices which are contemporary and crucial for improving the management of business change.
- To identify those strategic business initiatives which can help modern businesses in ensuring regular focus on sustainable changes in society.

Hypotheses of the Study

Hypothesis 1

Null Hypothesis (H_0) :'There are no significant sustainable practices discussed in G-20 Summit in November 2025'

Alternative Hypothesis (H_1): 'There are significant sustainable practices discussed in G-20 Summit in November 2025 '

Hypothesis 2

Null Hypothesis-(H0): 'There is no significant correlation between customer perception and Sustainable business practices'

Alternative Hypothesis (H_1): 'There is significant correlation between customer perceptions And sustainable business practices'

Methodology of the Study

The Researcher has referred to primary data from 100 Undergraduate colleges in Mumbai which have syllabus on G-20 Summit .The Researcher is also collecting secondary data from various news paper articles ,Government reports on G-20 Summit.In addition researcher has also referred to speeches, citations and debates by various global leaders in the G-20 November 2025 summit.

For Purpose of Primary data researcher is using random data sampling to reduce personal bias. There is more focus on collecting the data from expert opinions of different proment leaders from different countries,who expressed

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their views in the G-20 Summit.The degrees of freedom observed by the researcher is 5, and the level of confidence intervals is 95.
In addition, theresearcher has used the Standard Deviation, Variance as statistical tools for making the calculations in this research.

Result and Discussion

Sessions of G-20 Nov.2025	Topics of Discussion	Number of points emphasised
Session One	Inclusive and Sustainable Economic Growth, Building No one Behind,Building Economies, The Role of Trade,financing for Development and debt burden	**05**
Session Two	A Resilient World-Disaster Risk Reduction, Climate Change, Just Energy Transitions, Food systems	**04**
Session Three	Sustainable Future for all, Global Governance Reform, AI Governance,Anti-corruption,women's empowerment, human capital development	**06**

Source: G-20 Session schedule

Data referred to for research:

- The data table provides details about the three sessions in G-20 summit in November 2025..
- The table further specifies number of points emphasised in every session of G-20 summit.

About the Data Table -The above Data Table gives idea about different sessions organised for G-20 summit in November 2025.It further highlights the different points of discussion in the sessions which closely correlate with the various Social Development Goals of business.

Data Analysis of Research

- In Session one there was more focus on topics like sustainable and inclusive growth without increasing any unexpected use of resources. -There is focus on not leaving or excluding any person in the sustainable practices so as to ensure that these good practices are improving the economic and social development of even the lowest economic strata in economy.
- In Session Two there is focus on disaster risk reduction-The session provides clear basis of managing the climate change,wherein there is focus on managing the risks and changes in the environment by developing the right business performance.
- In Session Three -The session was more focused on Global Governance Reform, Women's Empowerment and Human Capital development, which are useful in not just helping to reduce inequalities in society but further supporting for creating better future opportunities of economic growth and development.

Limitations of Research

Following are Limitations of Research-

- Researcher has not covered all the points and discussions of G-20 summit November 2025,hence the points and topics discussed by researcher may not be accurate and based on actual discussions in the summit.
- The researcher has provided only a brief and limited inference of the discussions and hence many of the important and crucial points may be excluded from the research paper.
- The researcher has also relied on very limited secondary data and primary data and thus does not assure that the conclusions of the research paper can be relied for future research.

Suggestions and Recommendations-

Suggestions of Research are as follows-

- Researcher suggests that for making comprehensive research on G-20 a more systematic and elaborate research is required.
- Researcher further suggests that there is need to make more scientific and factual data analysis so as to provide an overview of elaborate discussions and statements in g-20 November 2025 Summit.
- Researcher suggests that there is need to further refer more government publications and official statements of the political leaders so as to make more systematic analysis of changes in the research.

Conclusion-

G-20 Summit 2025 with focus on sustainability, making more unified efforts for managing the climate change and further crating global cooperation for socio-economic issues.There is indeed an important focus of the more than

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120 countries of the world who aim to create a better future through the golden principles of solidarity, equality and sustainability. There was certainly absence of global representation by China,Russia etc which needs to be addressed in future such global initiatives.

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Original Article

Effectiveness of Concept Mapping on Academic Achievement in Chemistry among Secondary School Students in Relation to Critical and Logical Thinking Ability

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Abstract

The aim of the study was to find out "Effectiveness of Concept Mapping on Academic Achievement in Chemistry among Secondary School Students in Relation to Critical and Logical Thinking Ability". Accordingly, 100 students (50 Boys and 50 Girls) were taken as a sample from State Board English medium School of Vijayapura District. The research conducted on English medium 9th standard secondary school students of Vijayapura District. Concept mapping teaching strategy as Independent variable and Academic achievement, Critical thinking ability and logical thinking ability as dependent variables are used for the current study. Researcher itself prepared Academic achievement tool for chemistry which was used for the study. For Variable Critical and Logical thinking ability Standard tools were used. Quasi Experimental Research design was adopted for the present study and Samples are randomly selected. It was found that the above variable shows significant effect on Academic Achievement in chemistry of secondary school students with respect to critical and logical thinking ability.

Keywords*: Concept Mapping; Academic Achievement; Chemistry Education; Secondary School Students; Critical Thinking Ability; Logical Thinking Ability*

Introduction:

Developing strong conceptual understanding in Chemistry is a persistent challenge for many secondary school students. Traditional lecture-based instruction often emphasizes rote memorization, making it difficult for learners to visualize relationships between concepts. As a result, students commonly experience difficulties in applying knowledge, reasoning scientifically, and achieving proficiency in higher-order thinking skills such as critical and logical thinking. Concept mapping, introduced by Novak and Gowin (1984), has emerged as an instructional strategy that enables students to *organize*, *connect*, and *visualize* relationships among concepts. It functions as a cognitive tool that externalizes the learner's thought processes, promoting deeper understanding and long-term retention. Research indicates that concept mapping improves academic achievement, enhances meaningful learning, and strengthens thinking abilities. However, limited studies have focused on its effectiveness specifically in Chemistry, a subject rich in abstract concepts, and whether its benefits vary with learners' critical thinking and logical thinking abilities. The present investigation evaluates the effectiveness of concept mapping on students' academic achievement in Chemistry and examines how learning outcomes differ in relation to critical and logical thinking abilities among secondary school students.

Objectives of the Study:

Following are the Objectives of the present study

To study the difference between pretest and posttest scores of academic achievement in Chemistry of 9th standard students of secondary schools in control group.

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- To study the difference between pretest and posttest scores of academic achievement in Chemistry of 9th standard students of secondary schools in experiment group.
- To study the difference between pretest and posttest scores of Critical thinking ability of 9th standard students of secondary schools in control group.
- To study the difference between pretest and posttest scores of Critical thinking ability of 9th standard students of secondary schools in experiment group.
- To study the difference between pretest and posttest scores of Logical thinking ability of 9th standard students of secondary schools in control group.
- To study the difference between pretest and posttest scores of Logical thinking ability of 9th standard students of secondary schools in experiment group.

Hypotheses of the Study:

Keeping the objectives in mind the following Null hypothesis were formulated for testing.

1. **Null Hypothesis (H_0):** No significant difference between pretest and posttest scores of academic achievement in Chemistry of 9th standard students of secondary schools in control group.
2. **Null Hypothesis (H_0):** No significant difference between pretest and posttest scores of academic achievement in Chemistry of 9th standard students of secondary schools in experiment group.
3. **Null Hypothesis (H_0):** No significant difference between pretest and posttest scores of Critical thinking ability of 9th standard students of secondary schools in control group.
4. **Null Hypothesis (H_0):** No significant difference between pretest and posttest scores of Critical thinking ability of 9th standard students of secondary schools in experiment group.
5. **Null Hypothesis (H_0):** No significant difference between pretest and posttest scores of Logical thinking ability of 9th standard students of secondary schools in control group.

6. Null Hypothesis (H_0): No significant difference between pretest and posttest scores of Logical thinking ability of 9th standard students of secondary schools in experiment group.

Methodology of the Study:

For the current study researcher applied Quasi-experimental, Pre-test–Post-test Control Group design. Population of the study was English medium Schools of Vijayapura District. 100 students are randomly selected from the State board English medium 9th standard secondary school.

For the Study Researcher made two groups.

1. Control group: - Lessons taught through Traditional method
2. Experimental group: - Lessons taught though Concept mapping strategy method.

The researcher selected chemistry lesson of 9th standard NCERT book and taught for the duration of 6 weeks (Single period of 40 min.).

Groups	Boys	Girls	Total
Control Group	25	25	50
Experimental Group	25	25	50
Total	50	50	100

Variables used for the Present Study:

The investigator considered two major types of variables, viz., independent and dependent

Type of Variable	Variable considered
Independent Variable	➢ Concept Mapping
Dependent Variable	Academic achievement in Chemistry ➢ Critical thinking Abilities ➢ logical thinking Abilities
Moderate Variables	➢ Gender (Boys/Girls)

Tools Used for the study are:

- Academic Achievement test for Chemistry developed by the Researcher
- Concept mapping for four chemistry 9th standard chapters are prepared by the researcher itself (Matters in our surroundings, Is matter around is Pure, Atoms and molecules, Structure of the atom)
- A profile was prepared by the researcher for collection of information about past achievement of the students for classification of student according to their abilities
- Critical Thinking Scale developed by Prof. Hemanth Lata Sharma and Priyamvada.
- Logical thinking Test was developed by Dr. Sujeet Kumar and Dr. Shikha Tiwari.

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Statistical techniques Used for the Study:
The researcher used Mean, SD t-test for statistical analysis of the data.

Data Analysis and Interpretation

1. Null Hypothesis (H_0): No significant difference between pretest and posttest scores of academic achievement in Chemistry of 9th standard students of secondary schools in control group. To test the above null hypothesis (H_0), the dependent or paired t-test was applied and the results are presented in the following table.

Table No 1: Results of dependent or paired t-test between pretest and posttest scores of academic achievement in Chemistry of 9th standard students of secondary schools in control group.

Time points	Mean	SD	Mean gain	SD gain	|t|-value	p-value	Signi.
Pretest	71.24	10.15					
Posttest	71.28	10.14	0.04	0.60	0.4677	0.6421	NS

The results presented in the table show that the mean and standard deviation (SD) of the pretest scores of academic achievement in Chemistry for 9th standard secondary school students in the control group are 71.24 ± 10.15, while the mean and SD of the posttest scores are 71.28 ± 10.14. The mean gain from pretest to posttest is 0.04 ± 0.60. This difference was found to be statistically not significant (t = 0.4677, p = 0.6421) at the 5% level of significance. The calculated t-value (0.4677) is lower than the critical t-value (2.0320) at 34 degrees of freedom. Therefore, the null hypothesis (H0) is accepted (not rejected), and the alternative hypothesis (H1) is rejected. This indicates that the pretest and posttest academic achievement scores in Chemistry for the control group are similar. In other words, no significant change or gain in academic achievement in Chemistry was observed among 9th standard secondary school students in the control group after the posttest.

2. Null Hypothesis (H_0): No significant difference between pretest and posttest scores of academic achievement in Chemistry of 9th standard students of secondary schools in experiment group.

To test the above null hypothesis (H_0), the dependent or paired t-test was applied and the results are presented in the following table.

Table No.2: Results of dependent or paired t-test between pretest and posttest scores of academic achievement in Chemistry of 9th standard students of secondary schools in experiment group

Time points	Mean	SD	Mean gain	SD gain	|t|-value	p-value	Signi.
Pretest	74.92	10.31					
Posttest	83.76	11.28	8.84	6.16	10.1546	0.0001	S

The results presented in the table show that the mean and standard deviation (SD) of the pretest scores of academic achievement in Chemistry for 9th standard secondary school students in the experimental group are 74.92 ± 10.31, while the mean and SD of the posttest scores are 83.76 ± 11.28. The mean gain from pretest to posttest is 8.84 ± 6.16. This difference was found to be statistically significant (t = 10.1546, p = 0.0001) at the 5% level of significance. The calculated t-value (10.1546) is greater than the critical t-value (2.0320) at 34 degrees of freedom. Therefore, the null hypothesis (H0) is rejected and the alternative hypothesis (H1) is accepted. This indicates that the posttest academic achievement scores in Chemistry for the experimental group are significantly higher than the pretest scores. In other words, a significant improvement or gain in academic achievement in Chemistry was observed among 9th standard secondary school students in the experimental group after the posttest.

3. Null Hypothesis (H_0): No significant difference between pretest and posttest scores of Critical thinking ability of 9th standard students of secondary schools in control group.

To test the above null hypothesis (H_0), the dependent or paired t-test was applied and the results are presented in the following table.

Table No 3: Results of dependent or paired t-test between pretest and posttest scores of Critical thinking ability of 9th standard students of secondary schools in control group

Time points	Mean	SD	Mean gain	SD gain	|t|-value	p-value	Signi.
Pretest	344.06	23.86					
Posttest	345.64	24.33	1.58	7.52	1.4864	0.1436	NS

The results presented in the table show that the mean and standard deviation (SD) of the pretest scores of Critical thinking ability for 9th standard secondary school students in the control group are 344.06± 23.86, while the mean and SD of the posttest scores are 345.64± 24.33. The mean gain from pretest to posttest is 1.58± 7.52. This difference was found to be statistically not significant (t = 1.4864, p = 0.1436) at the 5% level of significance. The calculated t-value (1.4864) is lower than the critical t-value (2.0320) at 34 degrees of freedom. Therefore, the null hypothesis (H0) is accepted (not rejected), and the alternative hypothesis (H1) is rejected. This indicates that the pretest and posttest academic achievement scores in Chemistry for the control group are similar. In other words, no significant change or gain in Critical thinking ability was observed among 9th standard secondary school students in the control group after the posttest.

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4. Null Hypothesis (H_0): No significant difference between pretest and posttest scores of Critical thinking ability of 9th standard students of secondary schools in experiment group.

To test the above null hypothesis (H_0), the dependent or paired t-test was applied and the results are presented in the following table.

Table No 4: Results of dependent or paired t-test between pretest and posttest scores of Critical thinking ability of 9th standard students of secondary schools in experiment group.

Time points	Mean	SD	Mean gain	SD gain	|t|-value	p-value	Signi.
Pretest	351.04	22.30					
Posttest	360.06	22.23	9.02	9.55	6.6771	0.0001	S

The results presented in the table show that the mean and standard deviation (SD) of the pretest scores of Critical thinking ability for 9th standard secondary school students in the experimental group are 351.04± 22.30, while the mean and SD of the posttest scores are 360.06± 22.23. The mean gain from pretest to posttest is 9.02±9.55. This difference was found to be statistically significant (t = 6.6771, p = 0.0001) at the 5% level of significance. The calculated t-value (6.6771) is greater than the critical t-value (2.0320) at 34 degrees of freedom. Therefore, the null hypothesis (H0) is rejected and the alternative hypothesis (H1) is accepted. This indicates that the posttest academic achievement scores in Chemistry for the experimental group are significantly higher than the pretest scores. In other words, a significant improvement or gain in Critical thinking ability was observed among 9th standard secondary school students in the experimental group after the posttest.

5. Null Hypothesis (H_0): No significant difference between pretest and posttest scores of Logical thinking ability of 9th standard students of secondary schools in control group.

To test the above null hypothesis (H_0), the dependent or paired t-test was applied and the results are presented in the following table.

Table No 5: Results of dependent or paired t-test between pretest and posttest scores of Logical thinking ability of 9th standard students of secondary schools in control group.

Time points	Mean	SD	Mean gain	SD gain	|t|-value	p-value	Signi.
Pretest	24.80	11.23					
Posttest	24.90	11.12	0.10	0.42	1.6977	0.0959	NS

The results presented in the table show that the mean and standard deviation (SD) of the pretest scores of Logical thinking ability for 9th standard secondary school students in the control group are 24.80± 11.23, while the mean and SD of the posttest scores are 24.90± 11.12. The mean gain from pretest to posttest is 0.10± 0.42. This difference was found to be statistically not significant (t = 1.6977, p = 0.0959) at the 5% level of significance. The calculated t-value (1.6977) is lower than the critical t-value (2.0320) at 34 degrees of freedom. Therefore, the null hypothesis (H0) is accepted (not rejected), and the alternative hypothesis (H1) is rejected. This indicates that the pretest and posttest academic achievement scores in Chemistry for the control group are similar. In other words, no significant change or gain in Logical thinking ability was observed among 9th standard secondary school students in the control group after the posttest.

6. Null Hypothesis (H_0): No significant difference between pretest and posttest scores of Logical thinking ability of 9th standard students of secondary schools in experiment group.

To test the above null hypothesis (H_0), the dependent or paired t-test was applied and the results are presented in the following table.

Table No 6: Results of dependent or paired t-test between pretest and posttest scores of Logical thinking ability of 9th standard students of secondary schools in experiment group

Time points	Mean	SD	Mean gain	SD gain	|t|-value	p-value	Signi.
Pretest	24.30	8.24					
Posttest	34.58	5.84	10.28	4.79	15.1767	0.0001	S

The results presented in the table show that the mean and standard deviation (SD) of the pretest scores of Logical thinking ability for 9th standard secondary school students in the experimental group are 24.30± 8.24, while the mean and SD of the posttest scores are 34.58± 5.84. The mean gain from pretest to posttest is 10.28±4.79. This difference was found to be statistically significant (t = 15.1767, p = 0.0001) at the 5% level of significance. The calculated t-value (15.1767) is greater than the critical t-value (2.0320) at 34 degrees of freedom. Therefore, the null hypothesis (H0) is rejected and the alternative hypothesis (H1) is accepted. This indicates that the posttest academic achievement scores in Chemistry for the experimental group are significantly higher than the pretest scores. In other words, a significant improvement or gain in Logical thinking ability was observed among 9th standard secondary school students in the experimental group after the posttest.

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Major Findings Of The Study:

- The result showed that there is no significant change or gain in academic achievement in Chemistry was observed among 9th standard secondary school students in the control group after the posttest.
- The result showed that there is significant improvement or gain in academic achievement in Chemistry was observed among 9th standard secondary school students in the experimental group after the posttest.
- The result showed that there is no significant change or gain in Critical thinking ability was observed among 9th standard secondary school students in the control group after the posttest.
- The result depicts that there is a significant improvement or gain in Critical thinking ability was observed among 9th standard secondary school students in the experimental group after the posttest.
- The result showed that there is no significant change or gain in Logical thinking ability was observed among 9th standard secondary school students in the control group after the posttest.
- The result concludes that there is a significant improvement or gain in Logical thinking ability was observed among 9th standard secondary school students in the experimental group after the posttest.

Conclusion:

The study clearly demonstrates that concept mapping is an effective pedagogical tool for improving academic achievement in Chemistry among secondary school students. It supports meaningful learning, strengthens students' reasoning processes, and fosters both critical and logical thinking abilities. Given its proven benefits, concept mapping should be integrated into regular classroom instruction, especially in subjects like Chemistry where conceptual connections play a crucial role. Teachers should be trained to use concept maps not only as teaching tools but also as assessment instruments.

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Original Article

Cybersecurity and data privacy in legal research and Legal and Ethical Considerations for LIS Professionals by covering Copyright and intellectual property rights in law libraries

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Abstract

This research examines the critical intersection of information science, law, and technology within legal information environments. It analyzes the dual imperatives facing Law Library and Information Science (LIS) professionals: ensuring robust cybersecurity and data privacy in digital legal research platforms, and navigating the complex legal and ethical landscape of copyright and intellectual property rights (IPR) in law libraries. The study investigates the unique vulnerabilities of legal datasets, the ethical obligations of LIS professionals in handling sensitive information, and the balancing act between facilitating access to legal knowledge and complying with stringent IPR frameworks. It concludes with a framework for integrating cybersecurity protocols and ethical copyright practices into the core competencies of modern legal LIS professionals.

Keywords: *Cybersecurity, Data Privacy, Legal Research, Law Libraries, LIS Professionals, Copyright, Intellectual Property Rights (IPR), Legal Ethics, Information Ethics, Digital Preservation, Access to Legal Information, Confidentiality, Fair Use, Licensed Resources*

Introduction:

The digitization of legal resources—from case law and legislation to scholarly journals and client databases—has transformed legal research. While this shift increases accessibility, it introduces significant risks related to cybersecurity breaches and data privacy violations. Simultaneously, LIS professionals in law libraries operate at the nexus of copyright law, tasked with providing access to protected materials while adhering to legal exceptions like fair use. This paper explores these twin challenges, arguing that contemporary LIS professionals in legal settings must be adept in both technical data protection and nuanced legal compliance to uphold the integrity of the legal information ecosystem.

Definitions

- **Cybersecurity in Legal Research:** Protective measures for digital legal information systems against unauthorized access, data theft, or manipulation of sensitive legal data.
- **Data Privacy in this Context:** Ethical and legal handling of confidential user data (e.g., researcher queries, access logs) and sensitive legal information within library systems.
- **LIS Professionals:** Librarians, information specialists, and knowledge managers working in law libraries or legal information centers.
- **Copyright:** A legal right granting the creator of original work exclusive control over its use and distribution.
- **Intellectual Property Rights (IPR) in Law Libraries:** Encompasses copyright, database rights, and licensing agreements governing the use of legal texts, databases (e.g., Westlaw, LexisNexis), and scholarly works.

Need for the Study

- The need arises from: (1) Increasing cyber-attacks targeting valuable legal data;

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(2) Stringent data protection regulations (e.g., GDPR, country-specific laws) affecting library operations; (3) The constant tension between open access to law and restrictive licensing of legal databases; (4) A gap in professional training where LIS education often separates IT security from deep copyright law analysis.

Aims

To develop a holistic understanding of the converging responsibilities of LIS professionals in safeguarding digital legal information and ethically managing copyrighted legal resources.

Objectives

- To identify key cybersecurity threats and data privacy concerns specific to digital legal research platforms.
- To analyze the legal and ethical dilemmas LIS professionals face regarding copyright enforcement and fair use in law libraries.
- To examine existing policies and best practices in law libraries addressing these issues.
- To propose guidelines for integrating cybersecurity awareness and ethical copyright management into LIS professional practice.

Hypothesis

LIS professionals who are proactively trained in both foundational cybersecurity principles and the specific nuances of copyright law for legal materials will be more effective in mitigating risk, ensuring compliance, and promoting ethical access to legal information than those without such integrated training.

Literature Search

- **Cybersecurity/Privacy:** Literature on library data breaches, privacy policies, encryption for library systems, and ethical guidelines from ALA (American Library Association) and IALL (International Association of Law Libraries).
- **Copyright/IPR:** Scholarly work on copyright exceptions for libraries (e.g., Section 108 of U.S. Copyright Act), fair use doctrine in legal scholarship, licensing agreements for legal databases, and the open law movement.
- **LIS Professional Ethics:** Codes of ethics from ALA, SLA (Special Libraries Association), and IFLA (International Federation of Library Associations), focusing on privacy, intellectual freedom, and intellectual property.

Research Methodology

- **Type:** Mixed-methods (Qualitative and Quantitative).
- **Approach:** Descriptive and analytical.

Methods:

- **Survey Questionnaire:** Distributed to LIS professionals in academic, private, and government law libraries to assess current practices and perceived challenges.
- **Structured Interviews:** With senior law librarians, cybersecurity experts, and copyright officers.
- **Content Analysis:** Of library privacy policies, website security protocols, and copyright guides from top law libraries.
- **Case Study Analysis:** Of known security incidents in libraries and copyright infringement cases related to legal materials.

Strong Points of the Research

- Addresses a timely and underexplored intersection of technology, law, and information science.
- Provides practical insights for LIS curriculum development and professional training.
- Offers a balanced view, considering both proprietary database constraints and the ethos of open access to law.

Weak Points / Limitations

- Rapidly changing technology and cyber threats may outpace research conclusions.
- Copyright law varies significantly by jurisdiction, limiting universal recommendations.
- Possible reluctance from libraries to share details of security breaches or internal policies.

Current Trends

- Rise of **zero-trust security models** in institutional networks.
- Growth of **Open Access Legal Repositories** (e.g., arXiv for law) challenging traditional publishing.
- Increased use of **AI-powered legal research tools**, raising new copyright and data privacy questions.
- **Text and Data Mining (TDM)** for legal research, creating new fair use debates.

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History

Traces the evolution from physical, closed-access law libraries with minimal digital risk, to the CD-ROM era, to today's cloud-based, licensed databases. Parallel history of copyright law's expansion and the development of library-specific exemptions.

Discussion

This section would synthesize findings, debating questions such as: How does the duty of confidentiality for lawyers extend to the law library? Can a license agreement override statutory copyright exceptions for libraries? Who is liable for a data breach in a shared digital library platform? The discussion balances ethical principles (intellectual freedom, right to privacy) against practical and legal constraints.

Results (Expected)

- Identification of common vulnerabilities in legal research platforms (e.g., insecure user authentication, unencrypted data transfers).
- Documentation of widespread confusion among LIS professionals regarding the application of fair use to legal materials.
- A positive correlation between formal training and the implementation of robust security/privacy/copyright policies.

Conclusion

The modern law library is a digital fortress and a public forum. Its guardians, LIS professionals, must now possess a dual expertise: as **cybersecurity sentinels** protecting sensitive data and as **ethical copyright navigators** facilitating lawful access. This dual role is not ancillary but central to preserving trust, ensuring compliance, and fulfilling the mission of providing equitable access to justice and legal knowledge.

Suggestions and Recommendations

- **For LIS Education:** Integrate mandatory modules on cybersecurity basics and advanced copyright law for legal information.
- **For Libraries:** Develop clear, publicly available privacy policies and copyright guidelines. Conduct regular security audits.
- **For Professional Associations (IALL, AALL):** Create and disseminate best practice toolkits and offer continuing education on these topics.
- **For Database Vendors:** Promote transparent licensing and develop secure, privacy-preserving authentication methods.

Future Scope

- Investigating the implications of blockchain for copyright management and secure legal transactions in libraries.
- Studying the privacy and copyright impacts of Generative AI tools trained on legal corpora.
- Developing international standards for cybersecurity and copyright practice in law libraries across different legal jurisdictions.

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Original Article

Impact of National Education Policy (NEP) 2020 on Higher Education Institutions in Mumbai: A Comparative Analysis

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Abstract

In the National Education Policy (NEP) 2020, there are significant reforms that have been introduced that aim to restructure Indian higher education through flexibility, multidisciplinary learning, digital integration, and institutional autonomy that are intended to restructure Indian higher education. The purpose of this article is to examine the impact of NEP 2020 on higher education institutions (HEIs) in Mumbai, with a focus on two types of HEIs that are in conflict with NEP 2020: autonomous colleges and affiliated colleges. This study is to evaluate institutional readiness, curriculum redesign, pedagogical changes, faculty development, implementation challenges, and student outcomes as they pertain to the program. Based on the findings of the study, despite the fact that the implementation of NEP has begun across Mumbai, the pace of implementation varies widely depending on resources, administrative capacity, and institutional autonomy across the city. The research paper concludes with a set of recommendations for strengthening NEP 2020 implementation within Mumbai's diverse higher education system as a means of strengthening the programme.

Keywords: *National Education Policy (NEP), Higher Education Institutions (HEIs), Academic Bank of Credits (ABC), Autonomous Colleges, Affiliated Colleges, Multiple Entry and Exit System (MEES), Curriculum Reform, Multidisciplinary Education.*

Introduction:

The National Education Policy (NEP) 2020 marks a significant shift in India's educational vision, aiming to create a holistic, flexible, multidisciplinary, and technology-enabled ecosystem. For metropolitan cities like Mumbai—known for their dense academic networks, diverse student populations, and resource constraints—the policy presents both opportunities and challenges.

Mumbai hosts a variety of HEIs including autonomous colleges, affiliated colleges under the University of Mumbai, privately managed institutions, and professional colleges. This study investigates how NEP 2020 is influencing these institutions, with a comparative focus on two categories: Autonomous Colleges, which enjoy greater academic freedom. And Affiliated Colleges, which follow a centralized university structure.

Review Of Literature

- **Kumar S. (2021)**[(1)] in his research paper on "*Multidisciplinary reforms and implementation challenges under NEP 2020*"emphasized that NEP 2020 offers transformative potential by promoting flexible learning and multidisciplinary education. However, he argued that the success of NEP depends heavily on institutional readiness, particularly in metropolitan cities where enrolment pressure is high.
- **Shah A. etel (2021)**[(2)] in his article on "*Operational constraints in implementing NEP 2020 in metropolitan universities*" focused on operational challenges faced by large universities such as the University of Mumbai.

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They identified issues including staffing shortages, outdated academic structures, and the difficulty of shifting millions of students to a four-year UG curriculum within existing infrastructure.

- **Menon R. (2022)** [3] in his paper on "*Autonomous college governance and NEP adoption: A comparative study*" assessed the adaptability of autonomous colleges and concluded that these institutions are better placed to implement NEP reforms owing to their freedom in curriculum development, assessment patterns, and internal governance.
- **Rao V. (2022)** [4] in his research paper on "*Digital learning ecosystems and NEP 2020: An urban perspective"* highlighted the rapid digital transition triggered by the COVID-19 pandemic, noting that NEP 2020 aligns well with digital learning trends. However, he also pointed out disparities in digital infrastructure among urban and suburban colleges, including those in Mumbai.
- **Patil M. (2023)**[5] in his article on "*Student perceptions of NEP 2020 reforms in higher education"* studied faculty preparedness for NEP 2020 in Maharashtra and found that many teachers are unfamiliar with outcome-based education (OBE), multidisciplinary structuring, and new evaluation systems. He suggested continuous faculty development as a critical requirement.
- **Singh R. (2023)** [6] examined student perceptions regarding NEP 2020 reforms and found that students appreciated the idea of flexibility and credit transfer but lacked clarity regarding the new four-year degree model.

Collectively, the literature reveals that while NEP 2020 is promising, its success depends on adequate institutional capacity, digital infrastructure, faculty training, effective governance, and proper implementation strategies. Thus, Mumbai's higher education ecosystem serves as a crucial case for understanding the reform's practical challenges.

Objectives of the Study

- To evaluate the level of NEP 2020 implementation in higher education institutions in Mumbai.
- To compare autonomous and affiliated colleges regarding curriculum redesign, digital learning, and academic flexibility.
- To identify the challenges faced by institutions during NEP 2020 adoption.
- To provide suggestions to strengthen the implementation process in Mumbai.

Research Methodology

1. Type of Study:

The research is descriptive, analytical, and qualitative.

2. Sources of Data:

This study relies on secondary data obtained from:

- NEP 2020 official policy document
- Annual reports of institutions
- Academic Bank of Credits (ABC) guidelines
- University of Mumbai circulars
- NAAC reports and IQAC documents
- Scholarly journal articles and educational surveys

A comparative institutional analysis is carried out based on published qualitative information rather than primary survey data.

Comparative Analysis of NEP 2020 Implementation In Mumbai

This section provides an expanded comparison of autonomous and affiliated colleges.

1. Curriculum Redesign

Autonomous Colleges

- Have already restructured syllabi according to FYUGP.
- Offer interdisciplinary electives (e.g., commerce students taking psychology or environmental studies).
- Some institutions have integrated internships and research projects from the first year.

Affiliated Colleges

- Must follow the University of Mumbai's standardized curriculum.
- Implementation is delayed due to large-scale coordination required.
- Syllabi in many affiliated colleges still follow the 2019–2020 framework.

2. Academic Flexibility and Credit Transfer (ABC)

Autonomous

- Actively adopting credit transfer systems.
- Students can earn credits from SWAYAM, MOOCs, and skill-based courses.

Affiliated

- Awareness is increasing, but technical integration with ABC is limited.
- Students have fewer elective options due to rigid course structures.

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3. Teaching–Learning and Pedagogy

Autonomous

- Widespread implementation of blended learning.
- Use of digital platforms such as Moodle, Google Classroom, and proprietary LMS.
- Adoption of project-based and experiential learning methods.

Affiliated

- Many colleges still rely on traditional lecture-based teaching.
- Access to high-quality digital infrastructure is inconsistent.
- Pedagogical reforms depend on external workshops.

4. Assessment and Evaluation

Autonomous

- Continuous internal assessment system aligns with NEP.
- Greater use of open-book, case-study, and field-based evaluation.

Affiliated

- Examination patterns depend on the University of Mumbai.
- Majority still follow end-semester, theory-heavy evaluations.

5. Faculty Preparedness

Autonomous

- Regular FDPs, NEP workshops, outcome-based education training.
- Better awareness of credit system, multidisciplinary framework, and continuous evaluation.

Affiliated

- Faculty development is irregular and dependent on university-sponsored programs.
- Teachers often express confusion about FYUGP implementation steps.

6. Infrastructure and Digital Readiness

Autonomous

- Stronger laboratory facilities, digital classrooms, and learning management systems.
- Receive additional funding through autonomous status, CSR grants, and NAAC-based incentives.

Affiliated

- Many suburban colleges face space constraints and outdated IT facilities.
- High student-teacher ratios affect implementation capacity.

7. Student Awareness and Acceptance

Autonomous

- Students appreciate the flexibility and availability of electives.
- Career-oriented skills and internships improve employability.

Affiliated

- Students are often unaware of new credit systems or FYUGP structure.
- Confusion regarding the value of exit options and interdisciplinary courses.

Results and Findings:

- NEP implementation is notably faster in autonomous colleges due to academic independence.
- The University of Mumbai's centralized structure slows down uniform NEP adoption across affiliated colleges.
- Digital infrastructure gaps create unequal implementation across institutions.
- Faculty development remains a major challenge in both types of colleges.
- Students generally support NEP reforms but express confusion due to inconsistent communication.
- Institutional capacity—funding, space, and staff—is a major determinant of NEP readiness.

Suggestions and Recommendation:

- University of Mumbai should release clear, timely, and phased implementation guidelines.
- Faculty development programs must be made mandatory across colleges.
- Digital infrastructure grants should be provided by the state government for NEP compliance.
- NEP Implementation Committees must be established in every college.
- Collaboration between autonomous and affiliated colleges for resource sharing should be encouraged.
- Increase student awareness through seminars, orientation sessions, and ABC workshops.
- Encourage industry partnerships for internships, skill-based courses, and research projects.
- Strengthen internal quality assurance systems (IQAC**)** to monitor NEP progress.

Scope for Further Study:

- Broaden the scope of the research to cover technical, vocational, and professional educational institutions.

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- Conduct a comparative assessment of how NEP 2020 is being implemented in different cities or states.
- Investigate aspects such as financial support, institutional preparedness, and the use of technology in executing the policy.

Conclusion:

NEP 2020 is a visionary policy aimed at elevating India's higher education system to global standards. In Mumbai, the policy has initiated significant reforms, but the pace of implementation varies widely across institutions. Autonomous colleges are more aligned with NEP 2020 due to their administrative flexibility, whereas affiliated colleges face constraints related to university governance, faculty training, and infrastructural limitations. For Mumbai to emerge as a model of NEP success, coordinated efforts among the University of Mumbai, state government, institutional leaders, and faculty are essential. Effective implementation will require strategic planning, adequate funding, collective ownership, and sustained commitment to academic excellence.

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Original Article

The Role of Artificial Intelligence in Transforming Recruitment and Talent Management Practices

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Abstract

Artificial Intelligence (AI) has emerged as a transformative force in Human Resource Management, particularly in the areas of recruitment and talent management. Traditional HR practices were often time-consuming, subjective, and inefficient, relying heavily on manual processes and human judgment. The integration of AI technologies—such as resume screening systems, chatbots, predictive analytics, video interview analysis, and performance management tools—has significantly improved efficiency, accuracy, and strategic decision-making in HR functions. This study examines the role of Artificial Intelligence in modern recruitment and talent management practices by reviewing existing literature and analyzing secondary data from research journals, industry reports, and organizational studies. The findings indicate that AI enhances hiring speed, reduces bias, improves candidate experience, supports workforce planning, and enables personalized learning and development. However, the study also highlights key challenges including algorithmic bias, lack of transparency, data privacy concerns, and the need for upskilling HR professionals. The paper concludes that AI should be viewed as a strategic enabler rather than a replacement for human judgment, emphasizing a hybrid HR model where AI and human intelligence work collaboratively to create fair, efficient, and sustainable HR ecosystems.

Keywords: *Artificial Intelligence; Recruitment; Talent Management; Human Resource Management; Predictive Analytics; Resume Screening; HR Automation; Workforce Planning; Employee Engagement; Ethical Challenges in AI*

Introduction:

In the era of digital, Artificial Intelligence has become an essential tool for modern organizations seeking competitive advantage. The Human Resource (HR) function, previously seen as heavily administrative, is undergoing rapid transformation due to AI innovations that enable automation, data-driven insights, and advanced analytics.

Recruitment and talent management are two of the most critical HR domains impacted by AI. Traditional HR processes often suffered from challenges such as giving advertisement in newspaper, inviting applications from eligible candidates, manual screening, delays, inviting experts, physical interview, human bias, subjectivity, and inefficiency.

With AI-based tools—such as AI-driven resume screening, predictive analytics, automated interviews, and performance evaluation systems—organizations can make faster and more accurate hiring decisions.

This paper investigates how AI is reshaping recruitment and talent management, its benefits, limitations, and its future implications on the HR profession.

Review Of Literature

- Brynjolfsson & McAfee (2017) noted that AI is transforming organizational processes through automation and smart decision-making tools, significantly impacting knowledge work.

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- LinkedIn Talent Trends Report (2023) found that 67% of HR managers use AI tools for recruitment, especially for resume screening and candidate matching.
- Deloitte (2022) reported that predictive analytics in talent management helps forecast attrition, performance, and skill gaps, enabling strategic workforce planning.
- Upadhyay & Khandelwal (2018) observed that AI reduces human bias, improves efficiency, and enhances employee experience, but raises ethical concerns.
- SHRM (2021) highlighted the increasing use of AI chatbots for improving candidate experience and reducing HR workload.
- IBM (2020) emphasized that AI-enhanced HR systems help organizations identify high-potential employees and support personalized learning and development.
- The literature indicates that AI is not replacing HR but augmenting its capabilities by enabling intelligent automation and data-driven decisions.

Objectives Of The Study

- To examine the role of Artificial Intelligence in modern recruitment practices.
- To analyze how AI supports talent management and workforce planning.
- To identify the benefits and challenges of using AI in HR processes.
- To review existing literature on AI-driven HR technologies.
- To understand the future prospects of AI in recruitment and talent management.

Research Methodology

Research Design:

The study follows a descriptive research design, focusing on explaining the current role of AI in HR.

Data Collection:

Secondary Data has been used from:
Research journals (Elsevier, IEEE, Springer)
HR and business magazines (SHRM, Harvard Business Review)
Company reports and industry whitepapers (LinkedIn Talent Insights, Deloitte, McKinsey)
Online articles and government/industry publications

Data Analysis Technique:

Qualitative content analysis
Comparative analysis of current AI tools in HR
Thematic review of challenges, impact, and opportunities

Ai in Recruitment And Talent Management: Data Analysis

1. AI in Recruitment

a) Resume Screening and Candidate Shortlisting

AI-powered Applicant Tracking Systems (ATS) scan thousands of resumes instantly.
Machine learning matches candidate profiles with job descriptions.
Reduces manual screening time by up to 75% (industry estimate).

b) Chatbots for Initial Interaction

AI chatbots answer candidate queries, schedule interviews, and collect preliminary data.
Improves candidate experience and decreases response time.

c) Predictive Analytics

Helps HR predict job success, culture fit, and employee longevity.
Algorithms evaluate behavioral and cognitive parameters.

d) Video Interview Analytics

AI tools analyze facial expressions, voice tone, and communication.
Standardizes evaluations and removes interviewer subjectivity.

2. AI in Talent Management

a) Performance Analytics

AI monitors work patterns, productivity, and behavioral metrics.
Provides real-time performance insights for managers.

b) Learning and Development (L&D)

AI recommends personalized training modules based on employee needs.
Enhances skill development and upskilling programs.

c) Employee Engagement Monitoring

Sentiment analysis identifies employee morale and engagement levels.
Helps HR take timely corrective actions.

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d) Predicting Attrition and Retention.
AI identifies risk factors leading to employee turnover.
Supports proactive HR strategies to retain talent.

3. Benefits of Using AI in Recruitment and Talent Management
Improved Efficiency: Faster screening, scheduling, and decision-making.
Enhanced Accuracy: Data-driven selection reduces errors and bias.
Better Candidate Experience: Chatbots and automated tracking improve communication.
Cost Reduction: Automation cuts HR costs by reducing administrative workloads.
Data-Driven Decisions: Predictive analytics supports strategic HR planning.

4. Challenges and Concerns
Algorithmic Bias – AI may replicate biases from historical hiring data.
Lack of Transparency – Many AI algorithms function as "black boxes."
Privacy Issues – Use of employee data raises ethical and legal concerns.
Skill Gap – HR professionals require technical skills to manage AI systems.
Overdependence on Technology – Human judgment is still essential in HR decisions.

Results and Findings
- AI significantly improves hiring efficiency and reduces administrative workload.
- AI tools enhance talent management through predictive analytics and personalized L&D programs.
- Despite its benefits, AI introduces ethical concerns, especially regarding fairness and privacy.
- AI adoption is increasing rapidly, but organizations must balance automation with human empathy in HR.
- AI will act as a strategic enabler, not a replacement for HR professionals.

Conclusion
Artificial Intelligence is revolutionizing recruitment and talent management by offering automation, accuracy, and strategic insights. Organizations using AI experience faster hiring, better candidate matching, and enhanced workforce planning. However, ethical concerns regarding privacy, transparency, and bias require continuous monitoring. AI should complement human intelligence rather than replace it. The future of HR lies in a hybrid model where humans and AI work together to create efficient, fair, and innovative HR ecosystems.

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Original Article

Gen Z and NEP 2020: Bridging Expectations, Overcoming Challenges and Creating the Way Forward

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Abstract

This study explores the expectations and challenges of Generation Z and examines how NEP 2020 aligns with their needs through skill-based, flexible and multidisciplinary reforms. The findings show that Gen Z prioritises practical learning, employability and holistic development while facing significant academic and economic pressures. The study concludes that NEP 2020 has strong potential to bridge these gaps and create a supportive, future-ready education ecosystem.

Keywords: *Gen Z, NEP 2020, Multidisciplinary, Skill-Based Learning.*

Introduction:

Generation Z (1997–2012) is a dynamic, tech-savvy and socially conscious generation that values skill- based learning, flexibility, meaningful opportunities, equality and emotional well-being. At the same time, Gen Z faces significant challenges including high competition, financial insecurity, job uncertainty and rising mental stress. NEP 2020 introduces holistic, flexible, skill-oriented and multidisciplinary reforms that closely match these expectations through experiential learning, vocational education, digital literacy, mental well-being initiatives and industry–academia collaboration.

In this context, the present study explores how effectively NEP 2020 can bridge Gen Z's expectations, reduce their challenges and support their overall development. By analysing youth perceptions and educational needs, the study highlights NEP 2020's role in creating a supportive, inclusive and future- ready learning and employment ecosystem.

Objectives of the Study:

- To understand the key expectations of Gen Z regarding education, career, skill development, equality, and overall growth.
- To identify the major challenges faced by Gen Z in academic, social, emotional, and employment- related spheres.
- To examine the core features of NEP 2020 that are designed to address skill development, employability, flexibility, digital literacy, and mental well-being.
- To analyse whether NEP 2020 can effectively support Gen Z in overcoming challenges and achieving their aspirations.
- To suggest the way forward for integrating NEP 2020 reforms with Gen Z needs in order to ensure holistic development and future readiness.

Hypothesis:

H_1: Gen Z expects an education system that ensures skill-based learning, equality, flexibility and strong employability opportunities.

H_2: Gen Z faces major challenges such as academic pressure, competition, financial insecurity, unemployment concerns and mental stress.

H_3: NEP 2020's can help to reduce the key challenges experienced by Gen Z.

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Significance of the Study:

This study examines how effectively NEP 2020 responds to the expectations and challenges of Gen Z, a technology-driven and aspirational youth group. It offers valuable insights for educators and policymakers to build a flexible, skill-oriented, and inclusive education framework. The findings contribute to strengthening future-ready learning pathways and enhancing holistic youth development.

Research Methodology

The study adopts a descriptive research design using primary data collected through structured questionnaires from Gen Z learners. Secondary data from NEP documents, academic studies, and policy reports support the analysis. Statistical tools such as percentage analysis is used to evaluate perceptions and test the alignment between Gen Z needs and NEP 2020 reforms.

Limitations of the Study:

- The study is limited to 100 respondents from Dahanu taluka of Palghar district, which may not fully represent the entire Gen Z population.
- The data is collected mainly from students and young adults, leading to limited diversity in professional backgrounds.

Data Analysis and Interpretation:

Data analysis helps organise and examine the collected responses to identify trends, patterns, and meaningful insights about Gen Z.

Data interpretation explains these analysed results clearly to understand what they reveal about Gen Z's expectations, challenges, and future needs.

1) Age Group of Respondents-

Age Group	Percentage
14–17 years	10
18–21 years	74
22–25 years	16

Analysis and Interpretation: The data shows that most respondents (74 per cent) are aged 18–21, indicating a predominantly young and academically active participant group. Smaller proportions in the 14–17 and 22–25 categories suggest inputs mainly from late adolescents and early adults.

2) Current Status of Respondents-

Status	Percentage	Number of Respondents
Student	80	80
Employed	15	15
Business	5	5
Other	-	-

Analysis and Interpretation: The survey is dominated by students at eighty per cent, while employed, business, and other categories contribute very small proportions. This shows that the overall findings mainly reflect the views of the student population.

3) Most important in Career-

Career Priority	Percentage	Number of Respondents
Good Salary	33	33
Job Satisfaction	27	27
Freedom & Flexibility	18	18
Stability	16	16
Entrepreneurship	6	6

Analysis and Interpretation: The data shows that good salary and job satisfaction are the top priorities, indicating Gen Z's strong focus on financial security and meaningful work. Freedom,
stability and entrepreneurship are less preferred, highlighting practical career motivations over risk- taking.

4) Value At Work Place-

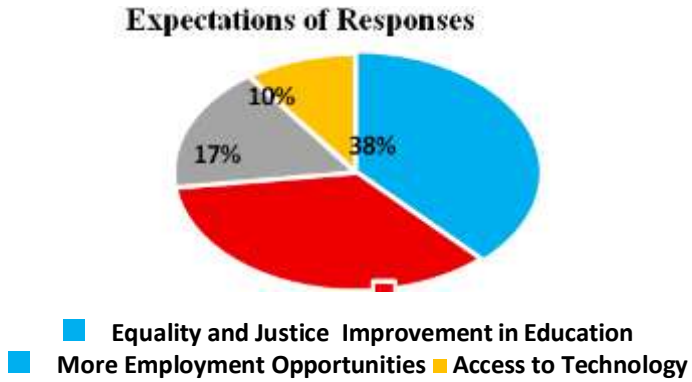
Workplace Value	Percentage of Responses
Learning Opportunities	57%
Supportive Environment	24%
Flexible Timing	15%
Promotion Opportunities	4%

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Analysis and Interpretation: Most respondents prioritise workplace learning opportunities, showing Gen Z's strong preference for growth and skill enhancement over promotions or hierarchical advancement.

5) Expectations-

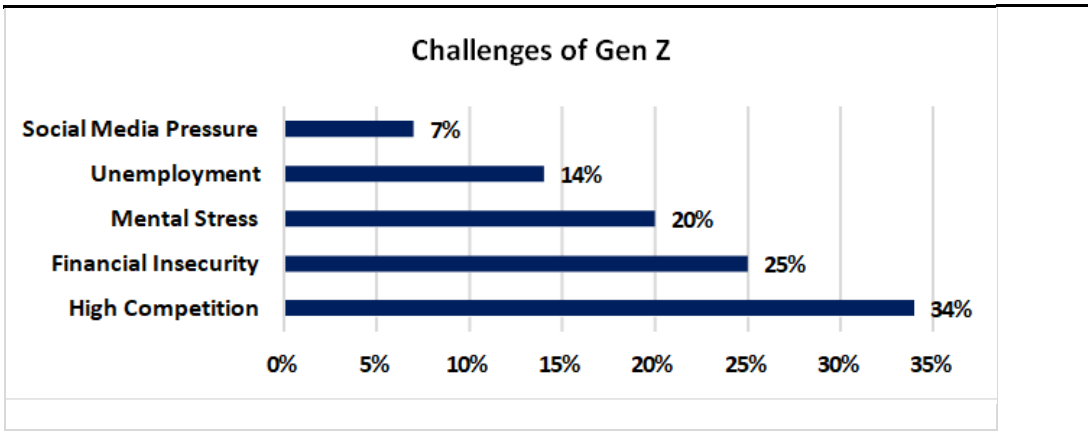
Expectation	Percentage of Responses
Equality and Justice	38%
Improvement in Education	35%
More Employment Opportunities	17%
Access to Technology	10%



Analysis and Interpretation: The data shows that Equality and Justice, along with Improvement in Education, are the top societal expectations, reflecting a strong preference for fairness and institutional reform. This indicates that Gen Z aspires toward a more just and intellectually developed society over immediate economic concerns.

6) Challenges of Gen Z-

Challenges	Percentage
High Competition	34%
Financial Insecurity	25%
Mental Stress	20%
Unemployment	14%
Social Media Pressure	7%
Total	100.00%

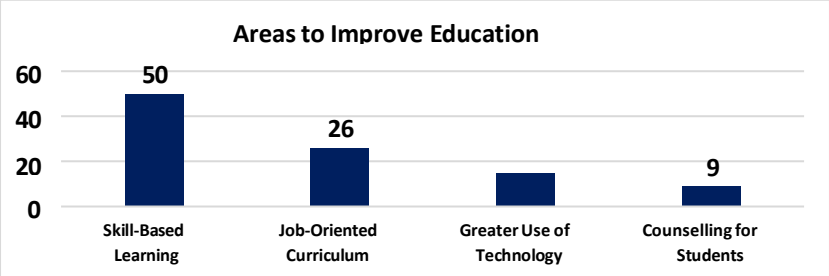


Analysis and Interpretation: The data indicates that high competition and financial insecurity are the major challenges for respondents, reflecting strong external and performance-driven pressures. Social media pressure is the least reported stressor, showing that career and economic concerns dominate Gen Z's difficulties.

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7) In Which Areas Should the Education System Improve?

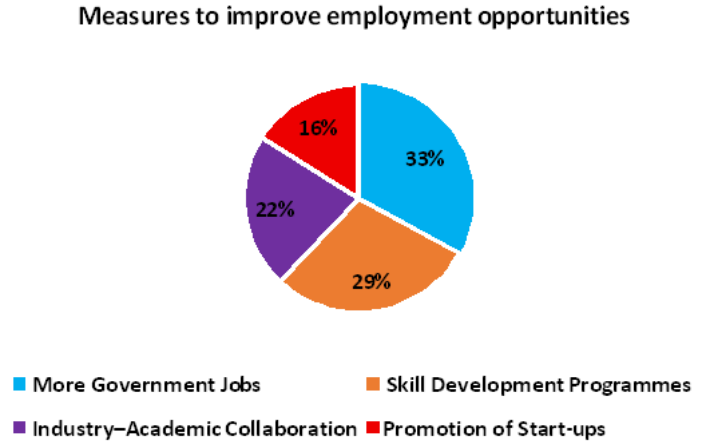
Option	Percentage	Number of Respondents
Skill-Based Learning	50	50
Job-Oriented Curriculum	26	26
Greater Use of Technology	15	15
Counselling for Students	9	9



Analysis and Interpretation: The data shows that students highly prioritise skill-based learning and job-oriented curriculum, reflecting a strong preference for practical, real-world readiness over theoretical teaching. While technology and counselling are valued, they are seen as secondary compared to the need for essential skill development.

8) Which Measures can Increase Employment Opportunities?

Option	Percentage	Number of Respondents
More Government Jobs	33	33
Skill Development Programmes	29	29
Industry–Academic Collaboration	22	22
Promotion of Start-ups	16	16

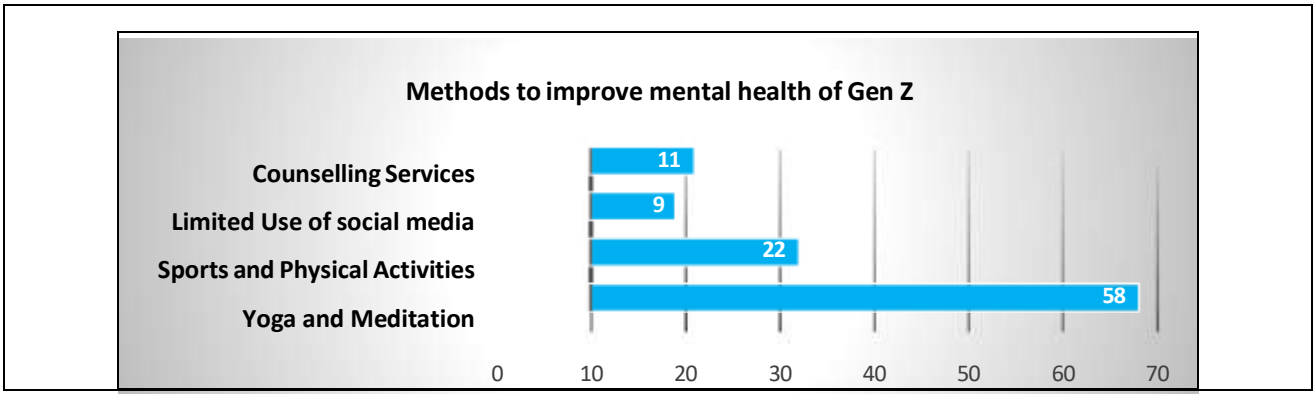


Analysis and Interpretation: The data shows that youth strongly prefer more government jobs, reflecting a reliance on stable, traditional employment. At the same time, significant support for skill development and industry–academic collaboration indicates a growing desire for practical, market- aligned training.

9) What can help improve mental health of Gen Z?

Methods to improve mental health of Gen Z	Percentage	Number of Respondents
Yoga and Meditation	58	58
Sports and Physical Activities	22	22
Limited Use of social media	9	9
Counselling Services	11	11

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Analysis and Interpretation: The data shows that students overwhelmingly prefer yoga and meditation for mental well-being, indicating a strong inclination toward traditional, self-managed stress-relief methods. Lower preference for counselling services suggests hesitation or limited awareness of formal mental health support.

10) What should society and government prioritize for Gen Z development?

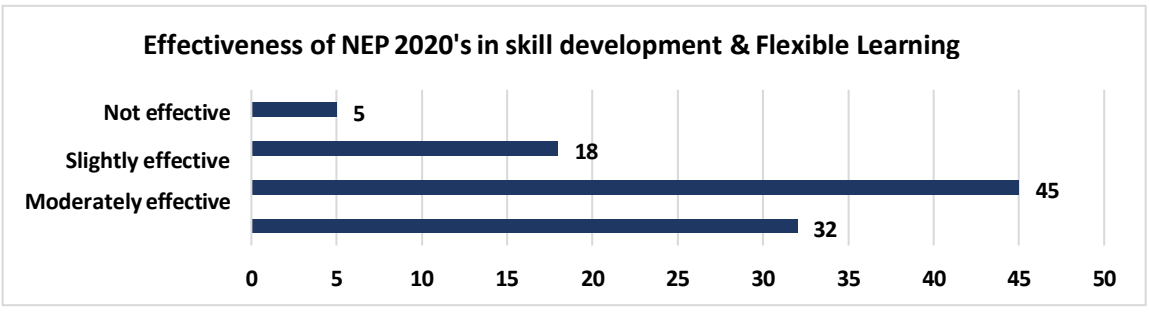
Priority Area for the development of Gen Z	Percentage	Number of Respondents
Employment Generation	36	36
Quality Education	36	36
Mental Health Facilities	18	18
Digital Literacy	10	10



Analysis and Interpretation: The data shows that employment generation and quality education are equally the top priorities for youth, reflecting their importance for future stability and growth. Mental health facilities also emerge as a key concern, indicating the need for policies that address employability, education and well-being together.

11) Effectiveness of NEP 2020's skill development & flexible learning:

Response Option	Number of Respondents
Very effective	32
Moderately effective	45
Slightly effective	18
Not effective	5



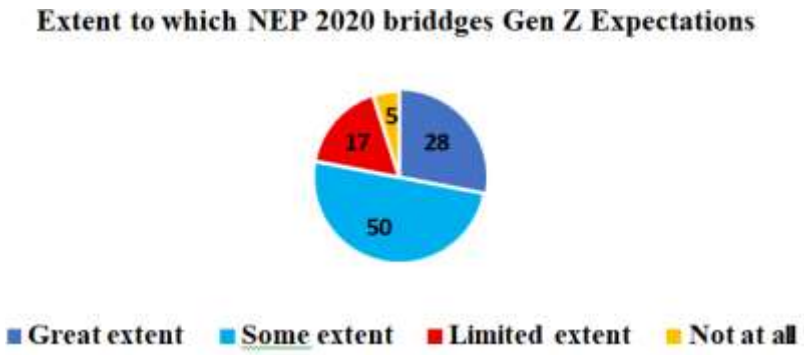
Analysis & Interpretation: The majority of respondents (45 per cent) feel that NEP 2020 is moderately effective in addressing Gen Z challenges through skill development and flexible learning. A significant group (32 per cent) believes

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it is very effective, indicating strong positive acceptance of these provisions. Only a small proportion finds it slightly effective or not effective, showing overall confidence in NEP 2020's relevance for youth needs.

12) Extent to which NEP 2020 bridges Gen Z expectations:

Response Option	Number of Respondents
Great extent	28
Some extent	50
Limited extent	17
Not at all	5



Analysis & Interpretation

Half of the respondents (50 per cent) feel NEP 2020 bridges expectations to some extent, reflecting cautious optimism. A notable 28 per cent believe it bridges expectations to a great extent, showing trust in the policy's potential for holistic development. Limited negative responses indicate that most respondents perceive NEP 2020 as a meaningful step toward aligning the education system with Gen Z needs.

Findings

- Gen Z prioritises financial security, meaningful work and continuous learning opportunities.
- Equality, justice and better education are their top societal expectations.
- High competition, financial insecurity and employment instability are their major challenges.
- Youth strongly prefer skill-based, job-oriented and practical learning over theoretical models.
- Respondents feel NEP 2020 can effectively bridge expectations through flexibility, multidisciplinary learning and skill development.

Suggestions

- Enhance practical, skill-based and job-oriented education across institutions.
- Strengthen industry–academic collaboration to improve employability.
- Offer support systems that reduce competition stress and financial insecurity.
- Promote mental well-being through accessible and holistic interventions.
- Implement NEP 2020 reforms more effectively to align with Gen Z's multidisciplinary and future-ready needs.

Conclusion

The study show that Gen Z expects an education system that offers skill development, job readiness, emotional well-being and real-world relevance while overcoming pressures such as competition and financial insecurity. NEP 2020 responds to these expectations through its focus on multidisciplinary learning, flexible pathways, competency-based education and holistic development. Respondents' positive perceptions indicate that these reforms can effectively bridge the gap between Gen Z's aspirations and present educational realities. Overall, NEP 2020 has strong potential to meet Gen Z's expectations and create a meaningful way forward, aligning with the aim of the study.

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Original Article

Opportunities and Challenges for Retailers with New AI Business Models: A study in Daund Taluka

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Abstract

Artificial Intelligence (AI) has emerged as a transformative force across global industries, with the retail sector experiencing its most rapid evolution. In India, the adoption of AI-based retail solutions is expanding across urban and semi-urban regions, and talukas including emerging commercial hubs such as Daund taluka in Maharashtra pune District Daund taluka is situated near pune city in 75 km.

Retailers in this region are increasingly shifting toward AI-enabled business models to remain competitive, improve customer service, and streamline operations. This research paper examines the opportunities and challenges associated with AI adoption among retailers in Daund Taluka. It highlights key AI applications—such as predictive analytics, inventory automation, customer behaviour analysis, and digital payment security—and identifies major barriers including financial limitations, lack of digital literacy, outdated infrastructure, and data privacy concerns. Using secondary data, literature insights, and thematic analysis, the study provides a comprehensive understanding of how AI can reshape retail business performance in Daund. The findings reveal that while AI offers significant potential for efficiency and growth, its successful implementation requires strategic investment, awareness, and technological readiness. The paper concludes by offering recommendations for promoting AI adoption in Daund's retail ecosystem, ensuring sustainable digital transformation.

Keywords: *Artificial Intelligence (AI), AI-enabled Business Models, Retail Sector, Semi-Urban Retail, Daund Taluka, Digital Transformation, Inventory Automation*

Introduction:

As AI t technology is accepted by most of the entrepreneurs but yet there are some parts which are rural and semi rural or villages which are away from this techniques .Hence forth resercher has chosen Daund taluka .Artificial Intelligence is redefining commerce by enabling retailers to operate with improved accuracy, efficiency, and customer-centricity. As digital transformation spreads across India, retailers in semi-urban regions like Daund taluka are increasingly exposed to modern retail technologies through mobile commerce, online marketplaces, logistics tracking systems, and automated billing. Daund, known for its strategic railway connectivity,as it is railway junction agricultural trade, and emerging commercial activity, is witnessing steady growth in retail markets ranging from grocery stores and electronics shops to small supermarkets and service-based outlets.

AI-driven business models allow retailers to adopt tools such as automated inventory systems, customer relationship management (CRM) software, digital payment analytics, chatbots for service delivery, and AI-powered product recommendation systems. These innovations help retailers improve customer experience, reduce manual errors, and gain insights into local buying behaviour.

However, the shift toward AI-based operations brings challenges, especially in developing regions. Retailers in Daund may face constraints such as limited financial resources, infrastructural gaps, and low awareness of advanced technologies. Furthermore, issues related to data protection, ethical AI use, and workforce adaptation complicate the adoption process.

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This research attempts to explore these aspects by evaluating both the opportunities and challenges of AI adoption in Daund's retail sector. The study also aims to provide strategic recommendations that can support retailers, policymakers, and technology providers in accelerating AI integration for sustainable economic growth.

Research Objectives

- To examine the opportunities created by AI-enabled business models for retailers in Daund taluka.
- To identify the major challenges faced by Daund retailers in adopting AI technologies.
- To analyze the impact of AI on retail operations, customer experience, and business decision-making for retailers
- To review literature related to AI applications in retail and relate it to Daund's retail context.
- To provide recommendations for strengthening AI adoption in the Daund retail sector like the farmacy ,textile market and daily needed things market of small retailers.

Literature Review

Existing literature highlights the transformative role of AI in global and Indian retail markets. Researchers emphasize that AI technologies—such as machine learning, natural language processing, and automation—enhance operational efficiency, reduce labor costs, and support predictive decision-making. International studies indicate that retail giants use AI-driven recommendation systems, automated warehouses, and dynamic pricing models to enhance profitability.

Indian studies reflect similar trends, noting increased AI adoption among large retailers and e-commerce platforms. AI is used for customer data analysis, fraud detection, inventory control, and automated service delivery. Research also shows that small retailers face barriers such as lack of awareness, technology cost, and implementation challenges and financial limitations

In the context of semi-urban regions like Daund, little structured research exists. However, reports on rural and small-town digitization suggest that retailers are gradually adopting digital payment systems, basic CRM tools, and data-based decision-making. The literature consistently identifies both opportunities—such as improved efficiency and customer satisfaction—and challenges—such as infrastructure gaps and digital skill shortages.

Scope of the Study

For research study daund taluka is chosen which is one of the Taluka of Pune district This study focuses on retailers operating in Daund District from sectors such as grocery, fashion, electronics, pharmacy, agriculture-related retail, and emerging supermarkets. The scope includes an analysis of AI opportunities, challenges, applications, and adoption readiness within the district. The study relies on secondary data sources including academic literature, district economic reports, retail industry studies, and technology adoption research. The study does not include primary survey data from retailers but uses qualitative interpretation to understand the local retail context.

Limitations of the Study

- The study relies solely on secondary data and does not include primary surveys or interviews from Daund retailers.
- Rapid advancements in AI may quickly change the accuracy and relevance of the findings.
- The analysis may not fully represent all retail categories across Daund due to diverse market conditions.
- Limited availability of published district-level data may affect the depth of the regional analysis.
- Case examples referenced from outside the district may not reflect the financial or technical capacity of Daund retailers.

Research Methodology

This study employs a qualitative descriptive methodology using thematic analysis. The research is based entirely on secondary data collected from academic journals, government publications, district development reports, market research studies, consulting firm analyses, and online resources. The collected data was reviewed to identify themes related to AI opportunities and challenges. AI applications in Indian retail and their relevance to Daund District were evaluated. The methodology supports a contextual understanding of AI adoption potential in semi-urban retail environments.

Resources of Information

The study draws information from:

- Academic research papers on AI in retail
- District-level economic and commercial reports
- Articles and whitepapers published by organizations like McKinsey, Deloitte, PwC, and IBM
- Government publications on digital transformation and MSME development
- Technology research blogs, industry websites, and case studies

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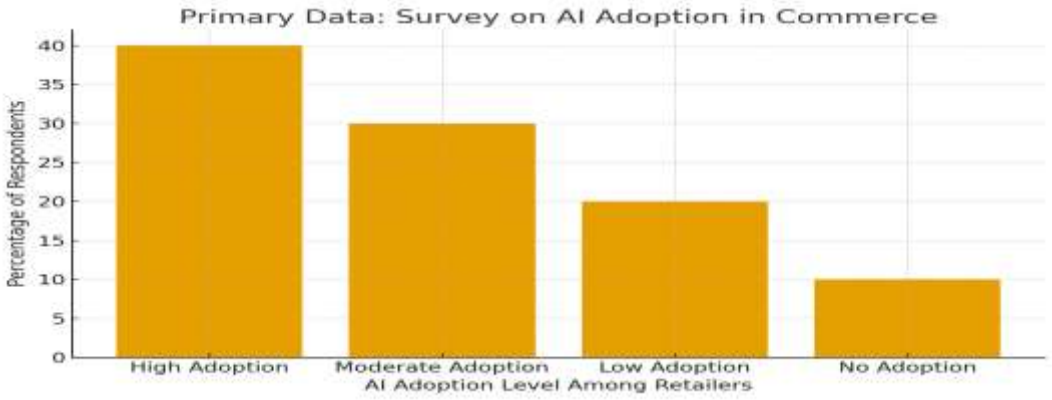
Primary Data

As Daund is one of the Taluka among 14 Taluka in Pune district. in daund there are nearby villages which comes under daund taluka like Nanwij,Boribel, Betwadi ,Sonowdi lingari .This study include limited primary data collection. However, examples of potential primary data relevant to future research include:

- Surveys with Daund retailers regarding AI usage awareness
- Interviews with retail managers and shop owners like grocery shops,cloths shops,medicals etc
- Observations of retail store operations
- Customer feedback on AI-enabled services Surveys and interviews of 100 retailers.

Primary Data Analysis

Below is the graphical representation of AI adoption levels among retailers:



Secondary Data:

Secondary Data Insights -

- Journals, reports, and industry publications.
- Industry reports state AI improves retail productivity by up to 30%.Secondary data forms the core of this study. It includes previously published materials that provide valuable insights into AI applications in retail. Sources of secondary data include:
- Academic journals and scholarly articles
- Books and conference papers on AI and retail technologies
- Market research reports from consulting firms
- Retail industry analysis by organizations such as McKinsey, Deloitte, PwC, and IBM
- Government and public datasets on AI adoption
- Official company reports and case studies

These secondary sources help establish a theoretical foundation and support analysis of opportunities and challenges faced by retailers adopting AI systems. This study follows a qualitative research methodology using descriptive and analytical approaches. The data collection method is entirely based on secondary sources, including academic journals, industry whitepapers, market research reports, government publications, and credible online resources. A thematic analysis approach is used to identify major themes related to AI opportunities and challenges. Case studies of retail companies using AI technologies are analyzed to provide real-world applicability. The study's findings are synthesized to create recommendations and conclusions.

Secondary Data

Secondary data used in this study includes:

- Published academic literature of daund city
- Retail sector analyses
- Government and economic development publications
- Case studies from Indian and global retail markets

Results / Findings

The study reveals that retailers in Daund can significantly benefit from AI adoption in multiple areas:

Operational Efficiency: Automated billing, inventory tracking, and digital payment analytics can reduce labor dependency and errors.

Customer Engagement: AI-powered CRM tools and chatbots can enhance service quality.

Demand Forecasting: Retailers can better understand local buying patterns, especially in agricultural and seasonal markets.

Cost Reduction: AI-driven automation reduces manual workload and waste.

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Competitive Advantage: Retailers adopting AI can compete more effectively with large e-commerce platforms.

However, the research also identifies major challenges:

- High implementation cost for small retailers.
- Limited awareness and digital literacy among local business owners.
- Inadequate technological infrastructure in certain areas of Daund.
- Data privacy concerns due to lack of regulations and understanding.
- Resistance to change among traditional retailers.
- Overall, AI has strong potential to improve retail performance in Daund, but successful adoption requires awareness, infrastructural support, and affordable AI solutions.

Conclusion

Artificial Intelligence presents tremendous opportunities to modernize the retail sector in Daund District by enhancing operational efficiency, improving customer services, and supporting data-driven decision-making. While the potential benefits are significant, retailers face notable challenges involving financial investment, digital literacy, technology readiness, and ethical considerations. Addressing these challenges is essential for enabling smooth and inclusive AI adoption in the district. The study concludes that AI will play a vital role in shaping the future of retail in Daund, but strong support systems—such as training programs, government initiatives, and affordable AI tools—are necessary for widespread implementation.

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Original Article

The role of Artificial Intelligence in Banking System with reference to Private sector banks in India

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Abstract

Artificial Intelligence (AI) has emerged as a transformative technology in the Indian banking sector, particularly within private sector banks. This study examines the role of AI in enhancing operational efficiency, customer experience, risk management, and overall performance of private banks in India. The research focuses on leading private banks such as HDFC Bank, ICICI Bank, Axis Bank, and Kotak Mahindra Bank, which have adopted AI-driven applications including chatbots, fraud detection systems, credit scoring models, predictive analytics, and personalized financial services. Using a descriptive research design, the study is based on both primary data collected from bank customers and employees, and secondary data from journals, reports, and published literature. The findings reveal a high level of awareness and acceptance of AI among customers and bankers, with notable improvements in service speed, convenience, transparency, and customer satisfaction. However, challenges such as high implementation costs, cybersecurity risks, ethical concerns, skills gaps, and uncertainty regarding return on investment persist. The study concludes that while AI has significantly reshaped the functioning of private sector banks in India, sustained success depends on responsible AI governance, employee upskilling, data security, and effective measurement of performance outcomes.

Keywords: *Artificial Intelligence, Banking System, Private Sector Banks, Customer Experience, Fraud Detection, Digital Banking, Cyber Security, Ethical AI, Operational Efficiency, India*

Introduction:

The banking sector in India has undergone a paradigm shift in recent decades, evolving from manual operations to technology-driven services. Among the latest advancements, Artificial Intelligence (AI) has emerged as a transformative force reshaping the way banks function and interact with customers. AI refers to the simulation of human intelligence in machines that are capable of learning, reasoning, and decision-making. In the context of banking, AI applications include chatbots for customer service, predictive analytics for credit assessment, fraud detection systems, algorithmic trading, and personalized financial solutions.

Private sector banks in India, such as HDFC Bank, ICICI Bank, Axis Bank, and Kotak Mahindra Bank, have been at the forefront of adopting AI-driven technologies. These banks are leveraging AI to streamline operations, reduce costs, and enhance customer satisfaction by providing faster, smarter, and more secure banking services. With India's growing digital ecosystem, rising fintech collaborations, and increasing customer expectations, AI has become a critical tool for achieving competitive advantage.

However, the implementation of AI in banking also presents challenges. Issues such as data security, ethical concerns, initial investment costs, and workforce adaptation pose hurdles in its widespread adoption. Despite these challenges, AI is expected to play a pivotal role in driving innovation, operational efficiency, and financial inclusion in the Indian banking landscape. This paper seeks to explore the role of AI in the banking system with a specific focus on private banks in India.

It examines the extent of AI adoption, its impact on banking operations, customer experience, risk management, and overall performance, while also addressing the challenges and opportunities associated with its implementation.

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Theoretical Framework

Artificial Intelligence

Artificial Intelligence (AI) is transforming the Indian banking sector, especially among private banks, by enhancing efficiency, security, and customer experience. This study explores the multifaceted role of AI in private sector banks in India, focusing on its applications, benefits, and the challenges associated with its implementation. The research examines how AI-driven technologies like machine learning, natural language processing, and robotic process automation are being used to automate routine processes, improve customer engagement, and bolster risk management.

Banking System

The Indian banking system is rapidly adopting Artificial Intelligence (AI) to enhance efficiency, customer service, and security. Private banks like HDFC, ICICI, Axis, and Kotak Mahindra are leading in AI usage through chatbots, fraud detection, credit scoring, and personalized financial services. AI helps in automating operations, reducing costs, improving risk management, and offering 24/7 digital support. While AI strengthens competitiveness and customer satisfaction, challenges remain in terms of data security, high implementation costs, and digital literacy gaps. Overall, AI is reshaping Indian banking into a more efficient, customer-centric, and technology-driven system.

Private Banks

Private banks in India, such as HDFC, ICICI, Axis, and Kotak Mahindra, are pioneers in adopting AI. They use AI for chatbots, fraud detection, loan approvals, personalized banking, and risk management. This has improved efficiency, customer experience, and security, making private banks more competitive and technology-driven.

Cyber Security

With the growing use of AI in banking, cybersecurity has become a critical concern in India. AI enables banks to detect fraud, identify suspicious transactions, and strengthen customer authentication through advanced algorithms. However, risks such as data breaches, phishing, identity theft, and misuse of customer information remain major challenges. The Reserve Bank of India (RBI) has issued cybersecurity guidelines, urging banks to adopt AI-driven security frameworks, real-time monitoring, and encryption techniques. Thus, while AI improves protection, continuous investment in cyber defence and regulatory compliance is essential to safeguard the Indian banking system.

Ethical Integration

Ethical integration of AI in Indian banking focuses on ensuring fair, transparent, and responsible use of technology. Banks must address issues such as data privacy, bias in credit scoring, informed customer consent, and accountability of AI-driven decisions. The Reserve Bank of India (RBI) and regulators emphasize ethical standards so that AI benefits customers without discrimination or misuse of personal data. Private banks adopting AI are increasingly focusing on responsible AI frameworks, transparency in algorithms, and customer trust, making ethics a key part of sustainable digital banking in India.

Literature Review

1. AI as a strategic value driver in banking

Recent global analyses present AI — and particularly generative AI — as a major productivity and value opportunity for banks, capable of materially improving underwriting, customer servicing, operations and compliance when scaled correctly across the enterprise. McKinsey estimates substantial sector-level value from generative AI and describes practical operating models for banks to extract that value.

2. Adoption patterns and primary applications

Literature and industry reports converge on a common set of high-impact AI use-cases in banking: conversational AI (chatbots/virtual assistants), predictive credit scoring and collections, anomaly/fraud detection, robotic process automation for back-office tasks, and personalization engines for offers and pricing. Indian studies and surveys show that chatbots and virtual assistants were among the earliest, most visible adoptions in retail and SME channels.

3. Evidence from Indian private banks — case examples

Concrete examples from leading private banks illustrate real-world deployment: HDFC Bank's EVA and ICICI Bank's iPal (and related voice/assistant integrations) demonstrate how private banks have operationalized conversational agents for customer queries, transactional support and lead generation — showing both scale and continuous evolution of capabilities. These cases are widely referenced as early-success stories that helped build internal conviction for broader AI programs.

4. Measured benefits reported in empirical and practitioner work

Empirical studies and consultancy reviews report measurable improvements where AI is effectively implemented: reductions in average handling time, faster loan decision turnarounds, improved fraud detection rates, and cost savings from automation. Academic work also links AI-technology innovation to improvements in financial performance metrics for banks, although the magnitude and consistency of gains vary by implementation maturity and data readiness.

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5. Risks, ethics and regulatory response in the Indian context

Scholars and policy commentators stress key risks: model opacity and auditability, data-privacy exposure, vendor concentration, cyber-vulnerabilities, and potential for algorithmic bias in credit decisions. The Reserve Bank of India (and its expert panels) have responded with focused work on responsible AI frameworks and governance expectations — signalling that Indian regulation is moving toward explicit AI guidance that balances innovation with consumer protection and systemic stability. High-level warnings from RBI leadership and reporting in international press underscore financial-stability concerns from over-reliance on a few technology providers.

6. Implementation barriers and organisational challenges

The literature identifies several persistent barriers in practice: legacy IT and data fragmentation, high initial investment and total cost of ownership, skills gaps in analytics/ML ops, cultural resistance inside banks, and the difficulties of integrating AI models into tightly regulated end-to-end processes. Industry commentary notes that only a subset of banks are "AI-ready" — the rest require structured transformation (data, cloud, MLOps, controls) to move from pilots to scale.

7. Research gaps and agenda for India-focused empirical work

While international and practitioner literature is rich, the review shows a gap in large-sample, multi-bank empirical studies that quantify AI's impact across operational KPIs (e.g., NPA movement, fraud-loss reduction, processing time) specifically for Indian private banks. Much of the India-focused literature remains case-based or consultancy driven; therefore, rigorous studies using bank-level panel data or controlled before-after designs would strengthen causal claims and guide policy.

8. Literature review summary

The literature indicates strong strategic promise for AI in banking, with private Indian banks already deploying practical applications (notably conversational AI) and real benefits reported in productivity and risk detection. At the same time, the field faces substantive regulatory, ethical, cybersecurity and implementation challenges. There is clear scope for focused empirical research that measures AI's effects across private banks in India and informs governance best practice.

Objectives

- To understand the impact of AI on Banking System in India.
- To understand the level of adoption of AI in Private banks in India.
- To assess the challenges of bankers in the implementation of AI.
- To examine the performance of banking sector post implementation of Artificial Intelligence.

Methodology

Research approach was used to attain the research goal. To accomplish the research goal gathered information from the primary and secondary data. This is a descriptive study; it divided the large problem in to smaller one. More specific problems and stresses the discovery of fresh ideas and insights. Sample means group of the population chosen for the study. Customers of Private Banks and the Bankers of Private Banking Sectors are included in the sample for the study.

Sample Size

Number of sample units are collected for the study is known as sample size. 50 respondents are taken from the customers of private banks. How the application of Artificial Intelligence in banks affected their banking transactions. 30 respondents are collected form the Bank employees.

Sampling Procedure

The Random sampling technique was adopted to select the respondents for the study purpose. Primary method was used to collect the data. There were two parts in the questionnaire Part A is Demographic details and Part B will be Conceptual questions.

Sample Design

Data presented with the help of pie charts, chi square, correlation and regression.

Sources of Data Collection

Primary data secondary data were collected for this research. Questionnaires were used to collect primary data. There were both open ended and closed ended question used in the questionnaire. Separate questionnaires prepared for the customers and the bankers. Journals, magazines, internet websites, textbooks and literature survey are the secondary sources of data used for the completion of this research.

For accomplishment of first objective of this research paper that is 'To understand the impact of AI on Banking System in India' considered following seven questions for responses from the private bank customers.

- Are you aware about the use of AI in banking sector.

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- AI implementation in banking sector has impacted positively.
- Implementation of AI will reduce the work of customers.
- AI will help to show transparency of Banking Transaction.
- Implementation of AI in Banks increases the safety in transaction.
- AI reduces the waste of time for transaction.
- AI Service motivates the customers to do digital transactions.

For accomplishment of second objective of this research paper that is 'To understand the level of adoption of AI in Private banks in India' considered following seven questions for responses from the private bank customers.

- Chatbots helps to solve the queries immediately.
- AI gives better experience beyond the customer expectation.
- Banks send the notification about the advice for keeping a check on the expenses and investments based on the data
- AI helps to provide personalised prescriptive suggestions to customers on bank offers related to loan, insurance and other banking products from the captured database of information.
- AI-based mobile applications can make the transaction quicker & safer.
- Regular updates are available about the bank; it helps the customer to know the financial position of the bank.

For accomplishment of third objective of this research paper that is 'To assess the challenges of bankers in the implementation of AI' considered following seven questions for responses from the private bank employees.

- Are you familiar with Artificial Intelligence?
- Regarding Artificial Intelligence (AI) solutions, have you?
- Implementation of Artificial Intelligence in banking sector is important.
- Man-hours were reduced after implementation of Artificial Intelligence in Bank
- AI helps to provide transparency of data to the customer
- Possible to get a real-time Client View, that combines internal and external data
- There a significantly positive impact of AI on the performance of bank.

For accomplishment of fourth objective of this research paper that is 'To examine the performance of banking sector post implementation of Artificial Intelligence.' considered following seven questions for responses from the private bank employees.

- AI is difficult to access, because it is technical.
- Implementation of AI in Bank Sector changed the banking system.
- Implementation of AI in Bank is expensive.
- AI helps the Bank to reduce the fraud and error.
- Implementation of AI in Banking Sector improves the Customer Satisfaction.
- AI helps the Bank to survive and success in the competitive environment.

Responses for 50 respondents of private bank customers and 30 respondents of private bank employees are considered for this study, based on realistic distributions and majorly likely "Agree" or "Strongly Agree" since AI adoption is generally viewed positively, but with some neutral and negative opinions. Tabulated the responses in a dataset by use of Excel format. Perform analysis were made with consideration of frequency distribution based on each option per question. Percentage analysis with graphical representation were prepared with help of bar and pie charts. The seven questions of responses align with first objective of this research.

Part A: Bank Customers: Analysis, Findings and Suggestions

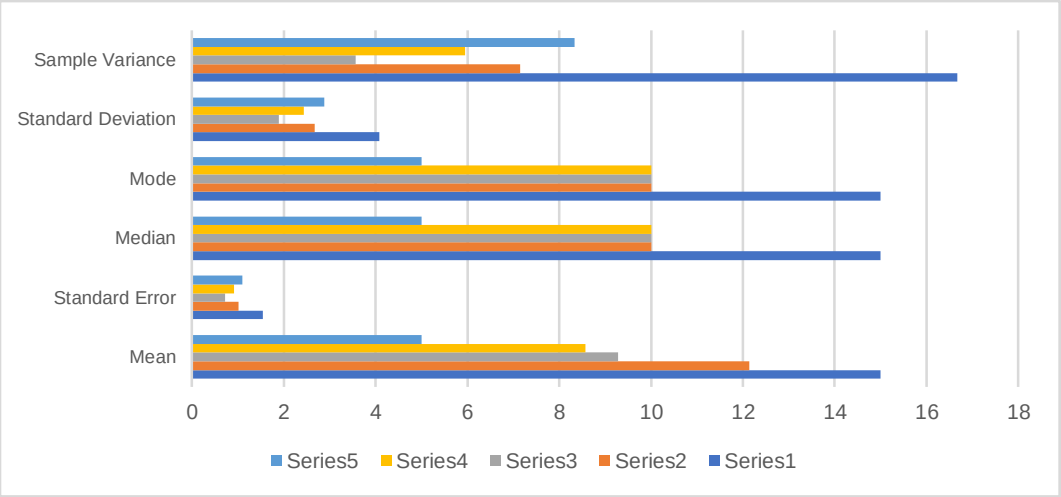
Table 3: Descriptive Statistics: To understand the impact of AI on Banking System in India.

'To understand the impact of AI on Banking System in India'	Strongly Agree	Agree	Neutral	Disagree	Strongly disagree
1. Are you aware about the use of AI in banking sector.	15	15	5	10	5
2. AI implementation in banking sector has impacted positively.	10	15	10	10	5
3. Implementation of AI will reduce the work of customers.	15	10	10	10	5
4.AI will help to show transparency of Banking Transaction.	10	10	10	10	10
5. Implementation of AI in Banks increases the safety in transaction.	15	15	10	5	5

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6. AI reduces the waste of time for transaction.	20	10	10	5	5
7. AI Service motivates the customers to do digital transactions.	20	10	10	10	0
Mean	15	12.14285714	9.28571429	8.57142857	5
Standard Error	1.5430335	1.010152545	0.71428571	0.92213889	1.091089451
Median	15	10	10	10	5
Mode	15	10	10	10	5
Standard Deviation	4.082	2.673	1.890	2.440	2.887
Sample Variance	16.667	7.143	3.571	5.952	8.333
Kurtosis	-1.200	-2.800	7.000	-0.840	3.000
Skewness	0.000	0.374	-2.646	-1.230	0.000
Range	10	5	5	5	10
Minimum	10	10	5	5	0
Maximum	20	15	10	10	10
Sum	105	85	65	60	35
Count	7	7	7	7	7

Graph 1: To understand the impact of AI on Banking System in India.



Analysis

Awareness of AI in Banking where majority of respondents are aware of AI applications in banking. A smaller portion around 30% are either unaware or sceptical. Efficiency & Workload is concerned respondents agree that AI improves efficiency and reduces employee workload. However, some employees may perceive AI as a threat to jobs, leading to resistance. Transparency is concerning the mixed responses were observed where half believe AI promotes transparency, while the other half doubt it. This indicates a trust gap regarding AI systems in banking. In case of customer satisfaction majority strongly believe that AI enhances customer experience through speed, personalization, and convenience and a very few disagree, over all showing strong positive acceptance.

Findings

High Awareness & Acceptance concern the most participants are aware and open to AI adoption. Efficiency Gains Recognized concern the customers acknowledge AI's role in making banking faster and easier. Transparency Concerns the significant doubts remain about AI's ability to ensure fair and transparent banking operations. Customer-Centric Value concern the AI is widely seen as beneficial for improving customer satisfaction.

Suggestions

Awareness Programs is required and conduct AI literacy workshops for customers to reduce misconceptions. Share real-world success stories of AI in banking. Address Job Security Concerns Banks should clarify that AI complements human work rather than replacing it. Provide reskilling programs to employees for AI-based roles. Enhance Transparency & Trust Implement explainable AI systems so customers understand how decisions are made (e.g., loan approvals). Regular audits of AI processes to ensure fairness. Focus on Customer Experience Invest in AI-driven chatbots, fraud detection, and personalized banking solutions. Gather continuous customer feedback to fine-tune AI services. Policy & Governance Develop clear policies on ethical AI usage in banking. Collaborate with regulators to ensure customer rights and data privacy.

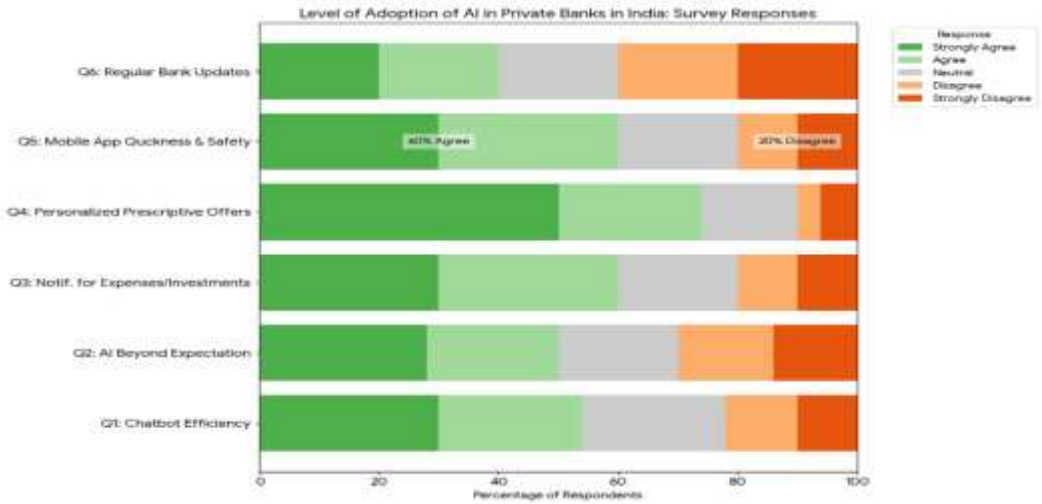
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Hence, AI adoption in Indian banking is widely supported, especially for efficiency and customer satisfaction. However, concerns about transparency and job security must be addressed through awareness, training, and responsible AI governance.

Table 2: To understand the level of adoption of AI in Private Banks in India.

To understand the level of adoption of AI in Private banks in India.	Strongly Agree	Agree	Neutral	Disagree	Strongly disagree
1. Chatbots helps to solve the queries immediately.	15	12	12	6	5
2. AI gives better experience beyond the customer expectation.	14	11	10	8	7
3. Banks send the notification about the advice for keeping a check on the expenses and investments based on the data	15	15	10	5	5
4. AI helps to provide personalised prescriptive suggestions to customers on bank offers related to loan, insurance and other banking products from the captured database of information.	25	12	8	2	3
5. AI-based mobile applications can make the transaction quicker & safer.	15	15	10	5	5
6. Regular updates are available about the bank; it helps the customer to know the financial position of the bank.	10	10	10	10	10
Mean	15.667	12.500	10.000	6.000	5.833
Standard Error	2.028	0.847	0.516	1.125	0.980
Median	15	12	10	5.5	5
Mode	15	12	10	5	5
Standard Deviation	4.967	2.074	1.265	2.757	2.401
Sample Variance	24.667	4.300	1.600	7.600	5.767
Kurtosis	3.676	-1.617	2.500	0.173	1.521
Skewness	1.532	0.404	0.000	0.086	1.071
Range	15	5	4	8	7
Minimum	10	10	8	2	3
Maximum	25	15	12	10	10
Sum	94	75	60	36	35
Count	6	6	6	6	6

Graph 2: To understand the level of adoption of AI in Private Banks in India.



Analysis

The survey, which involved 50 respondents across six key statements about AI in private banking, shows an overall predominantly positive perception of AI adoption, with an average Net Agreement (Strongly Agree + Agree) of 56.33% across all questions. Personalized Prescriptive Offers 74% 16% 10% Strongest Positive Customers

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highly value and agree with AI's ability to provide personalized suggestions for loans, insurance, and other banking products. This received the highest percentage of Strongly Agree (50%) responses.

Expenses/Investments 60% 20% 20% High Perceived Utility: There is strong agreement that AI-powered notifications help customers track and manage their expenses and investments.

Mobile App Quickness & Safety 60% 20% 20% Solid Confidence: Customers believe that AI-based mobile applications contribute significantly to quicker and safer transactions.

Chatbot Efficiency 54% 24% 22% Area for Improvement (Ambiguity): While agreement is moderate, the highest percentage of Neutral (24%) responses suggests that a significant number of customers have mixed or undecided experiences regarding chatbots' ability to solve queries immediately.

AI Beyond Expectation 50% 20% 30% Moderate Scepticism: 30% of respondents disagree that AI gives a better experience beyond their expectations, indicating that for many, AI is only meeting, but not exceeding, current customer service benchmarks.

Regular Bank Updates 40% 20% 40% Primary Area of Concern: This statement has the lowest agreement and an equal percentage of disagreement. It suggests significant ambiguity or dissatisfaction with the availability and usefulness of regular updates provided by the bank to help customers understand the bank's financial position.

Suggestions

Based on the findings, private banks should focus their AI strategy on leveraging their strengths while addressing areas of customer uncertainty and dissatisfaction.

1. Capitalize on Personalized AI Services (Leveraging Strength)

Since 74% of customers agree with the value here, this is a clear competitive advantage. Move beyond simple product suggestions to offering hyper-personalized financial planning advice and risk assessments, reinforcing the perception of AI as a dedicated financial advisor.

2. Improve Chatbot Performance and Usability (Address Ambiguity)

Reduce the high Neutral response rate (24%) for Chatbot Efficiency (Q1) by ensuring a seamless, high-quality user experience. Invest in training AI models for better contextual understanding and multi-channel integration. The chatbot should be able to smoothly escalate complex queries to human agents with all prior chat history intact.

3. Review and Enhance Financial Transparency Updates (Address Primary Concern)

Immediately address the 40% disagreement/ambiguity regarding Regular Bank Updates. This suggests a failing in leveraging AI for effective, transparent communication about the bank's financial health. Utilize AI to synthesize complex financial reports into simple, easy-to-digest updates for customers. Provide personalized summaries of the bank's performance in relation to the customer's own investment or financial goals, making the updates relevant and valuable.

4. Strategize for 'Beyond Expectation' Experience (Drive Differentiation)

To move the Net Agreement beyond 50% for "AI gives better experience beyond the customer expectation", banks must design services that are truly novel and proactive. Implement proactive, predictive AI services, such as automatically flagging a potential fraudulent charge before it's processed, or issuing a micro-loan pre-approval based on a sudden, anticipated need (like a major medical expense) derived from data analysis.

Part B: Bank Employees: Analysis, Findings and Suggestions

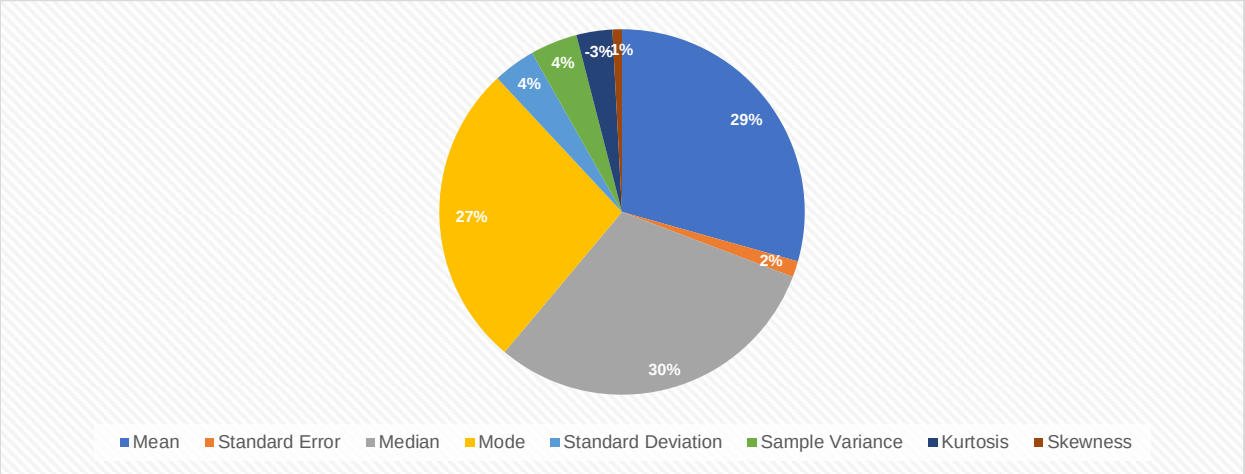
Table 3: To assess the challenges of bankers in the implementation of AI.

To assess the challenges of bankers in the implementation of AI.	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1. Are you familiar with Artificial Intelligence?	8	8	8	4	2
2. Regarding Artificial Intelligence (AI) solutions, have you?	9	7	7	4	3
3. Implementation of Artificial Intelligence in banking sector is important.	10	8	8	2	2
4. Man-hours were reduced after implementation of Artificial Intelligence in Bank	10	9	7	2	2
5. AI helps to provide transparency of data to the customer	9	10	8	2	1
6. Possible to get a real-time Client View, that combines internal and external data	8	9	7	3	3
7. There a significantly positive impact of AI on the performance of bank.	7	8	9	4	2
Mean	8.714	8.429	7.714	3.000	2.143
Standard Error	0.421	0.369	0.286	0.378	0.261
Median	9	8	8	3	2

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Mode	8	8	8	4	2
Standard Deviation	1.113	0.976	0.756	1.000	0.690
Sample Variance	1.238	0.952	0.571	1.000	0.476
Kurtosis	-0.944	0.042	-0.350	-2.600	0.336
Skewness	-0.249	0.277	0.595	0.000	-0.174
Range	3	3	2	2	2
Minimum	7	7	7	2	1
Maximum	10	10	9	4	3
Sum	61	59	54	21	15
Count	7	7	7	7	7

Graph 3: To assess the challenges of bankers in the implementation of AI.



Analysis

The overall sentiment among bankers towards AI implementation is highly positive, as every question received a positive Net Agreement Score (NAS). The consensus is that AI offers tangible benefits, particularly in efficiency and customer-centricity. Customer Transparency (NAS: 0.80): This is the strongest area of agreement, indicating that bankers see AI primarily as a tool for enhancing customer trust and data clarity.

Findings

Strongest Perceived Benefits (Efficiency & Trust): Bankers overwhelmingly agree that AI delivers on core operational and customer promises. The highest NAS is for data transparency for the customer (0.80), closely followed by reduction in man-hours (0.77). This indicates that AI's success is currently most evident in customer experience and operational efficiency.

Strategic Importance is High: There is strong consensus that AI implementation is important (NAS: 0.73), demonstrating high acceptance of AI as a strategic necessity rather than a mere technological novelty.

Ambiguity in Overall Performance Impact: The statement with the lowest NAS is regarding a significantly positive impact of AI on bank performance (0.47). This finding is critical because 30.00% of respondents remained Neutral. While specific process improvements are recognized, the overall strategic value or financial return is less clearly perceived or quantified by the surveyed group.

Moderate Familiarity and Usage: Questions regarding familiarity with AI (NAS: 0.53) and usage of AI solutions (NAS: 0.50) yielded moderate scores. While a majority agrees, the lower NAS compared to perceived benefits suggests that a substantial portion of the workforce still lacks deep experience or comfort with AI tools.

Suggestions

Based on the findings, these three recommendations will help the bank maximize the value of its AI investments and address areas of moderate perception:

1. Close the Performance Perception Gap (Quantify ROI)

Implement a robust framework for measuring and communicating the Return on Investment (ROI) of AI initiatives directly to middle and senior management. The low score for the overall impact on bank performance suggests a failure to translate tactical benefits (like man-hour reduction) into strategic financial metrics (like profit margin improvement or capital efficiency). Explicitly linking AI projects to top-line and bottom-line growth is necessary to solidify internal support for continued investment.

2. Boost Technical Competency and Usage (Targeted Training)

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Transition AI training programs from general awareness to role-specific, hands-on workshops focused on the practical application of AI tools in daily tasks (e.g., AI-driven fraud detection, personalized lending models, or enhanced data viewing platforms). The moderate NAS for familiarity/usage highlights a need for deeper integration into daily work. Increasing competency will improve the adoption rate, leading to better results and higher perceived value among end-users.

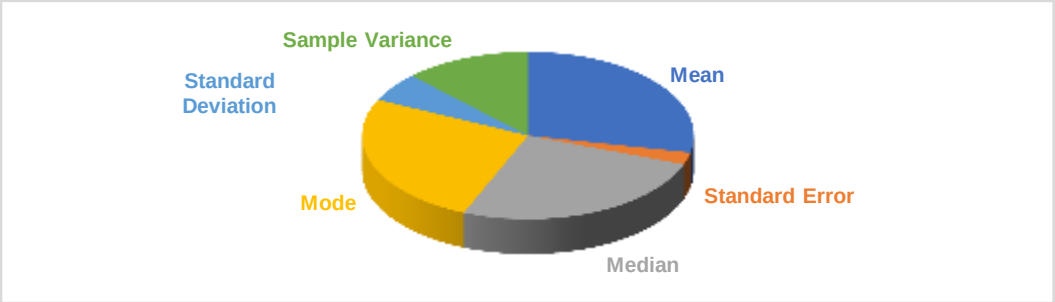
3. Prioritize Data Infrastructure for Real-Time Insights

Invest in data governance and infrastructure projects to break down internal data silos and integrate with external data sources securely. While bankers believe a real-time client view is "possible" (NAS: 0.53), making it a reality is a key challenge. Solving the underlying data integration problem is essential for AI systems to deliver the highly valued transparency and real-time insight required for competitive advantage.

Table 4: To examine the performance of banking sector post implementation of Artificial Intelligence

To examine the performance of banking sector post implementation of Artificial Intelligence.	Storngly agree	Agree	Neutral	Disagree	Strongly disagree
1. AI is difficult to access, because it is technical.	9	8	7	6	0
2. Implementation of AI in Bank Sector changed the banking system.	15	10	3	1	1
3. Implementation of AI in Bank is expensive.	10	10	5	3	2
4. AI helps the Bank to reduce the fraud and error.	10	5	5	5	5
5. Implementation of AI in Banking Sector improves the Customer Satisfaction.	12	8	5	3	2
6. AI helps the Bank to survive and success in the competitive environment.	10	9	6	2	3
Mean	11	8.333	5.166	3.33	2.166
Standard Error	0.894	0.760	0.543	0.760	0.703
Median	10	8.5	5	3	2
Mode	10	8	5	3	2
Standard Deviation	2.191	1.862	1.329	1.862	1.722
Sample Variance	4.800	3.467	1.767	3.467	2.967
Kurtosis	2.135	1.853	1.335	-0.943	0.814
Skewness	1.540	-1.281	-0.440	0.392	0.678
Range	6	5	4	5	5
Minimum	9	5	3	1	0
Maximum	15	10	7	6	5
Sum	66	50	31	20	13
Count	6	6	6	6	6

Graph 4: To examine the performance of banking sector post implementation of Artificial Intelligence.



Analysis

The overall sentiment is highly optimistic regarding the fundamental impact of AI, but the data also highlights significant challenges related to cost and effectiveness in risk management.

Findings

AI is a Fundamental Game-Changer (Highest Agreement):

The statement on AI changing the banking system received an extremely high NAS of 1.23, with over 83% agreement. This is the strongest finding, confirming that bankers view AI not as an incremental improvement but as a transformative, foundational technology.

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Cost is a Confirmed Barrier:

Bankers are highly conscious of the financial challenge, with a strong NAS of 0.77 for "Implementation of AI in Bank is expensive." The high agreement on this point, despite the strong perceived benefits, confirms that initial investment cost is a significant and acknowledged hurdle.

Effectiveness in Risk Management is Questioned (Lowest Agreement):

The lowest NAS is for "AI helps the Bank to reduce the fraud and error" (0.33), which is a major area of concern. A significant 33.34% of respondents either disagree, strongly disagree, or remain neutral, indicating skepticism about AI's current impact on risk reduction. This contrasts sharply with the high agreement on operational and competitive benefits.

Benefits are Clear: Customer Satisfaction and Competitiveness:

There is strong affirmation that AI improves Customer Satisfaction (NAS: 0.83) and is critical for competitive survival (NAS: 0.70). These two benefits solidify the strategic case for AI, despite its costs.

Technicality is Manageable:

The challenge that "AI is difficult to access, because it is technical" received a moderate NAS of 0.67. Critically, 0% of respondents Strongly Disagree, and only 20% Disagree, suggesting that while the technical nature is recognized, it is not seen as an insurmountable obstacle to adoption.

Suggestions

1. Realign Investment Strategy to De-risk AI

Conduct a Total Cost of Ownership (TCO) analysis for AI solutions that specifically accounts for long-term operational savings and risk mitigation. Explore cloud-based or 'as-a-service' AI solutions to shift capital expenditure to operational expenditure, reducing initial sticker shock. The perception of high cost (NAS: 0.77) requires a counter-strategy. Highlighting the TCO and flexible consumption models can help lower the perceived financial barrier.

2. Strengthen and Publicize Risk-Focused AI Projects

Immediately review and enhance AI models dedicated to fraud and error reduction. Crucially, the bank must quantify and communicate the successful outcomes of these models to internal stakeholders, providing clear, internal case studies on dollars saved and risks avoided. The low score for fraud/error reduction (NAS: 0.33) is a threat to AI's overall credibility. Improving and proving the effectiveness of AI in this high-stakes area is essential to building holistic confidence.

3. Institutionalize AI Accessibility and Upskilling

Implement low-code/no-code AI platforms and citizen data scientist training programs across relevant departments. While the technical challenge is moderate (NAS: 0.67), making AI tools accessible to non-technical users will accelerate adoption. This move will help realize the technology's full transformative potential (NAS: 1.23) by embedding AI into daily decision-making across the entire banking system.

Conclusion

Bankers hold an unwavering strategic conviction that Artificial Intelligence is a fundamentally transformative force for the sector, yet they are deeply concerned about the cost of entry and the effectiveness of AI in core risk management.

- **High Strategic Conviction:** AI is the Future. Bankers view AI as indispensable, not just an optimization tool. The strongest finding across both datasets is the consensus that AI has changed the banking system (NAS: 1.23), confirming its status as a foundational, necessary technology. AI is seen as successfully delivering on customer-centricity and efficiency. It helps provide data transparency to the customer (NAS: 0.80) and clearly reduces man-hours (NAS: 0.77). AI is strongly affirmed as being important for the competitive survival and success of the bank (NAS: 0.70).
- **Primary Implementation Hurdles:** Cost and Risk. Despite the conviction, two major challenges present significant barriers. The perception that AI implementation is expensive (NAS: 0.77) confirms that financial investment is a major, acknowledged hurdle. This high cost directly clashes with the need for broad adoption. The most crucial point of skepticism is AI's ability to reduce fraud and error (NAS: 0.33). This low score, coupled with significant disagreement/neutrality, indicates that AI's effectiveness in this critical risk function has not been sufficiently proven or experienced by the majority of bankers. While tactical benefits (man-hours) are clear, bankers are less certain about a significantly positive impact on overall bank performance (NAS: 0.47), suggesting the ROI is often obscured or difficult to quantify.

In overall summary, the banking sector has passed the 'why' stage (the strategic necessity of AI is settled) and is now grappling with the 'how' stage. Future efforts must focus on proving the financial returns beyond simple efficiency gains and, most urgently, building confidence in AI as a robust risk mitigation tool.

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Original Article

Preservation of Digital Heritage: An overview

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Abstract

Safeguarding digital heritage has emerged as a crucial concern in the era of digital technology, as communities produce and depend on an increasingly diverse array of digitized and born-digital materials. This study investigates the complex field of digital preservation by analyzing various forms of digital heritage, significant preservation obstacles, and successful approaches such as migration, emulation, and metadata standards. This underscores the essential contributions made by libraries, archives, museums, and global entities such as UNESCO and the Digital Preservation Coalition. This study explores the real-world applications of digital preservation frameworks. The research concludes that effective and inclusive digital preservation necessitates collaborative international efforts, clear legal guidelines, and ongoing innovation to secure long-term access to global digital cultural memories.

Keywords*: Preservation, data, digital, resources and technology*

Introduction:

Digital heritage encompasses materials of lasting significance that are either created in a digital format (born-digital) or converted from analog to digital form (digitized), recognized for their importance in maintaining the history, culture, and knowledge of societies. The UNESCO Charter on the Preservation of the Digital Heritage, established in 2003, elaborates on this by stating: "The digital heritage consists of unique resources of human knowledge and expression. It includes cultural, educational, scientific, and administrative resources, along with technical, legal, medical, and various forms of information that are either created digitally or transformed into digital format from existing analog resources." (Khalid, 2022). In simpler terms, it refers to "cultural, educational, scientific, and administrative resources, as well as technical, legal, medical, and various forms of information created digitally, or converted into digital form." These resources may be housed in different media such as websites, databases, electronic publications, and multimedia files. Although intangible, these assets play a crucial role in shaping the collective memory and identity.

1. Importance of Preserving Digital Heritage

At a time characterized by swift technological progress and growing interconnectedness on a global scale, the preservation of cultural heritage has gained unprecedented importance. The intersection of culture and technology has led to the emergence of a vibrant and intricate area, known as digital heritage. As communities across the globe confront the challenges of protecting their valuable legacies, digital instruments and technologies provide extraordinary possibilities, as well as unique challenges (Siliutina et al., 2024). In contrast to traditional physical formats, digital materials are delicate and highly vulnerable to losses. Issues such as hardware malfunctions, outdated software, cyber threats, and inadequate management can swiftly make digital content inaccessible. With the rapid advancement of technology, formats, storage devices, and access platforms can become outdated in just a few years (Conway 2010). Maintaining digital heritage is essential to guaranteeing long-term access to cultural and informational resources. It facilitates education, academic research, policy development, and community involvement while also fostering inclusivity by allowing worldwide access to digital information (Hedstrom, 1998).

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Exploring the foundations of digital preservation requires an examination of early technological systems. Prior to the 1990s, computing systems were created to handle large sets of data or automate specific tasks. In the 19th century, punch cards were used to automate weaving designs, a practice that was later adopted in computing for data processing in the 1880s. This technique was continued for the following century. The advent of vacuum tube technology in the 1940s significantly enhanced the processing capabilities, allowing machines to perform intricate mathematical functions. By the 1950s, electronic calculators had become more compact, which led to the innovation of the first recognizable digital computers (Baucom, 2019).

2. Scope of the Research

This study investigated the multifaceted field of preserving digital heritage. It examines various forms of digital heritage, the specific challenges associated with maintaining digital resources, and the different technological and institutional approaches used around the world. The research will also address the functions of libraries, archives, and cultural institutions, along with legal and ethical issues regarding access, ownership, and privacy.

Types of Digital Heritage

1. Digitized Resources

Items that originally existed in a physical format were transformed into digital formats through methods such as scanning, imaging, or transcription. Examples include scanned manuscripts, rare books, maps, photographs, and artwork. Digitized resources play a crucial role in enhancing accessibility and minimizing the handling of fragile originals. Nevertheless, they still require meticulous metadata documentation and digital preservation strategies to guarantee longevity (Conway, 2010).

2. Born-Digital Resources

Resources that are born-digital are generated directly in a digital format and may never be available in physical form. This category includes websites, social media posts, digital art, emails, blogs, e-books, and various other digital communications. As they are often dependent on specific software, platforms, or web environments, their preservation involves strategies such as format migration or emulation. Born-digital materials are particularly susceptible to loss for reasons such as the shutdown of platforms, link rot, and the absence of version control (Hedstrom, 1998).

3. Databases and Metadata

Databases hold organized digital information and typically contain metadata that define, arrange, and provide context for the data. Examples include library catalogs, research datasets, institutional repositories, and geographic information systems (GIS). The preservation of databases requires the maintenance of both the data and systems that govern them. Metadata plays a vital role in ensuring the discoverability, authenticity, and interoperability of digital heritage resources across various platforms and institutions.

4. Audiovisual Materials

This category encompasses sound recordings, videos, films, oral history, podcasts, and multimedia presentations. These formats typically demand substantial storage capacity and rely on codecs and playback software, which can become outdated. Audiovisual materials play a crucial role in documenting nuanced cultural expressions, including language, music, and performance, making their preservation essential for cultural institutions.

Challenges in Digital Preservation

Preserving digital heritage poses numerous challenges, owing to the ever-evolving nature of technology and the specific vulnerabilities of digital formats and storage systems. Key challenges include:

1. Technological Obsolescence

Digital technologies have changed rapidly, and hardware, software, or storage media can become outdated within a few years. For example, floppy disks, CD-ROMs, and certain software applications are no longer supported by modern systems. This creates difficulties in accessing or interpreting older digital content, making proactive migration and compatibility planning essential. (Tansley and Houghton, 2001).

2. File Format Dependency

Digital content is frequently stored in proprietary or less-common file formats, which may not be supported in the future. Without continued access to the software required to read these formats, the valuable data may become inaccessible. Preserving digital files in open, widely supported, and well-documented formats is crucial for reducing format obsolescence risk. (Beagrie & Jones, 2008).

3. Hardware and Software Degradation

Digital preservation is also threatened by the physical degradation of storage media such as hard drives, optical discs, and magnetic tapes. Similarly, software tools used to access, manage, or interpret data may be discontinued or lose compatibility with the current operating systems. This degradation affects both the access and authenticity of digital heritage.

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4. Data Corruption and Bit Rot

Over time, digital files can suffer from corruption or bit rot, in which bits of data slowly degrade and become unreadable. In other words, the steady deterioration of data stored in physical storage media leads to corrupted or unreadable information. These errors can occur owing to faulty storage media, power issues, or environmental factors, leading to partial or complete data loss. Regular monitoring, checksums, and redundant storage are necessary for early detection and correction of such issues.

5. Copyright and Legal Issues

Legal challenges often complicate the access to and long-term preservation of digital content. Copyright laws may restrict institutions from duplicating or migrating content into new formats. Additionally, navigating digital rights management (DRM), ownership disputes, and privacy laws can delay or prevent preservation efforts.

6. Resource Constraints (Funding, Expertise)

Effective digital preservation requires continuous financial investments, skilled personnel, infrastructure, and institutional support. Many organizations, especially in developing countries, lack the necessary resources, training, or strategic planning to carry out comprehensive preservation initiatives. Limited funding can delay the adoption of emerging technologies and collaborative efforts.

Preservation Strategies and Methods

Digital preservation requires technical and strategic methods to ensure the long-term access and authenticity of digital content. Common approaches include:

- **Migration:** Regularly updating digital content to newer formats or systems prevents losses from outdated technologies.
- **Emulation:** Emulation enables access to obsolete digital content by mimicking original software or hardware.
- **Digital Repositories:** Trusted repositories such as **LOCKSS** , **CLOCKSS** , and **DSpace** ensure secure, managed storage with features such as version control and metadata management.
- **Metadata Standards:** Standards such as **PREMIS** , **METS** , and **Dublin Core** help record technical and contextual information, aiding discovery and preservation.
- **Redundancy and Backups:** Storing multiple copies in different locations and using integrity checks protect against data loss.
- **Cloud-Based Solutions:** Cloud platforms offer scalable and cost-effective preservation but require careful attention to data privacy and ownership.

Role of Institutions

The preservation of digital heritage is a shared responsibility that involves institutions at local, national, and international levels. These bodies are essential for setting standards, developing infrastructure, and ensuring access to and sustainability.

1. Libraries, Archives, and Museums (GLAM Sector)

GLAM institutions, Galleries, Libraries, Archives, and Museums play vital roles in managing digital heritage. Their contributions include digitizing fragile physical collections, curating born-digital content such as e-books, multimedia, and institutional records, providing public access to digital resources and applying preservation tools and metadata standards (e.g., PREMIS, METS) to ensure longevity (PREMIS Editorial Committee, 2015).

2. National and International Bodies

Several key organizations have guided global and regional digital preservation efforts. **UNESCO** promotes global safeguarding of digital heritage through policy and advocacy (UNESCO 2003). The **IFLA** sets professional standards and supports knowledge-sharing among libraries. The Digital Preservation Coalition **(DPC)** provides training, tools, and community support to address preservation challenges.

3. Policy Frameworks and Mandates

Effective digital preservation depends on robust policy frameworks that establish national strategies to preserve digital records. Legal mandates for government record archiving. Institutional standards for metadata, access, and storage management (OECD 2011; Beagrie and Jones 2008). Clear policies ensure preservation efforts are sustainable, transparent, and legally compliant, supported by dedicated staff and disaster recovery planning.

Legal and Ethical Considerations

Digital preservation involves navigating complex legal and ethical issues to ensure responsible access and use of digital content.

- **Intellectual Property Rights (IPR)**

Many digital and digitized works are protected by copyrights or licenses. Institutions must secure proper permission, as even public domain originals may have new rights in their digitized form.

- **Access vs. Preservation Balance**

Not all preserved materials can be immediately made publicly accessible. Sensitive or copyrighted content may require controlled access, embargo periods, or user restrictions to balance its availability with legal obligations.

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- **Privacy and Data Protection**

Digital archives often contain personal information. Compliance with privacy laws, such as the GDPR or India's IT Acts, is essential. Institutions must anonymizes sensitive data and ensure secure storage to protect individual rights and maintain public trust.

Digital Preservation efforts

To understand how digital preservation works in practice, it is important to examine leading initiatives from around the world.

- **National Digital Information Infrastructure and Preservation Program (NDIIPP) USA** :Launched by the Library of Congress, NDIIPP developed a national strategy to preserve and ensure long-term access to culturally significant digital content. It established key partnerships and tools to foster a preservation-aware culture in the U.S. .
- **British Library's Digital Preservation Efforts** : The British Library leads the UK in digital preservation through its dedicated strategy using systems such as DLS and standards such as METS and PREMIS. Its work includes large-scale web archiving and international collaborations.
- **Digital Preservation in India** : India has developed robust national platforms to support digital knowledge access and preservation. They are **NDLI** (National Digital Library of India), managed by IIT Kharagpur, aggregates multilingual and cross-disciplinary educational content , and **INFLIBNET** , an inter-university center under UGC, runs initiatives such as Shodhganga and e-ShodhSindhu to preserve and disseminate Indian academic output.

Emerging Technologies and Trends

- **Blockchain in Digital Preservation:** Blockchain offers a decentralized and tamper-proof method to verify and record digital assets, ensuring transparency and authenticity in preservation workflows.
- **AI and Machine Learning:** AI and ML automate metadata creation and content restoration, enhancing the scalability and accuracy of preservation strategies.
- **Linked Data and Semantic Web** : Linked data and semantic web technologies improve the access, interoperability, and contextualization of digital objects across platforms.
- **Sustainable Digital Preservation (Green IT)** : Green IT promotes energy-efficient infrastructure and eco-friendly practices, helping institutions to align digital preservation with environmental sustainability.

Recommendations and Best Practices

As digital preservation advances, adopting structured best practices is essential to ensuring the long-term accessibility and sustainability of digital heritage.

1. Establishing Institutional Policies

Institutions should implement clear policies covering preservation frameworks, metadata standards (e.g., PREMIS and METS), legal considerations, and sustainability planning. Well-defined roles and procedures help ensure the consistency, accountability, and long-term protection of digital assets (Beagrie & Jones, 2008).

2. Training and Capacity Building

Digital preservation requires ongoing training and interdisciplinary collaborations. Regular staff development, knowledge sharing, and a culture of preservation are key to building skilled teams capable of managing evolving preservation challenges (Borgman 2007; Hedstrom 1998).

3 Collaborative Networks and Community Involvement

Collaboration enhances digital preservation through shared resources and global standards:

- **Global Partnerships:** Engage with initiatives such as the Digital Preservation Coalition and UNESCO's Memory of the World Program for Global Knowledge Exchange (UNESCO, 2003).
- **Shared Repositories:** Use cooperative platforms such as LOCKSS, CLOCKSS, and NDLI to expand access and reduce duplication.
- **Public Engagement:** Crowdsourcing and volunteer participation can enrich collection and improve metadata.
- **Tech Partnerships:** Collaborating with technology providers supports innovation and sustainable infrastructure (OECD, 2011).

These strategies foster a resilient and inclusive digital-preservation ecosystem.

Conclusion

The preservation of digital heritage is a multidimensional task that requires strategic, collaborative, and sustained effort. This study examined various aspects of digital preservation, from its foundational challenges to emerging solutions and institutional roles. After going through all the issues discussed above and taking them into consideration, preservation of digital data is a must in any manner for future reference, which cannot be adjusted in any way.

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Original Article

A study on Consumer Behaviour in the Age of Influencer Marketing

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Abstract

Consumer behaviour in influencer marketing is a complex and ever-evolving area of research that investigates how consumers engage with, are swayed by, and react to promotional messages conveyed by social media figures. Central to this discussion, this abstract delves into the psychological and social factors that motivate consumers to place their trust in endorsements from people who may not have conventional celebrity fame but are regarded as having substantial authenticity and specialized knowledge. The transition from conventional advertising to a more peer-oriented method of persuasion is the main focus. Source credibility theory and social proof, which holds that customers are more likely to adopt behaviour or buy items when they witness others—especially those they relate to or admire—doing the same, are important theories guiding this field. As strong social referents, influencers use their parasocial connections—one-sided bonds created by the consumer's perceived closeness to the influencer—to promote loyalty and engagement. The study's objective is to examine these patterns of behaviour and pinpoint the main factors influencing how customers react to influencer marketing. Additionally, it looks at how customer opinions are influenced by demographic parameters including age, digital proficiency, and cultural environment. This study advances our knowledge of how digital influence affects contemporary consumer decisions and offers guidance to marketers looking to establish enduring connections with their target markets.

Keywords: *Consumer behaviour, Influencer marketing, Source credibility, Authenticity Trust and loyalty, Engagement, Cultural Environment, Marketing strategy.*

Introduction:

Influencer marketing has grown into a powerful strategy that uses individuals with strong digital followings to promote products, services, and brands by leveraging their authenticity and credibility. Brands carefully select influencers whose audience demographics, values, and content style match their own objectives, ensuring that the promotion feels natural and trustworthy. Influencers then create engaging content in formats such as posts, stories, videos, blogs, and live interactions, all of which help communicate the brand's message in a relatable manner. Many countries mandate transparency, requiring influencers to disclose paid partnerships with labels like "ad," "sponsored," or specific hashtags to maintain honesty with audiences.

The success of a campaign depends heavily on audience engagement, measured through metrics like likes, comments, shares, click-through rates, conversions, and overall ROI. Influencers play a major role in shaping how consumers discover, evaluate, and purchase products, often introducing audiences to items they might not encounter through traditional advertising. Their recommendations feel trustworthy because followers perceive them as genuine, relatable individuals rather than corporate advertisers. Through personalized interactions—such as replies, Q&as, and live sessions—influencers strengthen relationships and make the shopping experience more interactive and meaningful. Their ability to target niche communities allows brands to reach specific customer segments with higher precision. Educational content like reviews, tutorials, and product demonstrations empowers consumers to make informed buying decisions.

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Emotional connections also influence behaviour, as followers often feel personally connected to influencers and value their opinions. User-generated content inspired by these promotions spreads additional social proof, while limited-time deals and exclusive offers create urgency. Overall, influencer marketing has significantly reshaped consumer behaviour by enhancing trust, improving product discovery, and driving higher online engagement and purchasing.

Opportunities and Challenges Opportunities:

- Trust and Authenticity: Many people have the impression that traditional advertising is less trustworthy and less authentication influencer marketing.
- Reaching Specific Demographics or Interest Groups: By collaborating with the appropriate influencers, brands may reach specific demographics or interest groups.
- Engagement: Because influencer marketing makes it possible to communicate directly with the target audience, it tends to produce results that are both more engaging and interactive.
- Cost-Effective: When compared to typical celebrity endorsements, micro-influencers and nano-influencers can be a more cost-effective marketing strategy option.

Challenges:

- Authenticity Issues: It might be difficult to keep one's audience from becoming sceptical if they get the impression that an influencer is only in it for the money if one wants to maintain their authenticity.
- Regulations: Compliance with advertising regulations and disclosures is absolutely necessary but might be difficult to achieve due to the regulations.

Review of Literature

De Veirman et al. (2017), suggests that the efficacy of influencer marketing hinges on the manner in which consumers perceive the legitimacy of influencers,a perspective that surpasses that of traditional advertising channels. The role of influencer marketing in the process of product discovery is of utmost importance. Consumers often depend on influencers to acquaint them with novel products.

Bergstrom et al. (2020), investigate the function of influencers in the capacity of product discovery, whereby they serve as catalysts for increasing interest and awareness among their audience. Through establishing a personal connection with their audience, influencers facilitate the opportunity for consumers to ask questions and receive customized solutions.

Jin et al. (2018), emphasize the importance of the interactive attributes of influencer marketing and its impact on customer engagement. Through the strategic use of influencer marketing, organizations have the ability to efficiently and precisely reach specific demographic segments or interest-based communities.

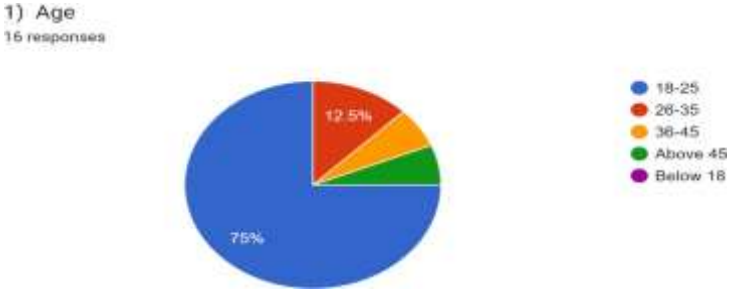
Babin and Carder (2019), conducted a study that examines the efficacy of micro- influencers in the context of targeted advertising and its potential impact on customer behaviour. In the context of influencer marketing, consumers are incentivized to provide content that pertains to their interactions and perceptions of endorsed items.

Smith et al. (2020), undertake a comprehensive evaluation to examine the influence of user-generated information and its subsequent cascading effect on individuals. Research Methodology The research has been used a descriptive convenience sampling approach.

Objectives of the Study

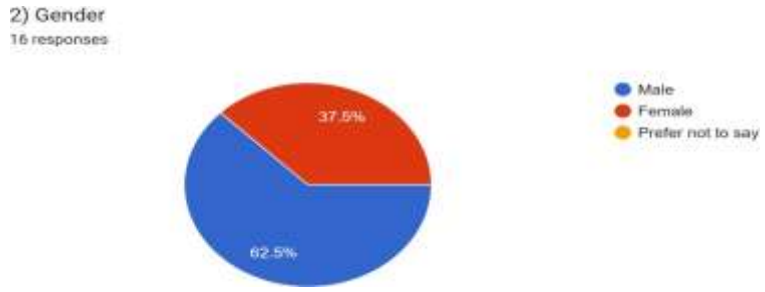
- To examine the role of trust and credibility in influencing buyer behaviour.
- To analyse factors impacting influencer marketing on consumer behaviour.
- To study how content style and platform choice impact consumer preferences.
- To evaluate how influencer endorsements affect brand perception.
- To study opportunities & challenges in influencer marketing & how it impacts on consumer behaviour.

Data Analysis and Interpretation

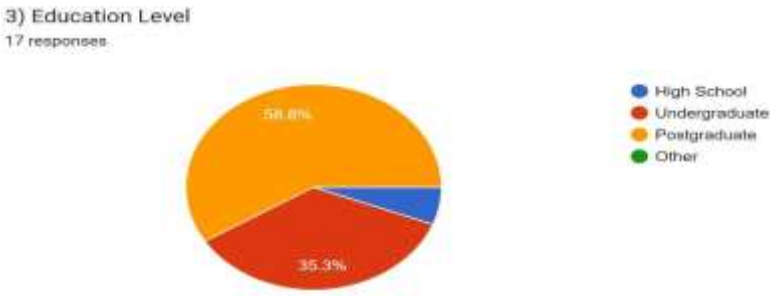


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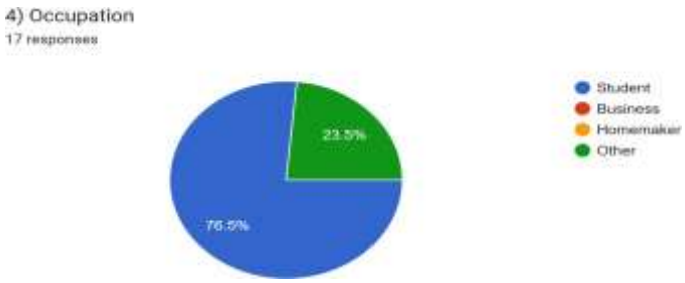
The chart shows that 75% of the respondents belong to the 18–25 age groups,
Indicating that the majority of participants are young adults who are highly active on social media. 12.5% fall in the 26–35 category, while smaller portions represent the 36–45 and above 45 groups, and no respondents are below 18. This demonstrates that influencer marketing primarily impacts young adults, who are more likely to
Follow influencers, engage with digital content, and make purchase decisions based on online endorsements.



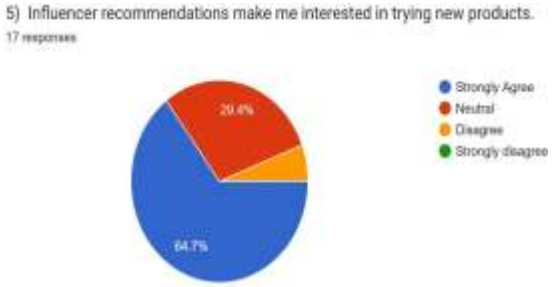
The chart shows that 62.5% of respondents are male, while 37.5% are female, and none selected "prefer not to say." This indicates that the sample consists of more male participants, suggesting that men may be slightly more represented in this survey on influencer marketing. The balanced participation from both genders, however, helps provide diverse insights into how influencer promotions impact consumer behaviour across male and female audiences.



The chart shows that 58.8% of respondents are postgraduates, making them the largest group, followed by 35.3% undergraduates, while only a small portion represents high school and none fall under "other." This indicates that most participants are well-educated, which suggests they may be more aware of digital trends, influencer credibility, and online purchasing behaviour. The high proportion of postgraduate respondents also reflects a more informed audience that evaluates influencer content more critically while still being engaged with social media platforms.



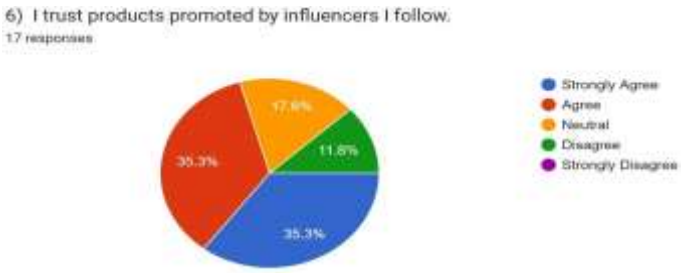
The chart shows that 76.5% of the respondents are students, while 23.5% fall under the "Other" category, with no participants from business or homemaker groups.



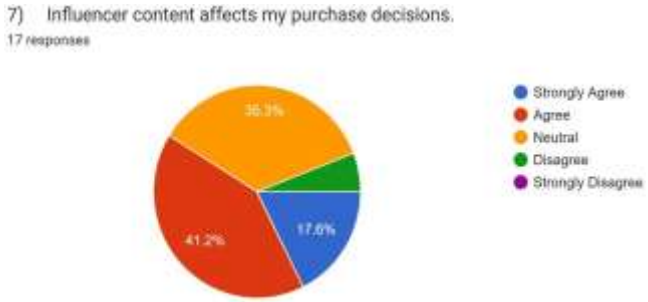
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his indicates that the majority of the sample consists of young learners who are highly active on social media and more exposed to influencer-driven content. Since students frequently follow trends, creators, and online recommendations, their responses provide strong insight into how influencer marketing shapes behaviour within the youth segment

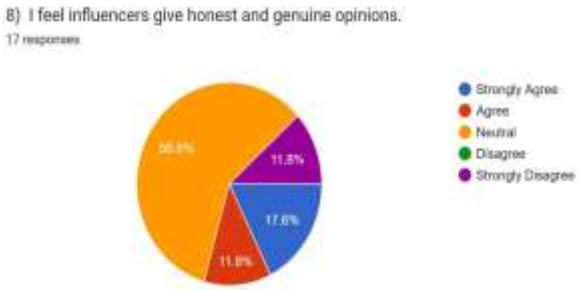
The chart shows that 64.7% of respondents strongly agree that influencer recommendations make them interested in trying new products, indicating a strong positive impact of influencer endorsements**.** 29.4% remain **neutral**, which suggests that while they do not actively rely on influencers, such recommendations may still affect their decisions indirectly. Only a small portion disagrees, showing minimal resistance to influencer influence. Overall, the data clearly highlights that influencers play a major role in encouraging product exploration and shaping consumer curiosity.



The responses show that 35.3% strongly agree and 35.3% agree that they trust products promoted by influencers they follow, meaning over 70% express a clear level of trust. This indicates that familiarity and consistent engagement with influencers positively influence consumer confidence in endorsed products. 17.6% remain neutral, suggesting uncertainty or selective trust, while 11.8% disagree, showing a small group that is cautious about influencer promotions. Overall, the data highlights that trust is a major factor driving consumer acceptance of influencer-recommended products.

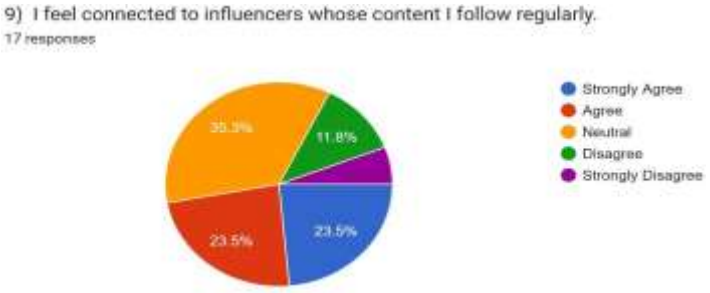


The chart shows how respondents feel about the influence of online creators on their purchase decisions. Most participants lean toward being affected to some extent: 41.2% agree and 17.6% strongly agree, indicating that influencer content plays a meaningful role for many buyers. Meanwhile, 35.3% remain neutral, suggesting some uncertainty or mixed experiences. Only a small portion, about **5.9%, disagree**, and no respondents strongly disagree. Overall, the results suggest that influencer marketing holds considerable persuasive power, with the majority acknowledging at least some impact on what they choose to purchase



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The chart shows 17% respondents feel about the honesty of influencers. Most participants 58.8% selected Neutral, indicating uncertainty about whether influencers give genuine opinions. A notable portion 29.4% either agree or strongly agree suggesting some trust in influencer authenticity. Meanwhile, 11.8% strongly



disagree, showing a small but clear group that believes influencers are not honest. Overall, the results reveal mixed perceptions, with the majority unsure, some expressing trust, and a few displaying strong skepticism.

The chart shows that the largest group 35.3% chose Neutral, suggesting many are unsure about feeling personally connected. Meanwhile, 23.5% Strongly Agree and 23.5% Agree indicate that nearly half of the respondents do feel some level of connection to influencers. On the other hand, 11.8% Disagree and 5.9% Strongly Disagree show that a small portion does not feel connected at all. Overall, the responses suggest that while many remain neutral, a significant number experience a sense of connection with influencers they follow.



The chart presents responses from 17 participants about checking influencer reviews before purchasing a new product. The largest group 35.3% selected Strongly Agree, showing that many strongly rely on influencer opinions when making buying decisions. Another 29.4% chose Agree, reinforcing that influencer reviews are influential for most respondents. Meanwhile, 17.6% remained Neutral, indicating some uncertainty about using influencer recommendations. Only 17.6% selected Disagree, and no one chose Strongly Disagree, suggesting minimal resistance to influencer guidance. Overall, the results show that a significant majority consider influencer reviews important in shaping their purchasing choices.

Conclusion

Influencer marketing is a growing and changing tactic with high payoff potential if done properly. In the right hands, it has the potential to help brands communicate with and interact with their intended audience on a more authentic and individual level. Remember that the success of influencer marketing depends not only on the business, but also on the influencer's credibility and the authenticity of the collaboration between the influencer and the brand. Because of its acknowledged power to shape and control customer behaviour in the digital age, influencer marketing has grown into a significant component of the advertising strategies of many different brands. The field of consumer behaviour has been profoundly affected by the rise of influencer marketing. Influencers have an effect on customer choices in a number of ways, including trust, product discovery, engagement, targeted advertising, user-generated content, and emotional relationships.

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Appendix

Age

- Below 18
- 18–25
- 26–35
- 36–45
- Above 45

Gender

- Male
- Female
- Prefer not to say

Education Level

- High School
- Undergraduate
- Postgraduate
- Other

Occupation

- Student
- Working Professional
- Business
- Homemaker
- Other

Influencer recommendations make me interested in trying new products.

- Strongly Agree
- Agree
- Neutral
- Disagree
- Strongly Disagree

I trust products promoted by influencers I follow.

- Strongly Agree
- Agree
- Neutral
- Disagree
- Strongly Disagree

Influencer content affects my purchase decisions.

- Strongly Agree
- Agree

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- Neutral
- Disagree
- Strongly Disagree

I feel influencers give honest and genuine opinions.

- Strongly Agree
- Agree
- Neutral
- Disagree
- Strongly Disagree

Influencers shape my perception of a brand's quality.

- Strongly Agree
- Agree
- Neutral
- Disagree
- Strongly Disagree

I check influencer reviews before purchasing a new product.

- Strongly Agree
- Agree
- Neutral
- Disagree
- Strongly Disagree

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Original Article

The Benefits, Challenges and Opportunities for Sustainable Green Supply Chain

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Abstract

Green supply chain management is a strategic approach that incorporates sustainable practices into supply chain operations. This includes working with environmentally conscious suppliers, sourcing sustainable materials, and managing products sustainably throughout their life cycle. In addition to consumer demand, the growth of green supply chain management has also been driven by regulatory standards.

In recent years, governments around the world have introduced more initiatives and incentives for businesses to adopt sustainable practices that are consistent with the United Nations Sustainable Development Goals. In today's global economy, businesses are increasingly focusing on reducing the environmental impact of their supply chains, and as a result, green supply chain management is receiving significant attention. Green supply chain management (GSCM) is an advanced management approach that considers environmental impacts comprehensively, requiring green supplier cooperation for green production but does not directly lead to effective waste disposal, which suggests the possibility of disconnection and more integrated approaches.

Green distribution helps meet consumer demand for sustainable practices. It emphasizes sustainable development for society and industries, including environmental and environmental protection design principles from the source of raw materials to the recycling of waste materials. The aim of this conceptual paper is to identify the challenges and practical issues in green supply chain management. In addition, it also draws attention to the established theory of adopting green business practices to clarify the complexities and practical issues that arise in the process.

The research focuses on the factors that hinder the success of green supply chain operations. The paper reveals the challenges and problems that arise from conflicting objectives and the limitations of measurement methods. Future research will be an opportunity to describe a practical measurement method to enable green businesses to achieve market acceptance as well as profit forecasting and strategic goal formulation. These findings will provide an overview of solving supply chain problems when implementing green supply chain practices. In the long run, management practices will enhance performance in supply chain components.

Therefore, in the current competitive scenario, the driver of green supply chain management assumes significant importance and requires serious research. To draw attention. This paper highlights the need for 'green' and green concepts in business. The challenges of green supply chain management for companies should not be ignored. Organizations need to balance sustainability with efficiency and profitability. This requires careful planning and organization. This article attempts to provide information on the benefits and challenges of green supply chain management as well as various concepts and strategies.

Keywords: *Green Supply Chain Management, Supply.*

Introduction:

Driven by global carbon neutrality goals and sustainable development strategies, enterprise supply chains are under increasing pressure to shift from efficiency-oriented models to greener, low-carbon approaches. With climate change intensifying and resource constraints mounting, Green Supply Chain Management (GSCM) has become central to advancing corporate sustainability.

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Unlike conventional supply chains, GSCM pursues a dual objective: maximizing resource utilization while minimizing environmental impact across procurement, production, logistics, and waste management.

Consequently, achieving high supply chain performance while simultaneously reducing costs and emissions has emerged as a pressing research challenge.

In this era of globalization, organizations are facing rapid changes in the business environment, including increased internationalization and global competition. To remain successful, companies are putting their best effort and deploying the resources in the best possible way. In a way they are contributing to the country's economy as well. The economic growth increases the level of energy and material consumption, which actually contributes to In today's global economy, businesses are placing increased emphasis on mitigating the environmental impacts of their supply chains and green supply chain management is gaining significant focus as a result. This figure is likely to rise as environmental and ecological concerns mount. By integrating sustainable practices into their supply chains, organisations can reduce their carbon footprint, enhance brand reputation, and satisfy growing consumer demands for ecologically responsible products. However, the challenges of green supply chain management should not be overlooked. Organisations need to balance sustainability with efficiency and profitability. This requires careful planning and organisation. This article will explore the benefits and challenges of green supply chain management as well as provide information on the various concepts and strategies underpinning sustainable practices. approach that integrates sustainable practices into supply chain operations. It involves working with ecologically conscious suppliers, sourcing sustainable materials and managing products sustainably across their life cycles.

In addition to consumer demand, the rise of green supply chain management has also been driven by regulatory standards. In recent years, governments worldwide have introduced more initiatives and incentives to businesses to adopt sustainable practices that align with the United National sustainable development goals. In today's global economy, businesses are placing increased emphasis on mitigating the environmental impacts of their supply chains – and green supply chain management is gaining significant focus as a result. In fact, 51% of business have already implemented a formal supply chain sustainability strategy. This figure is likely to rise as environmental and ecological concerns mount.By integrating sustainable practices into their supply chains, organisations can reduce their carbon footprint, enhance brand reputation, and satisfy growing consumer demands for ecologically responsible products. However, the challenges of green supply chain management should not be overlooked. Organisations need to balance sustainability with efficiency and profitability. This requires careful planning and organisation.This article will explore the benefits and challenges of green supply chain management as well as provide information on the various concepts and strategies underpinning sustainable practices. Despite the significance of SMEs, which constituted 99.6% of all businesses or approximately 3.13 million firms in 2020, Thailand confronts a persistent waste disposal issue. This problem is exacerbated by the government's lackadaisical approach to enforcing stringent waste management practices, particularly among SMEs. Research by Dey et al. (Citation 2020)revealed a concerning 70% prevalence of negative perceptions towards sustainability and waste disposal within this sector, underscoring a critical gap in environmental stewardship (Dey et al. Citation2020).

Recently, global warming has emerged as a pressing issue worldwide due to its detrimental effects on the environment, including large-scale disasters, flooding, and landslides. These events have severe economic impacts and are direct consequences of global warming (Linnenluecke, Griffiths, and Winn Citation2012; Nkrumah et al. Citation2021). Major contributors to this phenomenon include carbon dioxide (C□O2) emissions from industrial production (31.1%) and waste landfilling (3.2%) (Manfredi et al. Citation2009; Wei and Lahiri Citation2022). As a result, it is imperative for countries globally, especially their governments and businesses, to mitigate the effects of human activities on climate change (V. K. Sharma, Chandna, and Bhardwaj Citation2017). Consequently, many developed nations have implemented policies to curb environmentally damaging practices.

In the context of emerging markets like Thailand, the challenge is not only to adopt these measures but also to innovate and adapt in the face of limited resources and infrastructure. For instance, the European Union (EU) has been proactive in promoting a green economy among its member states, aiming to reduce CO2 emissions by 55% by 2030 through incentives such as a reduction in environmental taxes for green practices (Criqui, Jaccard, and Sterner Citation2019). Similarly, emerging markets can benefit from adopting green supply chain (GSC) practices, which not only help in achieving sustainability but also offer economic advantages (Han and Huo Citation2020; Walker et al. Citation2014). These benefits include gaining consumer trust, improving financial and market performance, and reducing operational costs through waste minimisation and avoidance of environmental non-compliance penalties (Han and Huo Citation2020; Nkrumah et al. Citation2021).

Moreover, embracing green supply chain practices can enhance a firm's environmental, social, and economic performance, leveraging activities across all processes from supplier to customer cooperation (Y. Feng, Lai, and Zhu Citation2022; S. Liu and Chang Citation2017). While developed countries have led the way in adopting green supply chain practices, there's a growing trend of their adaptation in emerging markets (Sarkis, Zhu, and Lai Citation2011). These markets have the opportunity to not only catch up but potentially leapfrog to more advanced green technologies and practices. This requires focusing on technology transfer, capacity building, and fostering

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international cooperation to overcome the unique challenges faced by these regions (Srisathan, Ketkaew, and Naruetharadhol Citation2023).

Thailand, as an emerging market, is at a critical juncture in promoting a green economy through the adoption of green supply chain (GSC) practices in its industrial activities to mitigate waste and pollution (Aunyawong et al. Citation2024; Pintuma and Aunyawong Citation2021). This imperative challenges the Thai government to revisit and reformulate policies aimed at curtailing the adverse environmental impacts attributed to C×O2 emissions from manufacturing sectors (Akkalatham and Taghipour Citation2021). Such emissions pervasively affect the industrial landscape, including the small and medium-sized enterprises (SMEs) that are pivotal to Thailand's economy (Ratanakuakangwan and Morita Citation2021).

Despite the significance of SMEs, which constituted 99.6% of all businesses or approximately 3.13 million firms in 2020, Thailand confronts a persistent waste disposal issue. This problem is exacerbated by the government's lackadaisical approach to enforcing stringent waste management practices, particularly among SMEs. Research by Dey et al. (Citation2020) revealed a concerning 70% prevalence of negative perceptions towards sustainability and waste disposal within this sector, underscoring a critical gap in environmental stewardship (Dey et al. Citation2020).

Empirical evidence pertaining to green supply chains predominantly concentrates on closed-loop supply chains, adaptation to green supply chains, and green supply chain management. Govindan et al. (Citation2015) explore the influence of a closed-loop supply chain on reverse logistics, employing quantitative methods to synthesise a foundational understanding of prior research (Govindan, Soleimani, and Kannan Citation2015). Nkrumah et al. (Citation2021) demonstrate that green supplier development skills and environmental engagement significantly enhance green supply chain management adoption (Nkrumah et al. Citation2021). Liu and Chang (Citation2017) reveal that closed-loop orientation and green supply chain management positively impact environmental and economic performance, with closed-loop orientation also affecting the extent of green supply chain management adoption (S. Liu and Chang Citation2017). However, these studies do not delve into responsible waste disposal practices or the internal dynamics of the green supply chain. Moreover, the research efforts of Nkrumah et al. (Citation2021) and Liu and Chang (Citation2017), while insightful, have primarily focused on large manufacturing firms. This focus neglects the unique challenges and opportunities presented by Small and Medium-sized Enterprises (SMEs), which represent a substantial portion of global employment and business entities. According to the OECD (Citation2021), overlooking SMEs in the context of green supply chain management research is a significant oversight, given their pivotal role in the global economy and their potential impact on environmental sustainability (OECD Citation2021).

Addressing this gap, our research posits that integrating green supply chain practices can revolutionise the approach to responsible waste disposal among firms, thereby laying a foundation for sustainability within Thailand's burgeoning market. This study illuminates the pressing need to enhance environmental consciousness and understanding of green supply chain principles, particularly among SMEs. The decision to focus on SME industries in Thailand for our analysis stems from the paucity of research on the strategies and activities of SMEs in emerging markets. This research aims to shed light on these areas, advocating for a paradigm shift towards sustainability in the Thai economic landscape. Moreover, the innovations highlighted in our study pertain to SME managerial innovation practices, which encompass innovative strategies tailored specifically for small and medium-sized enterprises to enhance their management processes, operations, and overall performance. These practices may involve the adoption of new technologies, strategies, or approaches to address the unique challenges and opportunities faced by SMEs.

This current study seeks to bridge this gap by examining how the components of the green supply chain – namely, green supplier cooperation, green manufacturing, green distribution, and green customer cooperation – contribute to fostering responsible waste disposal practices among Thai SMEs. It addresses two primary questions: (1) how does green supplier cooperation relate to green customer cooperation within the green supply chain framework? (2) In what ways does the green supply chain relate to responsible waste disposal practices among firms in Thailand? Our research aims to shed light on the impact of green supply chain components on firms' waste disposal practices, identifying key factors that drive responsible environmental management in the Thai context.

This study embarks on ground-breaking research to empirically uncover the mechanisms by which green supply chain variables catalyse responsible waste disposal practices. Distinguished by its focus, this paper pioneers the investigation into how green supply chain practices not only bolster responsible waste disposal among firms but also weave into the fabric of policy and economic development in Thailand. It promises to illuminate the path for policymakers, businesses, and stakeholders, offering insights that could shape the future of sustainable business practices and environmental governance. By delineating the direct and indirect effects of green supply chain components on waste management, our research is poised to contribute significantly to the literature on sustainable supply chains and environmental management. Moreover, it offers practical implications for the strategic planning and policy formulation of both governmental bodies and corporations, aiming to align economic development with environmental sustainability in emerging markets. The findings serve as a cornerstone for subsequent research, paving the way for innovative strategies in green supply chain management that are both effective and adaptable to different economic contexts. Thus, our study not only fills a critical gap in the current body of knowledge but also sets the stage

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for transformative change in how green supply chain practices are integrated with national policies and business operations to achieve a sustainable future.

- **Implications**
- **Practical implication**

In practical terms, this study highlights the need for Green Suppliers (GS) to adopt Production Concept Marketing across sectors. This involves sharing information, establishing green material quality management, and ensuring products from key suppliers are free of non-green items. Moreover, to manage costs effectively, GS should consider economies of scale, which can be beneficial for mass production. This approach aligns with the aspects covered in GS1–4. Furthermore, strategic integration, as noted by (Zhang et al. Citation2022), can lead to faster innovation cycles and enhanced product quality. Green manufacturing plays a pivotal role in cost control (Abdul-Rashid et al. Citation2017; Guo et al. Citation2021) and should plan production with environmental performance in mind, compliant with relevant laws and focused on securing clear contracts for green production, as per GM1–4. Green distribution is essential for a green supply chain, mitigating environmental impacts from delivery to the end customer. Green distribution encompasses not just logistics but also packaging and marketing channels, fostering better collaboration with stakeholders on circular economy issues (A. Khan et al. Citation2021; Yildiz Çankaya and Sezen Citation2019). Thai SMEs could now pursue sustainability goals and have made strategic alliances to implement management practices for green supply chains by integrating eco-friendly initiatives into their core business strategies. These alliances often involve collaboration with suppliers, regulatory bodies, and other stakeholders to develop and implement sustainable sourcing, production, and distribution processes (Srisathan et al. Citation2022). Through these efforts, businesses aim to reduce their environmental footprint, enhance brand reputation, and contribute to the global effort to address climate change and environmental degradation (Abbas and Tong Citation2023).

Conceptual implication

The theoretical implications of this study enrich our understanding of the green waste-conscious supply chain by emphasising the importance of environmental collaboration. The research suggests that by intertwining green manufacturing, green supplier cooperation, and green distribution, businesses can not only augment their operational capabilities but also secure a competitive edge. This synergy aligns with natural resource-based view (Tripathi et al. Citation2021), positing that leveraging environmental resources can lead to sustainable competitive advantages.Our findings extend this theory, proposing that embracing a green waste-conscious approach across various departments can significantly enhance overall supply chain performance. This approach not only aligns with ecological goals but also serves as a strategic lever for cost management, speedier access to markets, and heightened product quality, resonating with the principles (Afum et al. Citation2020; Agyabeng-Mensah, Afum, and Ahenkorah Citation2020). By infusing the concept of waste consciousness into the supply chain, the study offers fresh insights into the theoretical landscape. It underscores the potential for waste minimisation and resource reuse to not just mitigate environmental impact but also to serve as catalysts for innovation and efficiency. The study's results advocate for a model where environmental stewardship and business efficiency coalesce, redefining green practices as intrinsic elements of quality and performance rather than as compliance or public relations strategies (Behravesh, Darnall, and Bretschneider Citation2022; Keramitsoglou and Tsagarakis Citation2013; Navalersuph and Charoenngam Citation2021).
(Srisathan, Ketkaew, and Naruetharadhol Citation2023). They are willing to pay premium prices for products that are sustainable and ethically sourced (Diallo et al. Citation2021).

Research has shown how all these pieces of the green supply chain management puzzle are interconnected. Chatzoudes and Chatzoglou (Citation2023) point out that green supply chain management remains a relatively untapped area for many SMEs not only highlight its novelty but also underscore a vast landscape of opportunity and advantage awaiting SMEs that choose to embrace these practices more broadly. This viewpoint opens up a promising debate on the potential for green supply chain management to revolutionise business operations, drive sustainable development, and offer competitive edge in the market. The finding becomes particularly compelling when considering the increasing global emphasis on environmental sustainability, consumer demand for eco-friendly products, and the potential for regulatory landscapes to evolve in favour of greener business practices. In this light, the adoption of green supply chain management practices stands not just as a pathway to environmental stewardship, but as a strategic business move that could redefine industry standards, foster innovation, and create long-term value for companies willing to invest in a sustainable future (Abbas and Tong Citation2023). Balon (Citation2020) emphasises the crucial need for green supply chain management practices to be adopted widely across different industries and countries as a key strategy for significantly advancing global environmental sustainability. When suppliers and companies align on sustainability goals, this collaboration leads to enhanced green manufacturing methods (Peng et al. Citation2022). Subsequently, if products are manufactured in an eco-friendly manner, then the methods employed to deliver these products to customers should also adhere to sustainable practices, ensuring that the entire process is environmentally responsible (Zhang et al. Citation2022). Furthermore, if a firm demonstrates its commitment to sustainable distribution

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methods, this commitment can significantly influence customers to adopt more environmentally conscious behaviours. Additionally, Zhu et al. (Citation2005) and Zhuang et al. (Citation2014) highlight the significance of providing organisations, specifically SMEs, with the necessary resources and knowledge to embrace green initiatives effectively. This holistic adoption of green supply chain practices lays the groundwork for examining their interconnected impacts within the supply chain.

Supply chain management concepts

Green supply chain management includes a range of strategies aimed at reducing the environmental impact of a product or service across its lifecycle. Some of its most important concepts include:

Green purchasing:

This involves selecting suppliers and products based on their environmental impact. It includes prioritising eco-friendly materials, sourcing sustainably, and selecting suppliers who are intent on minimising their carbon footprint.

Green design:

This concept focuses on creating products that have minimal environmental impact throughout their lifecycle. This includes using sustainable materials, designing for energy efficiency, and ensuring products are recyclable or biodegradable, thus reducing waste and resource consumption.

Life cycle assessment:

A comprehensive evaluation of a product or service's environmental impact throughout its entire lifespan, from raw material extraction to production, use, and disposal.

Reverse logistics:

This comprises of moving goods from consumers back to the manufacturer for reuse, recycling, or proper disposal. This practice reduces waste, recaptures value and promotes a circular economy by extending the lifecycle of products and components.

Green manufacturing:

This involves producing goods using processes that minimise environmental impact such as reducing energy and water consumption, lowering emissions, and minimising waste.

Green packaging:

Emphasising the use of environmentally friendly packaging materials that are recyclable, biodegradable, or reusable, this aims to reduce packaging waste, lower resource consumption, and decrease the environmental footprint of products.

Benefits of Green Supply Chain Management:

Green Supply Chain Management has several advantages such as; reduction of cost, environmental protection, better brand equity, and compliance with global standards. It also has social implications by creating healthier societies and business environments.

Cost Savings:

The adoption of Green Supply Chain Management is a way of cutting down on costs by conserving energy, minimizing wastage, and maximizing resource utilization. This means that by minimizing material expenses, increasing production efficiency, and decreasing the cost of transportation, organizations can increase their revenues and profits in an environmentally friendly manner.

Environmental Conservation:

Green Supply Chain Management is another technique that enables the conservation of the environment through the minimization of waste, reduction of carbon footprint, and encouragement of the use of environmentally friendly products. They include the promotion of environmental sustainability by reducing the impact of the firm's activities on the environment and the responsible management of natural resources.

Improved Brand Image:

The adoption of green supply chain practices can go a long way in improving the brand reputation of a company. Consumers and stakeholders are paying more attention to sustainability, and the organizations that are conscious of the environment and its preservation will benefit from a better image, which will attract environmentally conscious consumers, and better market positioning.

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Global Responsibility:

Green Supply Chain Management complies with the concept of global responsibility as it is faced with environmental issues like climate change and resource scarcity. It helps in the development of sustainable development and ensures that companies do the right thing for the planet and the world.

Social Benefits:

Green Supply Chain Management has social implications because it makes workplaces safer and healthier environments to live in and, at the same time, minimizes pollution that has negative impacts on the population. It promotes corporate philanthropy and strengthens organizational and consumer relationships and social bonds.

Competition:

Implementing Green Supply Chain Management can help a business stand out from its counterparts since it is not common. Environmental issues can help to attract the attention of consumers, who are increasingly concerned with the environment, and can also help to meet regulatory standards and increase efficiency, allowing businesses to excel among the competition.

Challenges and Barriers of Green Supply Chain Management:

The challenges associated with Green Supply Chain Management include the high costs of investment, low awareness, resistance to change, challenges in engaging suppliers, and complicated supply chains.

High Initial Costs:

Green Supply Chain Management requires considerable capital investment in the form of green technologies, environmentally friendly products, and changes in the facilities' layout. These are some of the challenges that can hinder organizations, especially small and medium enterprises, from implementing green strategies.

Lack of Awareness and Understanding:

Possible reasons are that there is a limited knowledge and appreciation of Green Supply Chain Management and the actions involved in achieving it. Some businesses may not clearly understand the benefits of sustainability or they can have problems with defining the right sustainable solutions and technologies.

Resistance to Change:

Lack of willingness to change is another challenge in implementing Green Supply Chain Management. Employees and stakeholders may also be used to conventional methods and thus, may resist change and adoption of sustainable supply of goods. To overcome this, organizations need to engage in communication, training, and showing the possible benefits of green practices.

Supplier Engagement:

The involvement of suppliers in going green can be problematic in that many may not have the capability or desire to be environmentally friendly. Effective two-way communication, rewards, and cooperation systems should be implemented to ensure the supplier's activities are in sync with the green supply chain management objectives.

Supply Chain Complexity:

There are some challenges associated with Green Supply Chain Management and one of them is the complexity of supply chains. Managing and integrating sustainability at multiple levels and across various stakeholders, geographical locations, and processes is challenging. Managing these complexities is vital to green supply chain management as discussed in this paper.

Technological and innovation challenges

The implementation of green supply chain management Requires enterprises to constantly adopt new technologies and Innovative methods to reduce resource consumption and Environmental pollution. However, technological and Innovation challenges cannot be ignored. On the one hand, the Development and application of new technologies require a Large amount of research and development investment, which May require the economic strength and research and Development ability of enterprises. On the other hand, the Promotion and application of technology may face the Problems of technical adaptability, technical cost and Technical standards. In addition, the speed of technological Update is fast, and the emergence of new technologies may Also make old technologies quickly obsolete, which brings Challenges to the technology selection of enterprises.

Impact of consumer awareness and Demand

The increasing concern of consumers about environmental Issues and the enhancement of environmental awareness also have an impact on green supply chain management. Consumers are increasingly inclined to choose Environmentally friendly products and services, and they are Increasingly demanding environmental responsibility and Sustainability of enterprises. This has forced companies to Consider environmental factors in their supply chains, from Raw material procurement to product packaging, which needs To meet environmental standards. If the enterprise

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cannot meet the environmental protection needs of consumers, it may Lead to the decline of market competitiveness and brand Image damage. In summary, the uncertainty of environmental regulations And policies, cross-border cooperation and compliance issues, Technological and innovation challenges, and the impact of Consumer awareness and demand are all important challenges Faced by green supply chain management in practice. Enterprises need to actively respond to these challenges, strengthen international cooperation, promote technological Innovation, and improve environmental awareness to achieve The common goal of environmental sustainable development. At the same time, the government and society should also Provide support and encouragement to create a good policy Environment and social atmosphere for enterprises to Implement green supply chain management.

Opportunities for Green Supply Chain Management

Emerging Technologies and Sustainable Innovation Emerging technologies and sustainable innovation are important factors driving green supply chain management. With the continuous progress of science and technology, many new technologies have been applied in supply chain Management, which provides a new way for enterprises to Realize efficient use of resources and environmental Protection. For example, iot technology can enable real-time Monitoring and data analysis of all links in the supply chain, Helping enterprises optimize logistics and transportation, and Reduce energy consumption and emissions. Intelligent Manufacturing technology can improve production efficiency And resource utilization efficiency, and reduce waste generation. Renewable energy technologies can replace traditional fossil fuels and reduce carbon emissions. The application of these emerging technologies makes green supply chain management more efficient and sustainable. Resource efficiency and cost advantage An important advantage of green supply chain management is to improve resource efficiency and reduce costs. By optimizing the operation of the supply chain, enterprises can reduce the waste of resources and the consumption of energy, thus reducing production costs. For example, the use of energy-saving equipment and environmentally friendly processes can reduce energy consumption and reduce energy expenses. Recycling waste and recycling recycled materials can reduce raw material procurement costs. In addition, by improving production efficiency and optimizing logistics, unnecessary links and intermediate links in the supply chain can be reduced, further reducing costs. These resource efficiency and cost advantages make companies more competitive in the global marketplace.

Improvement of brand reputation and market competitiveness Green supply chain management has a positive impact on the brand reputation and market competitiveness of enterprises. In modern society, consumers are more and more concerned about the social responsibility and environmental awareness of enterprises, and they are more inclined to choose those enterprises with a good environmental image. By actively implementing green supply chain management, enterprises can improve their environmental image, establish a good brand reputation, and attract more consumers with strong environmental awareness. In addition, green supply chain management also opens up new markets and business opportunities for enterprises. In some countries and regions. government and consumer demand for environmentally friendly products and services is gradually increasing, green supply chain management can help enterprises to meet these needs and expand market share. Strategic cooperation and shared value Green supply chain management encourages strategic cooperation and shared value among enterprises to jointly promote environmental sustainability. Companies can work with suppliers, partners and relevant stakeholders to develop and implement environmental policies and measures. Through information sharing, technological innovation and resource integration, the green improvement of the entire supply chain can be achieved. Strategic collaboration and shared value help reduce duplication of inputs and waste of resources, and improve efficiency and sustainability across the supply chain. At the same time, shared value is also conducive to improving the status and influence of enterprises in the supply chain, and promoting long-term cooperation and common development between supply chain partner.

Conclusion::

Above all, we are emphasizing the sustainable development of the industry, from the end of its product to the full use of the environment, and green supply is becoming important. Although practical problems arise, future green businesses are related to the market efficiency and its prediction to achieve strategic goals, as well as to describe the practical measurement method. Cost savings are achieved, environmental conservation is effectively achieved, and global responsibility is brought to bear on environmental problems such as climate change and water shortages. As these studies have shown, their advantages are also easy, such as making investments large, reducing costs, and fulfilling the challenges and investment supply chain.

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Original Article

Effectiveness of Rajyoga Meditation in Reducing Post-Traumatic Symptoms among Flood Survivors

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Abstract

This quasi-experimental study will evaluate the efficacy of Rajyoga meditation in reducing post-traumatic reactions among flood-affected adults. Using a two-group pretest–posttest design (Rajyoga intervention vs. wait-list control), we will measure PTSD symptoms, depression, Sleep Quality, Resilience and Self-Efficacy at baseline, immediately post-intervention (4 weeks), and at 3-month follow-up. The intervention consists of guided Rajyoga sessions (daily home practice + Five days -weekly group sessions). Primary outcomes are reductions in PTSD symptom severity and improvement in functioning. Secondary outcomes include reductions in depression/anxiety and increases in resilience. Findings will inform community mental-health disaster-response programs and contribute evidence on spiritual/meditative interventions for trauma in low-resource, culturally specific contexts.

Keywords: *Rajyoga meditation, flood survivors, Post-traumatic reaction, PTSD, disaster mental health, resilience, quasi-experimental study*

Introduction:

Flood disasters cause wide-ranging physical loss and severe psychological effects, including acute stress reactions and persistent post-traumatic stress disorder (PTSD). In low-resource and culturally diverse settings, scalable, low-cost psychosocial interventions are urgently needed. Rajyoga meditation a spiritually informed meditation practice emphasising self-awareness, positive thought, and inner calm is widely practiced in parts of South Asia and has anecdotal reports of reducing stress and improving wellbeing. Rigorous empirical evidence of Rajyoga's efficacy specifically for trauma symptoms among flood-affected populations is limited. This study tests under flood prone area at **Arambagh Block,Hooghly,West Bengal** whether a structured Rajyoga program reduces post-traumatic reactions and improves functioning relative to a wait-list control, using validated measures and a pretest , posttest follow-up study design. Natural disasters are among the most severe stressors that human beings can face. They strike unexpectedly, destroy homes, displace populations, and cause large-scale physical, social, and psychological devastation. Among the numerous forms of disasters that afflict humankind, floods are the most frequent and widespread. In India and across the world, floods account for enormous loss of life and property every year. Beyond the visible physical destruction, floods inflict deep invisible wounds on the minds of survivors. The sudden exposure to life-threatening experiences, loss of loved ones, disruption of community networks, and uncertainty about the future often leave survivors with long-lasting emotional scars.

Psychological reactions to floods include acute stress disorder, depression, anxiety, grief, and post-traumatic stress disorder (PTSD).

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Studies have shown that between 20–40% of disaster survivors develop clinically significant levels of post-traumatic reactions. Symptoms include intrusive memories, flashbacks, avoidance of trauma reminders, hyper arousal, and emotional numbing. These symptoms can persist for months or even years, leading to impairment in social, occupational, and interpersonal functioning. While physical rehabilitation and economic compensation programs are often established soon after a disaster, mental health rehabilitation is frequently overlooked or underfunded. Yet, psychological recovery is as essential as physical reconstruction for long-term community resilience.

Psychological Consequences of Floods

Flood survivors not only endure physical losses but also suffer from profound emotional disturbances. The sudden onset and magnitude of floods often leave victims helpless and disoriented. Common manifestations include insomnia, fear of recurrence, feelings of hopelessness, guilt for surviving, and somatic complaints. The chronic uncertainty and disruption of livelihood exacerbate these emotional problems. In developing countries like India, where mental health infrastructure is limited, many affected individuals remain untreated, leading to chronic psychological distress. Community-based interventions that are inexpensive, culturally acceptable, and easy to disseminate are therefore urgently needed.

Significance of the Study

This research holds both scientific and societal significance. Scientifically, it contributes to the growing body of evidence on mind-body interventions and their role in trauma recovery. It provides quantitative and qualitative data on Rajyoga's effects on PTSD, depression, anxiety, and resilience. From a societal perspective, the study offers a sustainable, community-based model of psychological intervention for disaster-affected regions. If proven effective, Rajyoga meditation can be integrated into disaster relief frameworks, mental health policies, and psychosocial support programs.

The study also aligns with the global emphasis on holistic health as advocated by the World Health Organization (WHO), which recognizes mental well-being as an integral part of disaster management. By empowering communities through accessible spiritual practices, the intervention can promote long-term resilience and self-healing.

Raj yoga Meditation for flood survivors

Rajyoga, taught by the Brahma Kumaris movement since 1935-36 onwards, emphasises open eyed meditationpractice focused on the self as a spiritual being (i.e. soul consciousness awareness) and positive to divine thought habits. Historically Raj yoga is used in South Asian communities for stress management from dawn of the human civilization. However, this meditation technique has seen expanding interest in secular and community health settings, specifically in management of emotional health under natural disasters. Disaster mental health evolved from trauma counselling and debriefing debates to evidence-based psychological first aid and trauma-focused therapies; integrating meditation practices is an emerging field.

A Spiritual-Cognitive Approach

Raj yoga meditation, as propagated by the Prajapita Brahma Kumaris Ishwariya Viswa Vidyalaya**,** commonly called as Brahma Kumaris a unique form of meditation that emphasizes spiritual self-realization and connection with the Supreme Source of peace and power. Unlike other meditative practices that require physical postures, breath control, or chanting, Raj yoga is primarily a cognitive and awareness-based meditation. Practitioners of **Brahma Kumaris, Arambagh Centre, Hooghly, West Bengal** have actively participated and guided for aforesaid meditation to visualize themselves as 'soul: eternal, peaceful, and pure beings of light' and to experience their relationship with the Supreme Soul. This inward journey of self-realization actually fosters positive thinking, emotional stability, and detachment from negative experiences and overall body consciousness.

Raj yoga meditation focuses on transforming the quality of thoughts from simple routine thought to elevated divine thought through understanding self in a better way. By cultivating positive thoughts and self-awareness, individual can regulate immature emotional responses more effectively and control distress, stress cum related trauma consequences for healthy living. This approach aligns with modern psychological theories such as cognitive-behavioural therapy (CBT) which emphasizes restructuring maladaptive thought patterns. This Raj yoga meditation is prevail in Indian civilization since dawn of the human civilization. Thus open eyed Raj yoga meditation practice being spread by Brahma Kumaris throughout the five continents of this world usually integrates ancient Indian wisdom with modern psychological principles of self-regulation and mindfulness. This meditation technique also integrates the Eastern and Western philosophy of human Psychology where heart and mind play very complementary role for more beneficial result within survivors of any natural calamities like floods etc.

Scientific Basis of Meditation for overcoming stress and post-traumatic stress disorder (PTSD).

Over the last few decades, meditation and mindfulness-based interventions have gained strong empirical support in clinical and community psychology for overcoming stress and allied trauma related to natural calamities. Neurobiological studies have demonstrated that meditation modulates activity in the amygdala, prefrontal cortex, and hippocampus regions of brain implicated in stress and trauma responses like post-traumatic stress disorder (PTSD). Regular meditation has been shown to decrease blood cortisol levels, enhance parasympathetic activation, and improve

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emotional regulation. Meta-analysis also suggest that meditation based interventions can reduce anxiety, depression, and PTSD symptoms across diverse populations (Reviews on meditation and PTSD (search terms: "meditation PTSD systematic review", "mindfulness PTSD meta-analysis").

Rajyoga meditation, in particular, has been found to improve heart rate variability, enhance cognitive control, and promote psychological well-being. Research among healthcare workers, students, and individuals with chronic stress has shown that Rajyoga practice reduces perceived stress and enhances resilience. (Jain, D., et. All.) However, systematic studies evaluating its effectiveness in trauma-exposed populations especially disaster survivors are scarce. Hence,

Acceptance by diversified cultural and Community people

In India and many South Asian communities, spirituality plays a central role in coping with natural calamities specifically for safeguard of humanity through proving basic needs along with mental cum emotional support. Different practices associated with spirituality as rituals such as prayer, chanting, yoga, and meditation are culturally embedded and socially accepted for better emotional health. Thus Rajyoga meditation with its non-religious nature and in depth spiritual orientation is particularly well suited to the Indian cultural context for intervention tool to manage stress and PTSD. It does not require any ritual activities or physical exertion, making it accessible even to elderly, physically injured or especially abled survivors. Furthermore, the Brahma Kumaris organizationhas an established presence in many parts of India, with trained instructors who voluntarily provide meditation training and counselling. This makes Raj yoga a potentially scalable, sustainable and culturally acceptable intervention tool for post-disaster rehabilitation.

Post-Traumatic Stress and the Need for Psychosocial Interventions

Post-traumatic stress is not merely an individual problem but a public health concern. Following floods, affected communities often experience collective trauma. Social networks collapse, livelihoods are destroyed, and displacement fragments the community's sense of identity. Psychosocial interventions that address both individual and community healing are essential. Rajyoga meditation offers not only a personal coping mechanism but also a collective platform where survivors can come together, meditate, and regain emotional balance. Group meditation sessions encourage social support, empathy, and shared resilience.

Traditional psychotherapeutic interventions, though effective, are often resource intensive, requiring trained professionals and long term follow ups. In contrast, meditation-based programs can be delivered by trained volunteers at minimal cost. Moreover, meditation empowers individuals to take responsibility for their mental health, thereby promoting long term resilience and self-reliance.

Research Gap

Despite the widespread use of Rajyoga in stress management, few empirical studies have rigorously evaluated its impact on trauma-related symptoms, especially among disaster survivors. Most existing research focuses on general stress, anxiety, or lifestyle-related diseases. There is a paucity of data examining Rajyoga's efficacy in alleviating PTSD symptoms or improving psychological well-being among those affected by natural disasters. The present study addresses this critical gap by systematically testing the effectiveness of Rajyoga meditation on post-traumatic reactions among flood-affected populations using standardized psychological measures.

Theoretical Framework

This research is grounded in the bio psychosocial model of health and the theory of cognitive-emotional regulation. Rajyoga meditation influences the biological system (reducing physiological arousal), the psychological system (enhancing self-awareness and emotion regulation), and the social system (improving interpersonal harmony). It encourages a shift from trauma-centred thinking to self-empowered awareness, thereby reducing re-experiencing and avoidance behaviours. The practice cultivates equanimity and acceptance, essential components in trauma recovery.
Furthermore, from the perspective of positive psychology, Rajyoga fosters hope, optimism, gratitude, and purpose—protective factors that counteract the negative effects of trauma. Spiritual coping frameworks also support that connecting with a higher purpose enhances resilience and post-traumatic growth.

Hypotheses framed for current research work

Primary:

1. H1: Participants receiving Rajyoga will show significantly greater reduction in PTSD symptom severity from baseline to 4 weeks than controls.

Secondary:

2. H2: Rajyoga participants will show greater reductions in depression and anxiety scores and greater improvements in functioning and resilience at 4 weeks and 3-month follow-up.

H3: Improvements in the intervention group will be maintained at 3-month follow-up.

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Aims and objectives

- To evaluate whether a 4-week Rajyoga meditation program reduces PTSD symptoms among flood-affected adults compared with a wait-list control.
- To assess secondary effects on depression, anxiety, quality of life, and resilience.
- To examine maintenance of effects at 3-month follow-up.
- To document acceptability and adherence in a disaster-affected community.

Research Methodology

Design

Quasi-experimental nonrandomised controlled pre test & post test with 3-month follow-up. (If feasible, randomised controlled trial is preferable; if randomisation is possible, modify design to RCT.)

Setting

Community centres or temporary relief camps in flood-affected districts underAramBagh Block, Hooghly,West Bengal has been selected with Raj yoga meditation as intervention tool delivered by trained Raj yoga instructors of **Brahma Kumaris, Arambagh Centre ,Circus Maidan, Sub – Division – Arambagh, Dist. - Hooghly, West Bengal** as given below:

- Recruit N=100 (n=50 Control Group & n=50 Experimental Group) participants meeting inclusion criteria from flood-affected communities.
- Administer baseline assessments: PTSD symptoms, depression, Self - Efficacy, SQS and resilience.
- Deliver a 4 week Rajyoga awareness program to treated group only
- Re-assess at 4 weeks and 3 months; analyse within- and between-group changes.
- Conduct qualitative interviews with a purposive subsample about acceptability and lived experience.

Criteria for selection of participants

- **Inclusion:** Adults ≥18 years; experienced flood impact; scoring above threshold on screening PTSD measure (e.g., IES-R ≥ cutoff); able to consent.
- **Exclusion:** Active psychosis, severe cognitive impairment, active suicidal intent, ongoing trauma-focused psychotherapy.

Sample size (recommendation)

50 numbers participants per group have been recruited to detect medium effects (account for 20% attrition). (Adjust after power analysis with chosen effect size, alpha=0.05, power=0.80.)

Sampling & Recruitment

Purposive recruitment through relief agencies, community leaders, and health posts. Obtain informed consent; explain voluntary nature and confidentiality.

Intervention Procedure:Rajyoga Awareness Program for4 weeks

1. Orientation session explaining Rajyoga principles and safety.
2. Five-weekly group practice sessions (60 minutes each) led by certified instructor:

A. 10 min: brief check-in
B. 30 min: guided Rajyoga meditation (visualisation, identity as calm ‘soul’, positive affirmations)
C. 10 min: reflective sharing (if comfortable)
D. 10 min: practice plan & home assignment

3. Daily home practice: 20–30 minutes guided sitting (audio provided).
4. Logbook for home practice adherence.

Psycho analytical tools and other Instruments being used for current study

Scale collection Center: - Yellow Pond, 695,9th Cross Street, Anna Nagar, Madurai, Tamilnadu – 625020, India

- **PTSD symptoms:** Impact of Event Scale–Revised (IES-R) or PTSD Checklist for DSM-5 (PCL-5).
- **Depression Scale (DS)** Dr. Suresh Kumar Murugesan, Dr. Veenavani Nellapalli(2025)
- **Self-Efficacy Scale (2023),**Dr. Srinivasan,M.D, Dr. Suresh Kumar Murugesan, Ms. Jothi Kalathur
- **Sleep Quality Scale (SQS),** Dr. Srinivasan,M.D, Dr. M.Suresh Kumar, Dr. B.K. Pandiamoni
- **Resilience Scale (RS),** Dr. Srinivasan,M.D, Dr. Suresh Kumar Murugesan, Dr. Veenavani Nellapalli(2023)

Data Collection Points

- T0: Baseline (pre-test)
- T1: Post-intervention (4 weeks)
- T2: Follow-up (3 months’ post-intervention)

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Data Analysis

- Descriptive statistics for demographics and baseline comparability.
- Intention-to-treat analysis.
- Primary analysis: Mixed-effects repeated-measures ANOVA or hierarchical linear models to test group × time interaction for PTSD scores.
- Secondary analyses: similar models for depression, anxiety, resilience.
- Effect sizes (Cohen's d), confidence intervals, and clinical significance thresholds (e.g., ≥10–20% symptom reduction as clinically meaningful).
- Qualitative data: thematic analysis of interviews for acceptability and perceived change.

Ethical considerations

- Institutional ethics approval.
- Structured Informed consent; confidentiality.
- Safety protocol for suicidal ideation referrals.
- Cultural sensitivity and rights to withdraw.

Search of Literature with framing key words for current study

Different databases (PubMed, PsycINFO, Scopus, Google Scholar) and gray literature have been choosen with purposively framed keywords: "Rajyoga", "meditation and PTSD", "meditation and disaster", "mindfulness and flood survivors", "yoga and PTSD", "spiritual meditation and trauma" to summarize the following findings to support the current research.

Key review themes to summarise:

- Evidence for meditation interventions (MBSR, mindfulness, transcendental meditation) reducing PTSD/anxiety/depression.
- Any controlled studies of Rajyoga for stress/mental health (if limited, include observational or pilot data).
- Cultural acceptability of spiritual meditation in disaster contexts.
- Mechanistic literature: stress physiology (HPA axis), emotion regulation, and social support pathways.

Operational Definitions

- **Raj yoga Meditation:** A contemplative practice taught by the Brahma Kumaris tradition focusing on connecting the self (soul) with a calm, knowing state; operationalised here as an 4-week, structured program including guided sittings and home practice.
- **Post-traumatic Reaction:** Emotional, cognitive, and physiological responses following exposure to traumatic flood events; measured by validated PTSD symptom scales (e.g., SQS, Resilience Scale, Self-Efficacy Scale & Depression).
- **Flood-affected People:** Adults (≥18 years) who experienced moderate to severe impact from a flood (property loss, displacement, injury, or loss of family), assessed via screening criteria.
- **Efficacy:** Statistically and clinically significant reduction in PTSD symptom severity from baseline to post-intervention and follow-up attributable to the Rajyoga program.

Results:

- Present CONSORT-style flow diagram of recruitment, allocation, follow-up.
- Tables: baseline characteristics; mean (SD) scores on outcomes at T0, T1, T2 by group.
- Figures: line graphs of mean PTSD scores over time by group.
- Report mixed-model estimates, p-values, and effect sizes.
- Qualitative themes regarding acceptability, barriers, and facilitators.

Discussion

- If the intervention reduces PTSD symptoms significantly, discussion should consider mechanisms (stress reduction, improved emotion regulation, increased social support) and cultural fit.
- Compare effect sizes with other meditation-based interventions (mindfulness, TM).
- Address feasibility and scalability in flood response programs.
- If null findings, explore issues of fidelity, dosage, sample characteristics, and measurement sensitivity.

Strong Points

- Culturally relevant, low-cost, scalable intervention.
- Mixed-methods approach: quantitative effectiveness + qualitative acceptability.
- Focus on an underserved population (post-flood survivors).
- Practical protocol that can be implemented by trained community instructors.

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Weak Points
- Non randomised design (if RCT not possible) can introduce selection bias.
- Self-report measures vulnerable to response bias.
- Contamination risk if participants share practices.
- Adherence may vary in disaster settings due to instability.
- Generalisability limited to similar cultural contexts where Rajyoga is acceptable.

Current Trends
- Growing interest in mindfulness and meditation in global mental-health.
- Increased focus on scalable psychosocial interventions for disasters (psychological first aid, brief behavioural activation, group-based interventions).
- Emphasis on integrating culturally familiar practices into evidence-based care.
- Use of digital/remote interventions where in-person access is limited.

Conclusion

A structured Raj yoga intervention may offer a culturally acceptable, low-cost approach to reduce post-traumatic reactions among flood survivors. If effective, it provides an additional tool for community-based psychosocial support in disaster-prone regions. Results must be interpreted with attention to study limitations and need for replication.

Suggestions & Recommendations
- If positive, recommend pilot integration into relief programs with training for community Rajyoga instructors.
- Combine Rajyoga with basic psychoeducation and referral pathways for severe cases.
- For policy: recommend funding for larger RCTs and adaptation for different cultural contexts.
- For practice: create short audio guides and brief training packages to ensure fidelity.

Future Scope
- Larger randomized controlled trials across different disaster types and regions.
- Comparative trials with other meditation modalities and with trauma-focused psychotherapies.
- Mechanistic studies (physiological markers: cortisol, heart-rate variability).
- Longitudinal studies on sustained recovery and community resilience.
- Digital adaptations (mobile apps, tele-guided Rajyoga) for displaced populations.

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Original Article

An Empirical Conjoint Analysis of Investors' Preferences toward Mutual Fund Attributes

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Abstract

The mutual fund industry offers a wide range of investment alternatives differing in risk, return, cost structure, and managerial expertise, making the fund selection process increasingly complex for individual investors. This study aims to empirically examine investors' preferences toward key mutual fund attributes using a rating-based conjoint analysis framework. Five attributes—fund type, risk level, expense ratio, past three-year returns, and fund manager experience—were considered, with multiple levels defined for each attribute. Primary data were collected through a structured conjoint questionnaire, and part-worth utilities and relative importance scores were estimated. The results indicate that past three-year return performance is the most influential attribute in mutual fund selection, followed by fund type, while attributes such as expense ratio and fund manager experience exert relatively limited influence. Preference simulations further reveal distinct optimal fund profiles for aggressive, moderate, and risk-averse investor segments. The findings contribute to the behavioral finance literature by highlighting attribute-level trade-offs in investment decision-making and offer practical insights for mutual fund companies in designing investor-oriented products and positioning strategies.

Keywords: *Mutual funds, Investor preferences, conjoint analysis, Investment decision-making, Behavioral finance*

Introduction:

The mutual fund industry has experienced sustained growth over the past decade, driven by increasing financial awareness, regulatory initiatives, and the growing need for professionally managed investment options among retail investors. Mutual funds provide diversification, liquidity, and access to capital markets, making them an attractive investment avenue across different income and risk categories. However, the rapid proliferation of fund schemes has significantly expanded the choice set available to investors, thereby increasing the complexity of fund selection. Investors are now required to evaluate multiple fund attributes simultaneously, rather than relying on a single performance indicator, underscoring the importance of understanding the underlying preference structure guiding mutual fund choice.

Mutual fund selection is inherently a multi-attribute decision-making process involving considerations such as fund type, risk exposure, expense ratio, historical performance, and the experience of the fund manager. Prior studies have frequently examined these attributes in isolation, providing limited insights into how investors make trade-offs among competing fund characteristics. In practice, investors may tolerate higher risk or costs in exchange for superior return performance, or may place greater emphasis on certain attributes while discounting others. Capturing such trade-off behavior requires analytical approaches that can decompose overall preferences into attribute-level contributions. Conjoint analysis, widely employed in consumer choice and marketing research, offers a robust methodological framework to estimate part-worth utilities and assess the relative importance of attributes in realistic decision-making contexts. In this context, the present study applies a rating-based conjoint analysis to empirically investigate investors' preferences toward selected mutual fund attributes and their respective levels.

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The study estimates utility values associated with fund type, risk level, expense ratio, past three-year returns, and fund manager experience, and evaluates the relative importance of these attributes in influencing mutual fund selection. In addition, preference simulations are conducted across different investor segments to identify optimal fund profiles that maximize investor utility. By providing empirical evidence on attribute-level trade-offs and segment-specific preference patterns, the study contributes to the behavioral finance literature and offers actionable insights for mutual fund companies in designing and positioning investor-oriented products.

Review of Literature

The proliferation of financial markets has expanded investment avenues, prompting behavioral finance research to explore the attributes and psychological factors shaping investor intentions and attitudes. Mutual funds offer a diversified wealth-building strategy amid varying risk-return profiles, surpassing alternatives like fixed deposits or direct equities by enabling alignment with individual risk tolerance and goals across equity, debt, hybrid, and index categories. Empirical studies, such as Bairavi et al. (2025), reveal that investors disproportionately prioritize historical performance and front-end loads over expense ratios in fund selection, with financially literate individuals exhibiting reduced rationality in choices, underscoring persistent behavioral biases in decision-making.

Singal, V. (2019). Factors affecting investment in mutual funds. SCMS Journal of Indian Management, 5(2), 1-10.

Empirical studies using conjoint analysis have identified key mutual fund attributes influencing investor preferences, such as expense ratios, past performance, and scheme ratings. Singal (2019) surveyed Indian investors, revealing brand reputation and risk-adjusted returns as significant via conjoint modeling. An IOSR study (2017) on 400 retail investors ranked past performance highest (32% utility), followed by family branding and expense ratios through orthogonal designs. Past studies consistently identify historical returns as the dominant attribute in fund choice, mirroring the current study's emphasis on three-year performance. Ranganathan (2004) applied conjoint analysis to Indian investors, revealing consistent past performance as the top influencer, ahead of fund size and costs, while fund manager attributes ranked low. Similarly, Soussou (2022) analyzed Saudi mutual funds and found performance metrics far outweighed fund age or selectivity in investor sensitivity. Fund type emerges as a key secondary factor, with limited sway from expense ratios or manager experience, aligning with the present findings. Prather et al. (2004) examined managerial attributes and fund characteristics, confirming their marginal impact on performance perceptions compared to returns. Goel and D'Costa (2019) highlighted how expert ratings reinforce preferences for fund type and return over other elements in selection processes.

Statement of the Problem

Despite the growing popularity of mutual funds, investors continue to face challenges in selecting suitable schemes due to information overload and the complex nature of fund attributes. Traditional studies often focus on isolated factors such as returns or risk, providing an incomplete understanding of investor decision-making. There is limited empirical evidence on how investors trade-off between multiple mutual fund attributes simultaneously and the relative importance they assign to each attribute. This lack of clarity constrains fund houses in designing products aligned with investor expectations and may lead investors to make suboptimal investment choices. Hence, there is a need for an empirical investigation that systematically examines investor preferences toward mutual fund attributes using a multi-attribute analytical framework.

Objectives of the Study

The study is undertaken with the following objectives:

- To estimate the utility values of selected mutual fund attributes influencing investor preferences.
- To assess the relative importance of fund type, risk level, expense ratio, past three-year returns, and fund manager experience in mutual fund selection.
- To analyze the trade-offs investors make among risk, return, and cost-related attributes.
- To identify the most preferred mutual fund profiles across different investor segments using conjoint-based simulations.
- To provide managerial insights for mutual fund companies in designing investor-oriented products.

Research Methodology

Research Design

The study adopts a descriptive and analytical research design using a rating-based conjoint analysis approach to examine investor preferences toward mutual fund attributes.

Attributes and Levels

Five attributes were identified based on literature review and industry relevance: fund type (equity, debt, hybrid), risk level (low, medium, high), expense ratio (low, high), past three-year return (below average, average, above average), and fund manager experience (junior, experienced).

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Data Collection

Primary data were gathered via a structured conjoint analysis questionnaire distributed to mutual fund investors in Chennai. The sample comprised 30 respondents from the National Stock Exchange's (NSE) Investment Awareness Program, who rated each fund profile on a 10-point Likert scale to indicate their likelihood of selection.

Sampling

The study employed a random sampling method to collect responses from individual investors with basic awareness of mutual fund investments.

Data Analysis

Conjoint analysis was performed to estimate part-worth utilities and relative importance scores for each attribute. Preference simulations were conducted to identify optimal fund profiles for different investor segments.

Results and Discussion

Table 1 Part-Worth Utility Estimates for Mutual Fund Attributes

Attribute Level	Utility Value
const	7.34
FundType_Equity	0.65
FundType_Hybrid	0.19
Risk_Low	0.32
Risk_Medium	0.15
Expense_Low	0.23
Return3yr_Average	-1.14
Return3yr_BelowAvg	-3.49
ManagerExp_Junior	-0.86

Note. Higher utility values indicate greater investor preference.

Table **1** presents the part-worth utility estimates derived from the conjoint analysis. Positive utility values indicate attribute levels that enhance investor preference, while negative values reflect levels that reduce the likelihood of fund selection. Equity funds exhibit the highest positive utility among fund types, suggesting a stronger investor inclination toward equity-oriented schemes. Low risk and low expense ratios also contribute positively to investor utility, though to a lesser extent. In contrast, below-average past three-year returns show a substantial negative utility, indicating strong investor aversion toward underperforming funds. The negative utility associated with junior fund managers suggests that investors place greater confidence in experienced fund managers when making investment decisions.

Table 2 Relative Importance of Mutual Fund Attributes

Attribute	Relative Importance (%)
Fund Type	15.37
Risk	5.52
Expense	0.00
Return3yr	79.11
Manager Exp	0.00

Table 2 reports the relative importance scores of the selected mutual fund attributes. Past three-year return performance dominates investor decision-making, accounting for 79.11% of the total importance, indicating that investors primarily base their fund selection on historical returns. Fund type emerges as the second most influential attribute, reflecting investor preference differentiation among equity, hybrid, and debt funds. Risk level shows limited importance, while expense ratio and fund manager experience exhibit negligible influence, suggesting that investors may implicitly accept cost and managerial considerations when return expectations are favorable.

Table 3 Top Utility-Generating Mutual Fund Profiles across Investor Segments

Investor Segment	Fund Type	Risk Level	Expense Ratio	Return (3-Year)	Manager Experience	Total Utility
Aggressive	Equity	Low	Low	Above Average	Experienced	1.80
Aggressive	Equity	Medium	Low	Above Average	Experienced	1.63
Aggressive	Equity	Low	High	Above Average	Experienced	1.57
Moderate	Equity	Low	Low	Above Average	Experienced	1.20
Moderate	Equity	Medium	Low	Above Average	Experienced	1.03

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Risk-Averse	Equity	Low	Low	Above Average	Experienced	1.40
Risk-Averse	Equity	Low	High	Above Average	Experienced	1.17
Risk-Averse	Hybrid	Low	Low	Above Average	Experienced	0.94

Table 3 presents the highest utility-generating mutual fund profiles for aggressive, moderate, and risk-averse investor segments based on preference simulations. Across all segments, equity funds with above-average returns and experienced fund managers consistently yield the highest total utility scores. Aggressive investors demonstrate higher tolerance for risk and expense variations, provided return performance remains strong. Moderate investors show balanced preferences, favoring low to medium risk profiles. Risk-averse investors prefer low-risk and low-expense combinations, though they continue to prioritize superior return performance. These findings highlight the central role of return expectations while revealing nuanced segment-level trade-offs in mutual fund selection.

Managerial Implications

The findings of this study provide important implications for mutual fund companies and asset management firms. Given the overwhelming importance of return performance, fund houses should emphasize consistent performance and transparent communication of return-related information. Product design strategies should prioritize return optimization while maintaining acceptable risk levels. Additionally, segment-specific simulations suggest opportunities for customized fund offerings tailored to different investor risk profiles.

Conclusion

This study empirically examines investors preferences towards mutual fund attributes using conjoint analysis framework. The results highlight the dominance of past return performance in mutual fund selection and reveal the relative importance of other attributes such as a fund type and risk level. By capturing attribute-level, trade-offs and segment-specific preferences, the study contributes to the behavioural finance literature and offers actionable insights for industry practitioners. Future research may extend the analysis by incorporating larger samples, additional attributes, or longitudinal data to further enhance the understanding of investor decision-making.

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Original Article

An analytical study of human rights of vulnerable person with special reference to women in india

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Abstract

Human rights are the basic rights and freedoms that belong to every person in the world, from birth until death. They apply regardless of where you are from, what you believe or how you choose to live your life. They can never be taken away, although they can sometimes be estricted – for example if a person breaks the law, or in the interests of national security. Mainly seven human rights are Freedom from discrimination ,Right to equality between men and women, Right to life, Freedom from torture, Freedom from slavery, Right to liberty and security of person, Right to be treated with humanity in detention, Freedom of movement. These basic rights are based on shared values like dignity, fairness, equality, respect and independence. These values are defined and protected by law. They are not granted by any state. These universal rights are inherent to us all, regardless of nationality, sex, national or ethnic origin, color, religion, language, or any other status.There are certain groups of human beings which either by nature or because of deep-rooted custom are weak and vulnerable, such as, children, women, disabled persons, aged persons, migrant workers or persons belonging to a particular race etc. However, they being human beings do possess human rights and fundamental freedoms. But their rights have been violated very frequently by the dominant section of the society. The existence of weaker sections in any society and concerns expressed for ameliorating their plight may be traced back to times immemorial. In our society, while the origin and existence of such sections may have been justified at some point of time in theory and practice, voices have always been expressed against such theories and practices. Enough evidence of such voices is available since at least from the times of Lord Buddha. Reformers like Saint Tukaram, Kabirdas of the middle ages and Rajaram Mohan Roy, Swami Dayanand and several others most explicitly and forcefully denounced all theories and practices that even remotely justified the weaker position and subordination of Dalits and women and suggested the ways and means of improving their situation, So much so that this issue became one of the most prominent planks of our struggle for independence from the British rule.

Keywords: *Human right, women, vulnerable group, constitution of India*

Introduction:

Human rights are standards that recognize and protect the dignity of all human beings. Human rights govern how individual human beings live in society and with each other, as well as their relationship with the State and the obligations that the State have towards them. Human rights are needed to protect and preserve every individual's humanity, to ensure that every individual can live a life of dignity and a life that is worthy of a human being. Question: Why "should" anyone respect them? Fundamentally, because everyone is a human being and therefore a moral being. At time of making the Constitution for India, in the very beginning of the exercise, framers announced in their Objective Resolution in the Constituent Assembly that while assuring justice, equality and freedom to all people of this kind, it shall be also provided adequate safeguards “for minorities, backward class people and tribal areas, and depressed and other classes”. Accordingly, the Constitution as it emerged from the Assembly expressed its special concern for the weaker section of the society from its beginning in the Preamble to the end of the last Schedule. The concern was not confined only to the depressed classes and minorities but was also extended to women and children who were found and considered to be the vulnerable segments of the society.

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Looking at the prominence of this concern as expressed in the Constitution, Glanville Austin has drawn his famous conclusion that the Constitution of India constitutes a seamless web of which social justice is one of its three strands. The Constitution cannot be conceived of and operated without social justice. Social justice is its main constituent and lifeline. Realizing the indispensability of social justice for the Indian Republic we have not only retained it as it was conceived of and expressed in the original Constitution, but also further strengthened and expanded it through subsequent amendments in the Constitution. Such amendments have been found consistent with the original design of the Constitution which sustain and strengthen its basic structure.

Women and human rights

The incorporation of women's perspectives and lives into human rights standards and practice forces recognition of the dismal failure of countries worldwide to accord women the human dignity and respect that they deserve simply as human beings. The advancement of women has been also focus of the work of the United Nations since its creation. The Preamble of the Charter of the United Nations sets as a basic goal to reaffirm faith in fundamental human rights, in the dignity and worth of the human person, in the equal rights of men and women. Furthermore, Article 1 of the Charter proclaims that one of the purposes of the United Nations is to achieve international cooperation in promoting and encouraging respect for human rights and fundamental freedoms for the people without distinction as to race, sex, language, or religion.

As early as in 1946 the Commission on the Status of Women was established to deal with women's issues. The Universal Declaration of Human Rights had affirmed the principle of the inadmissibility of discrimination and proclaimed that all human beings are born free and equal in dignity and rights and that everyone is entitled to all the rights and freedoms set forth therein, without distinction of any kind, including distinction based on sex. However, there continued to exist considerable discrimination against women primarily because women and girls face a multitude of constraints imposed by society, not by law. It violated the principle of equality of rights and respect for human rights. During the UN Decade for Women (1976-1985), women from many geographical, racial, religious, cultural, and class backgrounds took up organizing to improve the status of women. The concept of women's human rights has opened the way for women around the world to ask hard questions about the official inattention and general indifference to the widespread discrimination and violence that women experience every day. Whether used in political lobbying, in legal cases, in grass-roots mobilization, or in broad-based educational efforts, the idea of women's human rights has been a rallying point for women across many boundaries and has facilitated the creation of collaborative strategies for promoting and protecting the human rights of women. Women's human rights not only teach women about the range of rights that their governments must honor; it also fuunctions as a kind of gestalt by which to organize analyses of their experiences and plan action for change. The human rights framework creates a space in which the possibility for a different account of women's lives can be developed. What is so useful about this framework is that it provides women with principles by which to develop alternative visions of their lives without suggesting the substance of those visions. The fundamental principles of human rights that accord to each and every person the entitlement to human dignity give women a vocabulary for describing both violations and impediments to the exercise of their human rights. The large body of international covenants, agreements and commitments about human rights gives women political leverage and a tenable point of reference. In other societies, girls are subjected to such traditional practices as circumcision, which leave them maimed and traumatized. In others, they are compelled to marry at an early age, before they are physically, mentally or emotionally matured. Women are victims of incest, rape and domestic violence that often lead to trauma, physical handicap of death. And rape is still being used as a weapon of war, a strategy used to subjugate and terrify entire communities. The Platform for Action adopted at the fourth world Conference on Women declared that rape in armed conflict is a war crime and could, under certain circumstances, is considered genocide.

Various Atrocities

Violence against women takes a dismaying variety of forms, from domestic abuse and rape to child marriages and female circumcision. All are violations of the most fundamental human rights. Violence at home: Domestic violence against women occurs in developed and developing countries alike. It has long been considered a private matter by bystanders, including neighbors, the community and government, but such private maters have a tendency to become public tragedies. Indeed, domestic violence is the leading cause of injury among women of reproductive age in the United States. Despite governments' promises to guarantee women's equality and full rights under the constitutions of their countries, governments deny women legal freedom to achieve such rights. In many countries statutory restrictions curtailed among other things, women's ability to inherit property, contract marriage, and seek divorce. In South Africa, women married under customary law were still considered minors and could not enter into any legal contract without the consent of their husbands or guardians. In India, Syria, and Pakistan women were discriminated against in divorce and inheritance laws. Many governments now recognize the importance of protecting victims of domestic abuse and taking action to punish perpetrators. The establishment of structures allowing officials to deal with cases of domestic violence and its consequences is a significant step towards the elimination of violence against women in the family. The Special Rapporteur's report highlights the importance of adopting legislation that provides for prosecution of the offender. It also stresses the importance of specialized training for law enforcement authorities as

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well as medical and legal professionals, and of the establishment of community support services for victims. In many countries, women fall victim to traditional practices that violate their human rights. The persistence of the problem has much to do with the fact that most of these physically and psychologically harmful customs are deeply rooted in the tradition and culture of society.

Female Genital Mutilation

The World Health Organization (WHO) have reported that 85 million to 115 million girls and women in the population have undergone some form of female genital mutilation and suffer from its adverse health effects. Every year an estimated two million young girls undergo this procedure. Most live in Africa and Asia, but an increasing number can be found among immigrant and refugee families in Western Europe and North America. Indeed, the practice has been outlawed in some European countries. In France, a Malian was convicted in a criminal court after his baby girl died of a female circumcisionrelated infection. The procedure had been performed on the infant at home.There is a growing consensus that the best way to eliminate these practices is through educational campaigns that emphasize their dangerous health consequences.

Son Preference

The consequences of son preference can be anything from foetal or female infanticide to neglect of the girl-child over her brother in terms of such essential needs as nutrition, basic health care and education. In China and India, some women choose to terminate their pregnancies when expecting daughters but carry their pregnancies to term when expecting sons. According to reports from India, genetic testing for sex selection has become a booming business, especially in the country's northern regions. Indian gender-detection clinics drew protests from women's groups after the appearance of advertisements suggesting that it was better to spend a little now to terminate a female foetus than a huge mount later on her dowry.

Dowry-related Violence

In many countries, weddings are preceded by the payment of an agreedupon dowry by the bride's family. Failure to pay the dowry can lead to violence. In India, an average of five women a day is burned in dowry-related disputes.

Early Marriage

Early marriage, especially without the consent of the girl, is another form of human rights violation. Early marriage followed by multiple pregnancies can affect the health of women for life. The report of the Special rapporteur has documented the destructive effects of marriage of female children under 18 and has urged governments to adopt relevant legislation.

Rape

Rape occurs in the community, where a woman can fall prey to any abuse. It also occurs in situations of armed conflict and in refugee camps. In the United States, national statistics indicate that a woman is raped every six minutes. In 1995, the case of a Brazilian jogger raped and murdered in New- York City's Central Park drew international attention once again to the problem. The incident occurred only a few years after an earlier sensational jogger-assault case in which the victim an American assaulted in the same general area of the park barely survived after her assailants left her for dead. Relations between residents of the Japanese island of Okinawa and American Girls were thrown into turmoil in 1995 after two marines and a sailor allegedly kidnapped and raped a 12-year-old girl. The special Rapporteur's report underlines the importance of education to sensitize the public about the special horrors of rape, and of sensitivity training for the police and hospital staff who work with victims.

Sexual Harassment

In many countries sexual assault by a husband on his wife is not considered to be a crime: a wife is expected to submit. It is thus very difficult in practice for a woman to prove that sexual assault has occurred unless she can demonstrate serious injury. The report of the special Rapporteur noted that light sentences in sexual assault cased send the wrong message to perpetrators and to the public at large that female sexual victimization is unimportant. Sexual harassment in the workplace is a growing concern for women. Employers abuse their authority to seek sexual favors from their female coworkers or subordinates, sometimes promising promotions or other forms of career advancement or simply creating an untenable and hostile work environment. Women who refuse to give in to such unwanted sexual advances often run the risk of anything from demotion to dismissal. But in recent years more women have been coming forward to report such practices

Problem of Prostitution

Many women are forced into prostitution either by their parents, husband or boyfriends or as a result of the difficult economic and social conditions in which they find themselves. They are also lured into prostitution, sometimes by mail-order bride agencies that promise to find them a husband or a job in a foreign country. As a result, they very often find themselves illegally confined in brothels in slavery-like conditions where they are physically abuse and their passports withheld. Most women initially victimized by sexual traffickers have little inkling of what awaits them. They

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generally get a very small percentage of what the customer pays to the pimp or the brothel owner. Once they are caught up in the system, there is practically no way out, and they find themselves in a very vulnerable situation. Since prostitution is illegal in many countries, it is difficult for prostitutes to come forward and ask for protection if they become victims of rape or want to escape from brothels. Customers, on the other hand, are rarely the object of penal laws. In Thailand, prostitutes who complain to the police are often arrested and sent back to the brothels upon payment of a fine. The extent of trafficking in women and girl children has reached alarming proportions, especially in Asian countries. Many women and girl children are trafficked across borders, often with the complicity of border guards. In one incident, five young prostitutes were burned to death in a brothel fire because they had been chained to their beds. At the same time, sex tours of developing countries are a well-organized industry in several European and other industrialized countries. The Special Rapporteur has called on governments to take action to protect young girls from being recruited as prostitutes and to closely monitor recruiting agencies.

Status of Women in India

India has given equal status to women under its Constitution under Article 14 which provides that, "The State shall not deny to any person equality before the law or the equal protection of the laws within the territory of India". The above provision clearly shows that women in India enjoy right to equality and any discrimination against them shall be violations of equality of right and respect for human dignity. The Constitution also provides under Article 15 that every female citizen has a right to access to shops, public restaurants, hotels and places of public entertainment and no restriction can be imposed on female citizens with regard to the use of wells, tanks, bathing ghats, roads and places of public resort maintained wholly or partly by State funds. Article 16 of the constitution provides that there shall be equality of opportunity for all citizens (including women) in matters relating to employment or appointment to any office under the State. Women in India enjoy right to equality. However, in order to improve their status further, the Constitution provides under Article 15(3) that State may make special provisions for women. Consequently, a member of legal provisions aimed at securing equal status for and removing discrimination against women have been made. For instance, the Constitution was amended in 1992 to reserve 50 per cent of the seats in their favour in panchayats[1] and municipalities. [2] The Amendment is regarded as a major step for socioeconomic empowerment of the women in India. The Constitution has also cast the duty on every citizen to renounce practices derogatory to the dignity of women.[3] It being a part of Directive Principles of State Policy, is not enforceable in court of law but if the State makes any law to prohibit any act or conduct in violation of this duty, the Court would uphold the law as a reasonable restriction on the fundamental rights. Indian Courts on the basis of above constitutional provisions have regarded a number of rules and regulations as discrimination against women, and consequently, unconstitutional. For instance, in C.B. Muthamma V. Union of India,[4] validity of the Indian foreign Services (Conduct and Discipline) rules of 1961 was challenged which provided that no married women shall be entitled as a right to be appointed to the services and a woman member of the service shall obtain the permission of the Government in writing before the marriage is solemnized and at any time after the marriage a woman member of the service may be required to resign from service, if the government is satisfied that her family and domestic commitments are likely to come in the way of the due and efficient discharge of her duties as a member of the service.

The SC held that the Provisions in Service rules requiring a female employee to obtain the permission of the Government in writing before her marriage is solemnized and denying right to be appointed on ground that the candidate is a married woman are discriminatory against women. The court however held that equality of opportunity in matters relating to employment does not mean that men and women are equal in all occupations and all situations. In Air India v. Nergesh Meerza,[5] and in Air Indian Cabin Crew Association v. Yeshwinee Merchant,[6] the SC. Struck down the provision of the rules which stipulated the condition those services shall be terminated on her pregnancy as unconstitutional. However, restriction on Air hostess not to marry within four years of service was held reasonable. In Maya Devi v. State of Maharashtra, [7]the requirement that a married woman should obtain her husband's consent before applying for public employment was held invalid and unconstitutional. It was observed that such a requirement is an anachronistic obstacle to women's equality. In Pratibha rani v. Suraj Kumarit, was held by the SC. That it cannot be said that upon entering into matrimony the Stridhan property of the married women has to be placed in the custody of her husband. In Githa Hariharan v.Reserve Bank of India,[8] the SC while interpreting the world 'after' used in Sec. 6 of the Hindu Minority and Guardianship Act, 1956 held that the mother could be the guardian in absence of the father.

[1] (Article 243D—Inserted by the Constitution {seventy-third Amendment} Act, 1992)
[2] 23 {Article 243T—Inserted by the Constitution (Seventy-fourth Amendment) Act, 1992}
[3] {Article 51-a(e) Inserted by the Constitution (Forty second Amendment) Act, 1976.}
[4] {(5) A.I.R. SC 1979 p. 1868}
[5] A.I.R. 1981 SC. P.1829.
[6] A.I.R. 2004 SC. P.187
[7] ISCR (1986)p. 743
[8] A.I.R. 1999 SC p. 1149

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In Vishaka and Others v. State of Rajasthan,[9] a writ petition was filed before the SC. by certain social activists and NGO's with the aim of preventing sexual harassment of working women in all work places through judicial process, to fill the vacuum, in existing legislation. The immediate cause for the filing of the petition was an incident of alleged brutal gang rape of a social worker in a village of Rajasthan. It was observed by the court that there is no domestic law to check the evil of sexual harassment of working women at all work places, and therefore, the contents of International Contentions and norms are significant for providing guarantee of gender equality and right to work with human dignity. International Conventions and norms are to be taken into consideration in the absence of enacted domestic law and when there is no inconsistency between the Court stated that "It is now an accepted rule of judicial construction that regard must be had is no inconsistency between them and there is a void in domestic law.[10]

The Court observed that each incident of sexual harassment of women at work place results in violation of fundamental rights of 'Gender Equality' and the 'Right to life and liberty'. Since neither civil nor penal laws in India provide specific protection to women from sexual harassment in work places, the Court laid down the guidelines and norms,[11] for effective enforcement of the basic human rights of gender equality and guarantee against sexual harassment and abuse, more particularly against sexual harassment at work places, for due observance at all work places or other institutions, until a legislation is enacted for the purpose

Protection of Women from Domestic violence Act, 2005

The Beijing Declaration and the Programme of Action had regarded domestic violence as a human right issue and a serious deterrent to development. In order to provide effective protection of the rights of women who are victims of violence of any kind occurring within the family, the Protection of Women from Domestic Violence Act, 2005 was enacted by the
Parliament.

Domestic violence has been defined by the Act under section 3 as any act, omission or commission or conduct of the respondent shall constitute domestic violence in case it : (a) harms or injures or endangers the health, safety, life, limb or well being, whether mental or physical, of the aggrieved person or tends to do so and includes causing physical abuse, sexual abuse, verbal and emotional abuse and economic abuse; or (b) harass, harms injures or endangers the aggrieved person with a view to coerce her or any other person related to her to meet any unlawful demand for any dowry or other property or valuable security; or (c) has the effect mentioned in clause harm, whether physical or mental, to the aggrieved person.

Conclusion And Suggestions

The women are another vulnerable section. Their rights are frequently violated. Advancement of right of women has been the concern of world community since the end of Second World War. several questions relating to the life of women, such as equal access to education at all levels, equal economic rights and opportunities for women; equal pay for equal work and various aspects of family law and property rights. It has made recommendations on these questions which have resulted in the adoption of many resolutions with the aim to promote the status of women and to establish the principle of equality of rights for men and women.

Right to equality, right to freedom, right against exploitation, right to religion, right to education and cultural rights and right to constitutional remedies are guarantee to all citizens without showing any discrimination. The fundamental rights have conferred political and economic rights to women. On the basis of fundamental rights several Acts have been enacted by the Parliament to recognize the rights of women. Minimum wages Act, Maternity benefit Act, Medical Termination of Pregnancy Act are important enactments to recognize the equal rights of women with men who are working in industries and factories. Similarly the Indian women are entitled to get the property from their ancestors. Section 14,15 and 16 of Hindu Succession Act of 1956 have conferred right to property and ownership on the property have been conferred upon the women. Guardian ship and maintenance Act of 1956 has provided right to adoption of children to women. Hindu Marriage Act has guaranteed equal opportunity for women to get separated from their husbands under certain grounds prescribed in Section 13. Women have right to remarry and are eligible to get the property from their deceased husband. They have similar right to receive property from their divorced husbands. Safety and security has been provided to women in the work place. The domestic violence Act of 2005 has provided security against the violence employed on women by their in laws or by their husbands or their relatives. The Indian woman is secure to some extent. But they are subjected to sexual harassment. They have their own right to enjoy a comfortable life with the persons they like.

The women have been provided political reservation in the local bodies. By providing political reservations the society has recognized the political rights of women. All most all states have conferred 50% reservation to the women. But a bill to provide 33% reservation in the Parliament and state legislatures for women is pending before theParliament. If this bill gets passed by the Parliament, the women will get 33% reservation in the highest law making

[9] A.I.R. 1997 SC. p. 3011
[10] Ibid
[11] Ibid

bodies. National commission for women has been conferred constitutional status to safeguard the rights of women. Nirbhaya Act is enacted to protect the women against the sexual harassment. Something is to do for the betterment of women's life. The dowry prohibition Act has failed to provide economic security for women. Under the mask of dowry lacks of rupees are grabbed by the bridegrooms from the bride's families. The poor brides are committing suicides for not getting suitable husbands by this way the right to marriage, right to life are being violated. Instead of holding conferences at A.C. halls, the politicians should look into the matter of dowry problem. Any how the Indian woman is finding her way to get better life and equal opportunities with their compatriots.

On the basis of above studies following findings are presented

- The term vulnerability has not been properly defined. Some public debates should be held to invite proper terminology from the public to define the term vulnerability.
- The position of depressed societies at the lowest level should be discussed in a wide manner. At the Parliament and State legislatures level the discussions are made and Acts are passed which are remained as tools in the hands of bureaucrats.
- India is a signatory of the covenants, protocols framed at International level. But they are not implemented here in India. Simply the programmes are organized to recall the covenants, protocols on the days prescribed by the UN general assembly. For example international women's day, population day, observation of environment day, children's day observation of international literacy day is being celebrated with enthusiasm but no fruitful results are yielded.
- To safeguard the rights of women at international level the valuable framework has been prepared. Thorough examination of reports from the state parties is done by the UN general assembly and UN general secretary. From time to time several measures have been suggested after the thorough examination of past development. But the position of Muslim women and the position of African women are remaining as it is before. The orthodox Muslim societies are reluctant to confer rights upon the women. They treat women as means of procuring children. The Muslim women are illiterate. The literacy rate among the Muslim women in the gulf countries is about 5%.
- The Indian women's position is better in compare to the contemporary Muslim and African societies. The castism is a seviour bloton Indian society. The dowry problem is a major obstacle in the way of Indian women's life. All the Acts relating to women should be implemented in a strict manner particularly the dowry prohibition Act and protection of women at workplaces. Working women's hostels, rehabilitation homes should be established under the government control.
- In case of Indian women the caste restrictions, dowry problem and male domination are major hurdles for the economic survival and social development of women. The Parliament should enact another stringent Act to prohibit dowry and take steps to remove caste barriers. Providing political reservations for women do not solve the problem of women amicably.

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Original Article

Impact of Multinational Corporations on Developing Countries

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Abstract

Multinational corporations (MNCs) are firms that operate in multiple countries. Because a large share of their activities takes place in developing nations, they exert considerable influence on the economic conditions within these host countries. The longstanding debate over whether MNCs contribute to or undermine development in these economies is the focus of this paper. To clarify the topic, the paper begins by defining MNCs and examining their historical development, key features, theoretical foundations, and organizational structures. It then explores both the beneficial and adverse effects that MNCs may have on the economic growth of developing countries. Multinational corporations (MNCs) are firms that operate across national borders, maintaining production facilities or providing services in at least two countries. Because a substantial portion of their activities occurs outside their home nation, they have the potential to significantly influence the economic environments of host countries. This paper explores the ongoing debate regarding whether MNCs promote or hinder development, particularly in developing economies. To address this, the paper begins with a concise definition of MNCs, followed by an examination of both the beneficial and adverse effects of their operations in developing countries. Furthermore, four case studies are presented to MNCs in India, to illustrate the positive, negative, and mixed impacts that multinational corporations can have on developing nations.

Keywords: *Multinational corporations, developing countries, MNCs in India, positive impact, negative impact of developing countries.*

Introduction:

Multinational Companies (MNCs) are large companies that operate in several countries with their headquarters at a particular country. Multinational Companies as recently have gain more momentum in terms of investment and playing a greater role in countries development, it succeeded in having more attention and more focus. The first multinational corporations were founded to set up colonial "factories" or port cities. The two main examples were the British East India Company founded in 1600 and the Dutch East India Company (VOC) founded in 1602.

The first Multinational Companies were established in the year 1920's. Many more came up in the 1950's and 1960's US. Businesses expanded worldwide and Western Europe and Japan also recovered to become powerful industrial economies. The world wide spread of MNCs was a notable feature of 1950's and 1960's.

Multinational Corporation (MNC) is a term synonymous with world trade today, and it refers to an enterprise whose business activities are spread in more than one country (Ghani, 2015), having their original has in more developed countries like Britain, USA, China and Japan. Examples of MNCs include Nike, Sony, Apple, Toyota, Coca-Cola and all these have investments and operations in developing economies (Rahman, 2009). The goal of MNCs in expansion into developing countries is profit maximisation and the developing economies have favorable conditions to facilitate this. MNCs venture out into developing economies because of various advantages such as cheap labour and production costs, availability of natural resources, lower tax rates and tax exemption that are offered for specified periods (Ghani, 2015). Additionally, MNCs also recognize the increase in consumer demand for various products and services and move into developing economies to increase their market base.

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The developing host countries also seek to attract investment from MNCs as these countries have insufficient funding to drive holistic economic development. Host countries benefit from FDI, job creation, skills development and technological transfer brought about by MNCs. However, the operations and benefits of MNCs in developing countries have been questioned owing to the negative impact that some MNCs have had on developing countries. These corporations have been seen to exploit developing nation's workforce, natural resources and exert undue political influence over governments (Jiboku, 2018). A country's economic development is measured using various economic indicators such as Gross Domestic Product (GDP), employment, Capital inflow and outflow, Skills development technological advancements among others. We will thus use various economic indicators to assess the impact of MNCs on developing economies.

Objectives of the Study:

The current study aims to examine the impact of MNCs on developing countries. To achieve the main objective, the study covers the following specific purposes:

- To study of Multinational Corporations (MNCs) in India.
- To analysis the Impact of Multinational Corporations (MNCs) in India.
- To the analysis of positive and negative economic impact of MNCs on various economic developing countries.
- To suggest some recommendations/policy implications for developing countries to attract MNCs within their boundaries.

Literature Review:

Recent advances in information technology, coupled with deregulation and market liberalization worldwide, have fuelled an unprecedented surge in the growth of MNCs. While some regard them as ruthless exploiters, others view them as benevolent engines of prosperity. But today's multinationals bear little resemblance to their ancestors. They are reinventing themselves in diverse ways that confound the assumptions of critics and advocates alike (Stop ford, 1998).

Theory and research concerning the process of multinational firms have been given significant attention by many scholars and researchers after the Second World War due to the increased cost of production, and the imbalance of resources (e.g. Buckley & Casson, 1985; Dunning, 1993; Ghoshal, 1987; Hamel & Prahalad, 1990; Ohmae, 1990; Prahalad & Doz, 1987; Rugman, 1981; Vernon, 1979). Most of these studies were conducted in the well-developed established countries namely North America, the Western European Community, and Japan. There has been little empirical study found on developing countries. In spite of this little attention, the study on developing countries commenced in the end of the 1970s and early 1980s (Lall,1983, Wells, 1983). In the 1990s, renewed attention has been given to the topic of MNC growth with the effort of scholars and researchers in considering their studies on multinationals from developing countries (Cantwell & Tolentino, 2000; Dunning, 1997; Hoesel, 1999; Tolentino, 2000; UNCTAD, 2006; Yeung, 1994).

According to Dunning (1995) in his eclectic paradigm theory, the main difference between MNCs from developing countries and those from developed countries lies in the nature of ownership-specific advantages of developing country MNCs. Ownership advantages of MNCs from developing countries are argued to lie in their lower production costs, lower wages and lower prices, which can only be exploited in other developing countries with a similar or poorer economic status (Lall,1983, Wells,1983). Available evidence (e.g. Ahmad & Kitchen, 2007; Cantwell & Tolentino, 2000; Hoesel, 1999; Tolentino, 1993; Yeung, 1998) has emphasised that capabilities of developing countries MNCs to catch up with their developed-countries counterparts through the process of technology accumulation.

In describing his school of thought, Wells (1983) claimed that there are two pertinent market features in developing countries that force local firms to generate and adapt various innovations to achieve growth. These two features are small market size and the easy availability of low-cost labour. Lall (1983, 1983) believed that localization of technological change is the key to the development of developing country MNCs. He further asserted that the wealth, assets, and knowledge of the local environment enabled developing country MNCs to develop sustainable proprietary assets that could be effectively utilized in overseas operations. Moreover, he emphasized that the lack of high-end technologies among multinationals from developing countries allows them to derive their advantages from widely diffused technologies, and from special knowledge of developing country markets.

Tatum (2010) proposes that multinationals operate in different structural models. The first common model is for the MNC positioning its executive headquarters in one country, while production facilities are located in more other countries. This model often allows the company to take advantage of benefits of incorporating in a given locality, while also being able to produce goods and services in areas where the cost of production is lower. The second structural model is for an MNC to base the parent company in one nation and operate subsidiaries in other countries around the world. With this model, just about all the functions of the parent are based in the country of origin. The subsidiaries more or less function independently, outside of a few basic ties to the parent. A third approach to the setup of an MNC involves the establishment of headquarters in one country that oversees a diverse conglomeration that stretches many different countries and industries (Robinson, 1979; Tatum, 2010).

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MNCs in service industries have given this sector's large and growing impact on the global economy (Goerzen & Makino, 2007). The Marxists view the emergence of an MNC as an aspect of capitalism in the process of developing, at international level (Gilpin, 1987; Stopford, 1988). While institutions are important for economic development, particularly in resource rich countries, the interaction between MNCs and host country institutions is not well understood (Wiig & Kolstad, (2010).

Chandler (1962) showed in his study, *Strategy and Structure*, the process by which a corporation develops from an initial small workshop through progression to a large factory, and then to a series of factories nationwide in scale. During this evolution and development, the importance of central office as well as the number of its department increases. The greater the size of the firm, the larger and more subdivided the operations of this central office become. Moreover, the power and responsibilities of this central office will rise according to their new structure.

Multinational corporations (MNCs) are defined as firms which are incorporated in one country but which own, control, or manage production and distribution facilities in several countries (Ayesha, 2021). Many multinational corporations are based in developed countries and have extended their business corporations to developing countries. MNCs may acquire financial capital from one country, raw materials from another, produce goods and services in another and sell their outputs to various countries (Nyitongo, 1995).

The history of MNCs is traced back to the history of colonialism. Many of the first MNCs were formed at the will of European monarchs in order to conduct expeditions. A number of the colonies that were held by Spain or Portugal were under the administration of some of the world's earliest MNCs (Ferdausy, 2009). One of the first MNCs was the British East India Company (1600-1874), which ventured into international trade and exploration, and run trading posts in India (ECI, 2021).

In today's era, examples of current leading global MNCs include Walmart, Sinopec group, China National Petroleum and Royal Dutch Shell (Fortune, 2021). MNCs are generally larger and more productive than local companies, and are usually willing to invest in local markets (Resnick, 2014). A significant number of MNCs began their corporations in developing countries by the 1990.

Literature Gaps: -

Although extensive research has examined the evolution, structure, and theoretical foundations of multinational corporations, the majority of these studies focus on MNCs originating from developed economies such as North America, Western Europe, and Japan. Early and influential contributions (e.g., Buckley & Casson, 1985; Dunning, 1993; Vernon, 1979) have shaped the understanding of MNC behaviour, yet they largely overlook the unique dynamics of MNCs operating in, or originating from, developing countries. Only limited empirical work mainly emerging in the late 1970s and early 1980s (Lall, 1983; Wells, 1983) examined the distinctive strategies and constraints of developing-country MNCs.

While more recent scholarship (Cantwell & Tolentino, 2000; Hoesel, 1999; UNCTAD, 2006) has renewed interest in outward FDI and technological catch-up among developing economies, significant gaps remain. In particular, the interaction between MNCs and host-country institutional environments, especially in resource-rich developing countries, remains poorly understood (Wiig & Kolstad, 2010). Existing studies often highlight the potential for MNCs to fuel dependency, patronage, or resource-curse dynamics, but empirical evidence on how these mechanisms operate in specific developing contexts is still limited.

Furthermore, the literature predominantly addresses manufacturing-oriented MNCs, despite the growing importance of service-sector multinationals in global economic activity (Goerzen & Makino, 2007). There is also limited investigation into how modern MNC structures more flexible, decentralized, and technologically integrated than their predecessors (Stopford, 1998; Tatum, 2010) shape economic outcomes in developing host countries. Additionally, although the historical evolution of MNCs from the colonial period onward is well documented, few studies connect this historical trajectory to contemporary patterns of influence, power asymmetry, and economic dependency in developing economies.

Overall, there is a need for deeper empirical research on the current economic impact both positive and negative of MNC corporations in developing countries.

Summary of the gaps:

Overall, the literature indicates that while MNCs from developing countries have become increasingly important global actors, **research has not kept pace with their rapid transformation.** There is a need for more contemporary, context-sensitive, and empirically grounded studies that:

- **Investigate the changing sources of competitive advantage** among developing-country MNCs.
- **Examine sector-specific expansion patterns**, especially in service and knowledge-intensive industries.
- **Explore institutional interactions** between MNCs and the host countries in which they operate.
- **Understand how developing country MNCs evolve over time**, shifting from cost-based strategies to innovation- and asset-seeking strategies.
- **Update existing theoretical models**, which may inadequately reflect the realities of modern global business dynamics for firms from the Global South.

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- **Insufficient empirical studies on the internationalization of MNCs originating from developing countries.**
- Outdated theoretical assumptions, which do not reflect the evolving strategies and capabilities of developing-country firms.
- Limited sector-specific research, especially concerning developing-country MNCs in service and knowledge-based industries.

Research Methodology:

Data sources an extensive review of existing literature was conducted to examine the subject matter. The research adopts an analytical approach and is grounded exclusively in secondary data. These secondary data have been collected from several sources include books, scholarly journals, government publications, newspapers, articles and websites.

Multinational Corporations (MNCs):

A multinational company refers to a company that is registered in more than one country or that has operation in more than one country. Generally, any company or group that derives a quarter of its revenue from operations outside of its home country is considered a multinational corporation. The history of multinational corporations began with the history of colonialism. The first multinational corporations were founded to set up colonial "factories" or port cities. The two main examples were the British East India Company founded in 1600 and the Dutch East India Company (VOC) founded in 1602.

Definitions:-

Different authors define the term MNCs differently:

- As **ILO Report** says. “The essential nature of the multinational enterprise lies in the fact that is managerial Headquarters are located in one country (home country) while the enterprise carries out operations in a number of other countries as well (host countries”
- The **United Nation** defines MNCs as. “Enterprises which control assets factories, mines, sales offices and the like in two or more countries”
- MNCs are a Multinational Corporation, which is a company that operates in at least two different countries. It typically has its headquarters in one country (home country) and has subsidiaries, offices, or production facilities in other countries (host countries). Examples include companies like Apple, Amazon,Samsung and Coca-Cola.

Multinational Corporations (MNCs) in India:

India is one of the faster-developing countries. At its peak of growth, it was growing at about 10.26% per annum in 2010. It is seen as a powerhouse for software and IT services. Consequently, many international corporations have set up their offices across India. Overall, most of the top MNCs that operate in India are related to Information Technology enabled Services (ITeS). Others have retail and other cooperation’s in India. Some of these MNCs have research and development centers as well.

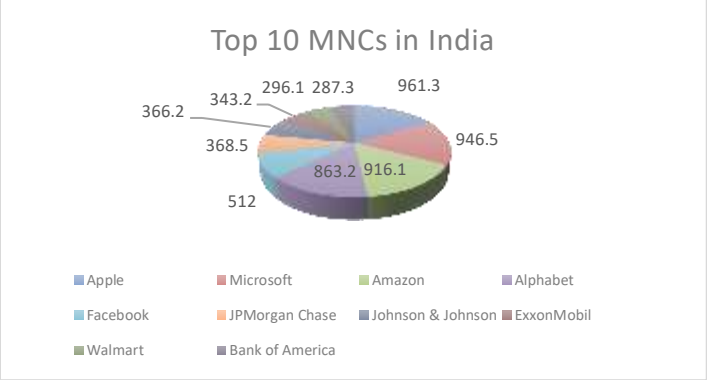
However, there has been a dip in the growth rate since 2016. It can be attributed to the slowing down of the world economy. However, according to the ex-governor of the central bank, The RBI there could be internal reasons as well. Prof Raghuram Rajan has attributed the dip to demonetization and a poorly implemented GST scheme. However, post-Covid crisis, India is expected to spring back to growth mode. Industry 4.0 could be an important factor for the future of MNCs in India.

Top 10 MNCs Companies in India:

The country has got many MNCs operating here. Following are names of some of the most famous multinational companies, who have their headquarters, market value, employees and industry in the nation:

Rank	Company	HQ	Market Value (Billion USD)	Employees	Industry
1	Apple	USA	961.3	137,000	Consumer Electronics
2	Microsoft	USA	946.5	144,000	Software services
3	Amazon	USA	916.1	798,000	Retail
4	Alphabet	USA	863.2	118,899	Software Services
5	Facebook	USA	512	44.942	Internet Services
6	JPMorgan Chase	USA	368.5	256.891	Banking & Financial Services
7	Johnson & Johnson	USA	366.2	132,200	Pharmaceuticals
8	ExxonMobil	USA	343.2	74,900	Energy
9	Walmart	USA	296.1	2,200,000	Retail
10	Bank of America	USA	287.3	208,131	Banking & Financial Services

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(Figure-1 the data source for market value is Statista.com for the year 2019. The data source for the home country, employees, and sector is Fortune global 500(2020) and Wikipedia.)

Impact of Multinational Corporations (MNCs) in India:

The presence of Multinational Corporations (MNCs) in India has grown considerably over recent decades, influencing multiple facets of the country's economy. Their contributions can be observed in areas such as Foreign Direct Investment (FDI), employment generation, market development, GDP growth, Corporate Social Responsibility (CSR), technological advancement, and technology transfer. The following outlines these impacts in detail:

Foreign Direct Investment (FDI)

FDI is a crucial driver of India's economic growth, providing a source of non-debt capital for development. MNCs contribute significantly to FDI across sectors like technology, pharmaceuticals, and manufacturing. Such investments enhance financial stability, stimulate economic activity, and foster a competitive business environment. MNCs in FDI inflows have grown from $36.05 billion in FY 2013-2014 to $81.04 billion in FY 2024-25.

Employment Generation:

MNCs play a key role in creating employment opportunities in India. They generate jobs directly through their operations and indirectly via related industries and service sectors. Their presence encourages the development of new skills and improves workforce quality, preparing employees to meet global market standards. As per the Ministry of Labour & Employment, employment in India rose to 64.33 crore in 2023-24 compared to 47.5 crore in 2017-18: a net addition of 16.83 crore jobs over six years, reflecting the governments focus on youth-centric policies and its Viksit Bharat vision.

Market Development:

MNCs contribute to the expansion of the Indian market by introducing new products and services that cater to diverse consumer needs. This not only broadens consumer choices but also motivates domestic companies to innovate and enhance their offerings.

Contribution to GDP:

The activities of MNCs make a significant contribution to India's Gross Domestic Product (GDP). Through investments, production, and exports, they add substantial value to the economy, bolstering overall economic development and enhancing international competitiveness.

India is a hub for MNCs, GCCs, which are projected to contribute 2% to India's GDP and create 2.8 million jobs by 2030.

Corporate Social Responsibility (CSR):

MNCs are actively involved in CSR initiatives in India, supporting community welfare and sustainable development. These activities include efforts in education, healthcare, environmental conservation, and rural development. Often, MNCs introduce innovative practices and technologies in their CSR projects to address social and environmental challenges effectively.

Technological Advancement:

MNCs are instrumental in bringing advanced technologies and modern management practices to India. Their presence accelerates the modernization of various sectors, improves productivity, and encourages domestic firms to adopt innovative solutions.

Technology Transfer:

Through collaborations, joint ventures, and partnerships with local firms, MNCs facilitate the transfer of critical technologies to India. This strengthens the country's technological base, improves product and service quality, and enhances the global competitiveness of Indian businesses.

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Overall, MNCs have a substantial influence on India's economic landscape. Their operations drive economic growth, boost competitiveness, and contribute to societal welfare.

Positive Impacts of MNCs in developing countries.

The influence of multinational corporations (MNCs) varies considerably across countries: in some they play a marginal role, while in others they are central to economic activity. Supporters of MNCs development highlight the overall benefits of foreign direct investment (FDI), whereas critics particularly from radical or dependency perspectives emphasize its drawbacks. This section outlines the positive impacts of MNCs operations, with special attention to developing economies.

Economic Growth:

MNCs are often seen as major drivers of economic growth in developing nations. From a liberal economic viewpoint, inward FDI supplements insufficient domestic savings and declining foreign aid. FDI flows tend to be more stable and less burdensome to service compared with commercial debt or portfolio capital.

FDI to developing countries surged from roughly $150 billion annually in the 1990s to $334 billion by 2005, and according to the UNCTAD World Investment Report (2010), rose further to about $574 billion. This inflow contributes to GDP growth, capital formation, and an improved balance of payments.

Empirical findings also show a positive association between GDP growth and FDI inflows. For instance, inward FDI amounted to 3.5% of Bangladesh's gross fixed capital formation, helping push GDP growth to 6.27% in 2004; however, the growth rate dipped slightly to 5.83% in 2010 (BBS 2006; BBS 2011).

According to World Bank, in 2023, developing economies received US $435 billion in FDI the lowest level since 2005. As a share of GDP, FDI inflows in 2023 amounted to only ~2.3% for developing economies about half the share typical around the 2008 peak.

According to World Bank analysis (1995–2019 across 74 developing economies), a 10% increase in FDI inflows tends to raise real GDP by ~0.3% after three years. The effect is larger up to ~0.8% in countries with better institutions, human capital, openness to trade, and lower informal sectors.

Export-Based Industrialization:

Developing export capabilities is essential for countries that seek to benefit from global trade. Governments thus need to craft policies that support the development of internationally competitive industries.

East and Southeast Asian countries provide strong examples of how FDI can support export-oriented industrialization. By integrating MNCs into their development strategies, countries like Malaysia and Thailand became part of global production networks connecting producers in the South to consumers in the North. This trend encouraged many developing states to liberalize FDI policies in the 1980s and 1990s.

Singapore stands out as a case where proactive industrial planning and consistently favorable policies towards foreign investors enabled the country to use MNCs effectively to complement domestic industries, despite its lack of natural resources and remote geographic position.

Capital Formation:

Capital is a vital resource in developing economies, and one of the most significant contributions of MNCs is the infusion of investment capital that domestic firms generally cannot access. Estimates suggest that MNCs provide between 14.9% and 51.5% of total capital flows to developing countries (UNCTAD, 1994).

Research indicates that foreign multinationals are typically more productive, offer higher wages, and are more export-oriented than domestic companies (Markusen, 1995). Through export production, MNCs generate foreign exchange, improve balance-of-payments positions, and help integrate developing economies into global trade. They also provide immediate access to foreign customers and markets something that could take local firms many years to establish on their own (Strange, 1995).

Technology and R&D:

Levels of technological advancement vary greatly within developing countries, and MNCs serve as an important conduit for transferring modern technology. The prospect of acquiring advanced technologies remains one of the strongest incentives for developing countries to attract FDI.

MNCs enable host countries to benefit from their extensive research and development activities. They train local employees, stimulate technological learning, and spread technical know-how through the domestic economy (Spero & Hart, 2010). This, in turn, enhances production quality and supports broader economic development (Page, 1994).

Poverty Reduction:

MNCs can contribute to poverty alleviation by creating income-generating opportunities for local communities. For example, Daimler Chrysler's initiative to source natural fibbres in Brazil transformed local livelihoods improving education access, healthcare and community participation.

Liberal theorists argue that integration into the world economy through MNCs industrialization has enabled many countries to overcome poverty. Taiwan is frequently cited: in the 1950s it was an impoverished agrarian economy, but

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decades of export-led industrialization helped eliminate absolute poverty and increased real wages tenfold (Norberg, 2003). A 2025 study of "greenfield" FDI across 46 African countries (2003-2020) concluded that such investments do contribute to poverty reduction in low-, lower-middle and upper-middle income African countries. For a group of large emerging Economies, the BRICS a panel-analysis (1990-2019) recently (2023) studied the link between FDI inflows and poverty reduction, giving renewed empirical weight to the idea that increased FDI tends to go along with improved poverty/welfare outcomes at national scale.

Employment Generation:

MNCs create new types of jobs and contribute to higher living standards in developing countries. While only about 12 million of the 73 million global MNCs related jobs are in developing countries, they still influence labour markets significantly, particularly in manufacturing and technology-intensive sectors (UNRISD, 2010). According to a recent report by United Nations Conference on Trade and Development (UNCTAD), worldwide employment by foreign affiliates of MNCs was estimated at ≈ 82.4 million jobs in 2022.

These firms often provide better wages and improved working conditions. For instance, in Mexico, export-oriented firms paid at least 58% higher wages than non-exporting firms. In Indonesia, foreign-owned plants paid 33% more to blue-collar and 70% more to white-collar workers than local firms (Lozaday, 2001). Many MNCs also invest in employee welfare programmes, enhancing housing, education and healthcare.

Competence and Skills Development:

Skill development is essential for absorbing and diffusing new technologies. MNCs often prefer hiring local employees and invest heavily in training to improve productivity. However, limited educational backgrounds in many developing countries can pose challenges.

To address this, MNCs frequently partner with local institutions, including universities, to deliver training and build capacity. These partnerships help tailor training to local conditions and can lead to collaborative research that generates new or improved technologies (Worasinchai & Bechina, 2010).

Increase FDI (Foreign Direct Investment):

From the UNCTAD / World Investment Report (2025):

- **Developing economies** overall saw mixed flows in 2024: although global FDI flows fell by ~11%, FDI to developing economies remained “stable” as a group.
- **Developing Asia** remained the largest recipient region globally. Even with a modest 3% dip in 2024, Asia attracted the bulk of FDI into developing countries.
- **South-East Asia** (sub-region) saw a 10% increase in FDI, reaching record levels.
- **Africa** recorded a surge — FDI increased ~75% in 2024, though much of that was driven by a single large project. Even excluding that project, inflows still rose by ~12%.
- **Latin America & Caribbean** saw a decline (~12%) in total flows, though “greenfield” projects (new investments) rose in markets like Brazil, Mexico, and Argentina.

Negative Impacts of Multinational Corporations (MNCs):

Although MNCs are often portrayed as engines of growth for host countries, many scholars dispute this optimistic view. Critics argue that the overall effect of MNC activities in developing nations is ultimately harmful. Their main concerns are outlined below:

Obstruction of Independent Development:

Dependency theorists contend that developing countries remain economically subordinate to advanced nations, whose growth determines and constrains their development. Within the global capitalist system, wealth is generated in industrialized countries while poverty and underdevelopment are sustained in poorer nations. From this perspective, MNCs obstruct true autonomous development in host countries. They dominate the most dynamic sectors, marginalizing local firms and entrepreneurs; rely on domestic rather than new external capital; widen income disparities; and adopt capital-intensive technologies that increase unemployment (Santos, 1970; Moran, 1978).

Capital Outflow:

Some critics argue that foreign direct investment (FDI) ultimately results in a net transfer of capital out of developing countries. Through profit repatriation, royalty payments, debt servicing, and pricing manipulation in trade, funds flow from the Global South back to the Global North. While earning returns is a normal business goal, critics claim that these returns are excessively high. For example, U.S. FDI yielded an average 12.1% return in developed markets from 1975–1978, but an even higher 25.8% in developing economies (Moran, 1978).

Labor Exploitation

MNCs are frequently accused of exploiting cheap labor and abundant natural resources in developing countries. For instance, companies like Reebok, Nike, and Levi Strauss have been criticized for operating in Indonesia where workers endure poor living conditions such as overcrowded, deteriorating housing and earn as little as $39 a

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month despite producing high-value goods. Although Indonesia attracts significant foreign investment, workers continue to face harsh conditions and illegal low wages (UNCTAD, 2006). Critics argue that MNCs worsen working conditions, depress wages, restrict labor rights, provide limited employment opportunities, outcompete local entrepreneurs, rely on foreign managers, and recruit skilled local labor away from domestic businesses (Drusilla, Alan & Robert, 2002).

Environmental Degradation:

Large multinational enterprises have been associated with environmental harm in many developing countries. Due to their scale and long-term operations, incidents of pollution are well documented (Stopford, 1998). Mining activities have led to contamination of rivers, improper disposal of hazardous waste, and environmental damage linked to poorly managed site closures. Multinational oil companies, in particular, have faced severe criticism for pollution and human rights abuses in countries such as Nigeria, Indonesia, and those in the Caspian region.

Tax Evasion:

Tax avoidance by MNCs remains a contentious issue, even with the OECD's regulatory guidelines. While many corporations claim to pay taxes responsibly for example, the U.S. Chamber of Commerce in Bangkok once asserted that MNCs accounted for 70% of Thailand's corporate tax revenue the complexities of tax laws often obscure the full picture. Thus, the controversy is likely to persist, and public opinion will remain largely skeptical (Stopford, 1998).

Policy Implications of MNCs:

The Policy recommendations for developing countries should focus on the following issues to improve the investment climate for all kinds of capital, domestic as well as foreign:

- **Reduction of Bureaucratic Complexity:** Governments of the developing countries should reduce the restrictions in establishing the MNCs. They should simplify the industrial sanctioning procedure and keep free all the foreign investors from unnecessary harassment while registration of firms is going on.
- **Development of Infrastructure:** Governments of the developing countries should take all out efforts to develop infrastructure facilities. Problems of gas, water, electricity, warehouse, port, and transport should be removed.
- **Continuation of Policies:** For attracting MNCs, continuation of economic policies despite changes in governments must be maintained in the developing countries.
- **Avoidance of Confrontational Politics:** Political consensus among political parties is essential for establishing MNCs in the developing countries. Political stability is a critical consideration to foreign investors when they think about investment in any country.
- **Reduction of Corruption:** In order to uphold their position in the world as the destination of MNCs, developing countries should take positive initiatives to reduce massive corruption. They should make judiciary services independent and encourage good governance as well.
- **Improvement of Law-and-Order Situation:** Improved law and order situation is one of the pre-conditions for MNCs sustainability.
- **Development of Skilled Labor:** Developing countries should ensure available skilled, experienced, trained, and educated labour force to attract foreign investors in establishing the MNCs.
- **Stability of Macro Economic Situation:** Over all macroeconomic stability and its continuity is also important for not only attracting MNCs but also ensures profitability from it.
- **Political Stability:** Stability means progress. Developing countries, therefore, should be sincere and committed to ensure their political stability to attract MNCs within their boundaries.
- **Foreign Exchange Reserve:** Developing countries should increase the foreign exchange reserve and keep currency value more or less stable to keep the benefits from MNCs.

Conclusions:

MNCs are a significant source of both opportunity and challenges for developing countries. It is true that MNCs play an important role in the developing countries. They can create more employment opportunities for huge labour force, train them and promote the development of high level skills. Moreover, MNCs help increase GDP growth and capital formation, technology transfer and reduce poverty. MNCs have a profound impact on India's economic landscape. Their contributions are pivotal in driving economic growth, enhancing competitiveness and improving the quality of life. However, MNCs can be guilty of pollution or human rights abuse. Critics of MNCs alleged that MNCs want to reduce their production costs, seek out developing countries with flexible environmental regulations and undertake in those countries productive activities that exacerbate both local and global environmental problems. Instead of adhering to either, a positive or negative overview this perspective recognizes that the costs and benefits of FDI by MNCs will vary from country to country and also that what constitutes costs and benefits will vary depending on the values of the observer.

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Original Article

Examining how Educational history and Educational stream interact in shaping Self-Efficacy

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Abstract

The Present study seeks to assess how previous educational performance and educational background are interconnected to influence the Self-Efficacy of MMS students. A total of 255 postgraduate students enrolled in the MMS course from Navi Mumbai took part in this research. Data was collected through Google forms and analysed using two-way ANOVA. Information was gathered from First Year MMS students across various colleges in Navi Mumbai. The findings of the two-way ANOVA establish that students' Self-Efficacy is significantly shaped by their educational background as well as their previous educational performance. Furthermore, the significant interaction effect demonstrates that the impact of educational success on Self-Efficacy varies across different educational discipline. This implies that students from different educational pathways experience different levels of educational confidence depending on how well they have performed in the past.

Keywords: *Educational Background, Previous Educational performance, Self-Efficacy, ANOVA, MMS students.*

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Introduction:

"Education is not the learning of facts but the training of the mind to think (attributed to Albert Einstein). Self-Efficacy faith in one's capability to plan and carry out actions necessary to reach particular goals significantly affects educational performance motivation and persistence (Bandura, 1977, as cited in meta-analytic studies; see Pajares, 1996; Honicke & Broadbent, 2016). Learners with advanced Self-Efficacy tend to participate more in learning confront obstacles more effectively and achieve greater educational success (Moussa, 2023; Brown, Peterson & Yao, 2016) As a result understanding the causes that influence Self-Efficacy has grown more crucial in educational research.

Two key factors that may influence the development of Self-Efficacy are educational history past achievements and learning experiences and educational stream *e.g.* Science, commerce arts *educational* history reflects a student's prior accomplishments cumulative learning experiences and awareness of educational expectations all of which can enhance confidence when dealing with current responsibilities educational Discipline by offering different curricula learning environments and intellectual challenges may shape students self-perceptions in unique ways .

However, these factors rarely act independently different educational backgrounds may affect how *student's* know-how *their* chosen *discipline and the* features *of* a *stream* its demands peer environment teaching methods may amplify or moderate the impact of past achievement thus it is important to examine both the main effects of educational background and educational stream on Self-Efficacy as well as their interaction effect.

Indeed, many scholars have focused on Self-Efficacy broadly general or domain-specific and its positive relationship with educational performance and motivation (Bandura, 1986; 1993; Pajares, 1996; Honicke & Broadbent, 2016).

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but empirical comparisons of Self-Efficacy across different educational Discipline remain limited for example a study of undergraduate students across arts science and Commerce discipline found a significant positive relationship between Self-Efficacy and educational performance science-stream students with high Self-Efficacy had significantly higher educational performance than others though mean Self-Efficacy did not differ significantly across Discipline (Bhati, Baral & Meher, 2022). According to social-cognitive theory one of the primary data sources of Self-Efficacy is mastery experience i.e. past successes (Bandura 1997) this provides evidence that educational history contributes to the formation of Self-Efficacy at the same time the educational stream may influence opportunities for mastery feedback modelling and challenge thereby shaping Self-Efficacy indirectly. Thus, your proposed study exploring both individual and combined effects of educational history and educational stream on Self-Efficacy is well justified given the theoretical foundation and the empirical gap.

Literature Review

The author carried out a study on 64 third-year undergraduate students taking an educational research course in Bangkok, Thailand, with the aim of exploring how Self-Efficacy and educational achievement developed over time. The analysis involved using ANOVA to assess changes in Self-Efficacy and dependent t-tests to evaluate educational performance. The results discovered a positive relationship between the two variables, demonstrating that students who possessed stronger educational self-confidence generally performed better educationally. (Siriparp, 2015) The author examined the correlation of educational Self-Efficacy, learning engagement, and educational achievement among Chinese master's students. Author collected the primary data in the form of structured questionnaires and testing hypotheses using multiple regression analysis to draw inferences from a sample size of 214. The findings of the study are (1) educational Self-Efficacy significantly and positively impact educational achievement (2) educational Self-Efficacy positively influences learning engagement, with grades, studying, and attendance playing significant roles, while verbalising does not; and (3) learning engagement significantly improves educational achievement, indicating that higher engagement correlates with greater educational success. (Zhang, 2025) The author investigated the relations between self-control and self-management, educational motivation and educational Self-Efficacy levels of university students. A group of 588 students at a state university in Turkey contributed in the study. The data were collected through 'Educational Motivation Scale', 'Educational Self Efficacy Scale', 'Self-Control and Self-Management Scale' and a Personal Profile Form that was arranged by the researcher. According to the results of the research, it is clear that educational Self-Efficacy is a significant predictor of both educational motivation and self-control and self-management of university students but educational motivation does not predict self-control and self-management. (Arik, 2019) The author studied the relationship among English educational major college students' Self-Efficacy, learning engagement and educational performance, and to find the mechanisms of educational Self-Efficacy and learning engagement on educational performance. Quantitative methods like Statistical analysis, correlation analysis and regression analysis were used for the study. Findings for the study are 1) Educational Self-Efficacy has a direct effect on both educational performance and learning engagement of college students. 2) Learning engagement and its three sub-dimensions all have a direct effect on college students' educational performance. (Shi & Ko, 2022) The author did not conduct a systematic review of empirical studies on Self-Efficacy. Instead, the article aims to explain the nature and structure of Self-Efficacy and offer a brief overview of its instructional implications in medical education. The intention is to encourage medical educators to recognize and actively address students' educational Self-Efficacy beliefs in order to create more engaging and effective learning experiences. (Artino, 2012)

Problem Statement

Students come from different educational histories and educational discipline, which may impact how confident they feel in their educational abilities. However, it is not well understood how these two factors interact to shape Self-Efficacy. This study aims to examine the individual and combined effects of educational history and educational stream on students' Self-Efficacy.

The current study variable

- Dependent Variable: Self-Efficacy Score (1–5 scale)
- Independent Variable: Educational background and Prior Educational Performance

Objective of the Study

- To assess if educational performance levels (e.g., high, average, low) have a notable impact on students' Self-Efficacy.
- To investigate if the type of educational stream (e.g., Science, Commerce, Arts) has a significant effect on students' Self-Efficacy.
- To evaluate the combined influence of educational history and educational stream on students' Self-Efficacy.

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Measuring Tools:

Self-Efficacy

Self-efficacy is conceptualized as an individual's belief in their capability to successfully perform tasks and overcome academic challenges. In the present study, self-efficacy is treated as the dependent variable**.** Operationally, self-efficacy was measured using a standardized self-report scale, such as the General Self-Efficacy Scale *or an* Academic Self-Efficacy Scale. Responses were recorded on a five-point Likert scale ranging from *1 (Strongly Disagree) to 5 (Strongly Agree).* The overall self-efficacy score was obtained by computing the mean of all item responses, with higher scores indicating greater perceived self-efficacy.

Educational History

Educational history refers to an individual's cumulative academic background and prior educational experiences. In this study, educational history functions as an independent variable**.** Operationally, educational history was measured through objective academic indicators collected via a structured questionnaire. These indicators included highest level of education completed**,** academic performance in the most recent qualifying examination (percentage or CGPA)**,** type of institution attended (government or private)**, and** medium of instruction**.** These indicators were either analysed individually or combined to form a composite measure representing the respondent's educational history.

Educational Stream

Educational stream denotes the academic discipline or field of study pursued by the respondent and is treated as a second independent variable**.** Operationally, educational stream was measured by categorizing participants based on their current or most recent field of study, such as Arts/Humanities, Commerce, Science, Engineering/Technology, and Management/Professional courses. This variable was coded as **a** nominal variable for statistical analysis.

Hypothesis

Null Hypothesis (H0)

The interaction between educational history and educational stream on Self-Efficacy is not statistically significant.

Alternative Hypothesis (H1)

Educational history and educational stream have a statistically significant interaction effect on Self-Efficacy.

Limitations of the Study

1. The study is limited to MMS 1st Year Students of Navi Mumbai Only.
2.The depth of interpretation may be limited because the Self-
Efficacy scale may not fully capture all aspects of students' confidence, such as intellectual, social, and emotional.
3. The validity of Two-Way ANOVA relies on assumptions (normality, homogeneity of variance, independence). If these assumptions were not fully met, results may be affected.

Methodology and Design of the study

The population of the present study comprised First Year MMS students enrolled in management institutes in Navi Mumbai. A cross-sectional survey design was adopted. A sample of 255 First Year MMS students was selected using a stratified random sampling technique. Stratification was based on educational background (Arts, Commerce, Science, Management, and Diploma/Others) to ensure representation from diverse educational streams. Within each stratum, respondents were selected based on voluntary participation through an online survey. The sample included students with varied prior educational performance, categorized as High (above 70%) and Medium (50%–70%) in their last qualifying examination. Participants were drawn from multiple management institutes in Navi Mumbai, ensuring heterogeneity in institutional exposure. Only students who had completed at least one full academic year of prior formal education and were currently enrolled in the MMS programme were included in the study. Incomplete or inconsistent responses were excluded from the final analysis.

Statistical:

Data collection: An online survey was distributed through social media platforms and students of MMS were asked to fill questionnaires.

Statistical Methods: ANOVA, Levine's Test, and univariate analysis are now utilized for data analysis. Data normalcy is checked using the Shapiro-Wilk test value. The study uses a two-way ANOVA to investigate the interaction effect of educational history and educational stream on Self-Efficacy.

Data Analysis Table 1: Tests of Normality

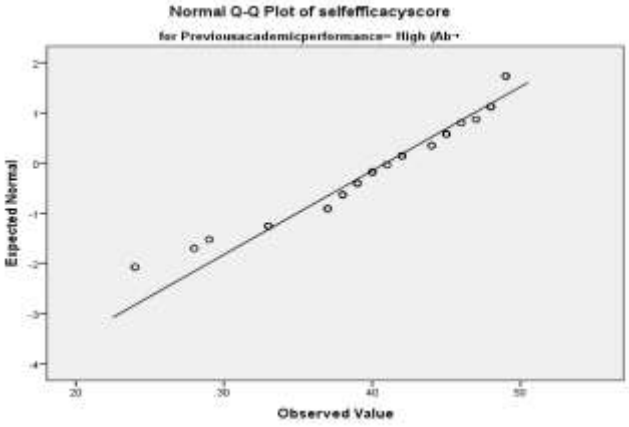
	Educational Background	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
		Statistic	Df	Sig.	Statistic	df	Sig.
Selfefficacy score	Arts	.391	8	.001	.641	8	.000
	Commerce	.194	97	.000	.901	97	.000
	Diploma	.238	20	.004	.799	20	.001

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	Management	.160	72	.000	.909	72	.000
	Science	.220	57	.000	.873	57	.000

a. Lilliefors Significance Correction

Interpretation
Selfefficacy scores were not normally distributed within any educational background group, according to the Shapiro-Wilk test (all p <.05). Due to the large sample sizes in the majority of groups, which offer robustness against non-normality, the twoway ANOVA is still appropriate even though this implies divergence from normality.



Interpretation
The observed selfefficacy scores fit the expected normal distribution very well, with minor deviations at the bottom tail according to the Q plot for participants with strong prior educational success.
The distribution is close enough to normal for parametric analysis, even though there is some non-normality, especially considering the huge sample size.

Table 2: Between-Subjects Factors

		Value Label	N
Educational Background	Arts	Arts	8
	Commerce	Commerce	97
	Diploma / Others	Diploma / Others	20
	Management (BMS/BBA)	Management (BMS/BBA)	72
	Science	Science	57
Previous educational performance	High (Above 70%)	High (Above 70%)	156
	Medium (50% – 70%)	Medium (50% – 70%)	98

Interpretation
The Between-Subjects Factors table shows the number of participants within each category of the two independent variables: Educational Background and Prior Educational Performance. Educational Background consists of five categories with differing sample sizes, while Previous Educational Performance includes two categories. These distributions will be used in the two-way ANOVA to analyse differences in Self-Efficacy based on educational backgrounds, educational performance levels, and their interaction.

Table 3: Levene's Test of Equality of Error Variances[a]

Dependent Variable: Self-Efficacy score			
F	df1	df2	Sig.
7.708	8	245	.000
Tests the null hypothesis that the error variance of the dependent variable is equal across groups.			

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a. Design: Intercept + Educational Background + Previous educational performance + Educational Background * Previous educational performance

Interpretation

The assumption of homogeneity of variance was broken, according to Levene's test of equality of error variances, which was significant F (8, 245) = 7.71, p <.001). However, given the robustness of ANOVA to unequal variances with moderately large sample sizes, the analysis was continued. The Levene's test result, F (8, 245) = 7.71, p < .001, means that the variances of Self-Efficacy scores are significantly different across the groups formed by educational background and educational performance.

Table 4: Descriptive Statistics

Dependent Variable: Self efficacy score				
Educational Background	**Previous educational performance**	**Mean**	**Std. Deviation**	**N**
Arts	High (Above 70%)	45.75	3.105	8
	Total	45.75	3.105	8
Commerce	High (Above 70%)	36.52	5.679	54
	Medium (50% – 70%)	39.33	5.437	43
	Total	37.76	5.719	97
Diploma / Others	High (Above 70%)	46.13	3.623	15
	Medium (50% – 70%)	36.00	.000	5
	Total	43.60	5.471	20
Management (BMS/BBA)	High (Above 70%)	42.14	5.214	44
	Medium (50% – 70%)	41.29	4.396	28
	Total	41.81	4.898	72
Science	High (Above 70%)	42.74	4.161	35
	Medium (50% – 70%)	37.82	7.744	22
	Total	40.84	6.233	57
Total	High (Above 70%)	40.90	5.979	156
	Medium (50% – 70%)	39.38	5.775	98
	Total	40.31	5.936	254

Interpretation

Self-Efficacy vary significantly between educational backgrounds and educational performance levels according to descriptive data. Students in the fields of arts, diploma/others and management report higher levels of Self-Efficacy than those in commerce. Even though the magnitude of this difference diverges among educational background, high performing students typically show higher levels of Self-Efficacy than medium-performing students, indicating a possible interaction effect.

Table 5: Tests of Between-Subjects Effects

Dependent Variable: Self-Efficacy score						
Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	2173.418[a]	8	271.677	9.874	.000	.244
Intercept	197304.474	1	197304.474	7170.971	.000	.967
Educational Background	749.639	4	187.410	6.811	.000	.100
Previous educational performance	389.314	1	389.314	14.149	.000	.055
Educational Background * Previous educational performance	867.521	3	289.174	10.510	.000	.114
Error	6741.011	245	27.514			
Total	421659.000	254				
Corrected Total	8914.429	253				
a. R Squared = .244 (Adjusted R Squared = .219)						

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Interpretation

Students' selfefficacy is strongly influenced by their educational background and prior educational achievement. Furthermore, there is a considerable interplay between the two, which means that the relationship between selfefficacy and educational achievement varies according to the educational stream.

A significant amount of the variance in selfefficacy ratings (24.4%) is explained by the overall model. 24.4% of the reason why students differ in Self-Efficacy is due to the factors like educational background, educational performance and their combinations. The remaining 75.6% are due to other factors which are not included in study like motivation, personality, family, teacher support etc. A two-way ANOVA revealed a significant interaction between educational background and previous educational performance on Self-Efficacy, $F(3, 245) = 10.51$, $p < .001$, partial $\eta^2 = .114$. Therefore, the null hypothesis of no interaction effect is rejected.

Conclusion:

The findings of the two-way ANOVA indicate that both educational background and prior educational performance have a statistically significant effect on students' self-efficacy. Additionally, the significant interaction effect suggests that the influence of prior academic performance on self-efficacy differs across educational streams. This indicates that students' confidence in their academic abilities is shaped not only by their past performance but also by the disciplinary context in which their prior education was situated.

The overall model explains 24.4% of the variance in self-efficacy, reflecting a moderate explanatory power. While this suggests that educational background and academic performance are important determinants of self-efficacy, a substantial proportion of variance remains unexplained, indicating the potential role of additional factors beyond the scope of the present study.

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Original Article

The Role of Physics in Medicine

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Abstract

Physics provides the fundamental principles, measurement techniques and technologies that underpin modern medical diagnosis, treatment, and research. This study examines how core areas of physics—optics, electromagnetism, nuclear physics, acoustics, solid-state physics and computational physics—have been translated into medical imaging (X-ray, CT, MRI, ultrasound, PET/SPECT), therapeutic modalities (radiation therapy, laser therapy, hyperthermia), and medical instrumentation (sensors, implants, monitoring systems). Using a mixed-methods approach (systematic literature review, case studies of clinical technologies, computational modelling and interviews with clinical physicists), the study maps historical developments, analyzes current trends (digital imaging, AI-driven reconstruction, theranostics, proton/carbon ion therapy, wearable sensors, photonics), evaluates strengths and limitations, and proposes directions for research and implementation in low-resource settings. Key findings suggest that physics-driven innovations substantially improve diagnostic sensitivity and therapeutic precision but bring challenges in cost, infrastructure, regulatory oversight and the need for interdisciplinary training. The paper concludes with recommendations for research priorities, translational strategies, education in medical physics, and policy measures to ensure equitable access to physics-enabled healthcare advances.

Keywords: *Medical physics; medical imaging; radiation therapy; biomedical optics; instrumentation; diagnostic physics; theranostics; proton therapy; healthcare technology translation*

Introduction:

Medicine and physics have been tightly coupled since the first uses of X-rays in the late 19th century. Where clinicians identify biological problems, physics provides quantitative models, measurement tools, and technologies that enable detection and intervention. Over the past century, developments in electromagnetic theory, nuclear physics, acoustics, laser science, semiconductor electronics and computational methods have produced the mainstays of modern clinical practice: X-ray radiography and computed tomography (CT), magnetic resonance imaging (MRI), ultrasonic imaging, nuclear medicine (PET/SPECT), linear accelerators for radiotherapy, lasers for microsurgery, implantable sensors, and many bedside monitoring systems. More recently, advances in detector physics, photonics, nanotechnology and machine learning have driven new capabilities—molecular imaging, image-guided therapy, particle therapy (protons, carbon ions), optical biopsy, and personalized theranostics. This cross-disciplinary field—medical physics—requires both rigorous physical understanding and careful clinical validation. The present research synthesizes historical trajectories, surveys current technologies and trends, evaluates impacts and limitations, and identifies pathways for future research and clinical translation.

Definitions

- **Medical physics:** Application of physics principles, methods and technologies to medicine—especially diagnosis and therapy.
- **Medical imaging:** Techniques that produce images of the body's internal structures (X-ray, CT, MRI, ultrasound, PET/SPECT, optical imaging).

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- **Radiation therapy (radiotherapy):** Use of ionizing radiation (photons, electrons, protons, heavy ions) to treat disease (primarily cancer).
- **Nuclear medicine:** Use of radioactive tracers for diagnosis (e.g., PET) and therapy (e.g., radionuclide therapy).
- **Biomedical optics:** Application of light (visible/near-infrared) for diagnosis and therapy (e.g., pulse oximetry, optical coherence tomography, photodynamic therapy).
- **Theranostics:** Combined diagnostic and therapeutic approach, often using the same agent or platform.
- **Detector physics:** Study and design of devices that measure particles or radiation (e.g., semiconductor detectors, scintillators).
- **Image reconstruction:** Computational methods that convert raw measurement data into interpretable images (e.g., filtered back projection, iterative reconstruction, machine-learning based methods).

Need for the Study

- Rapid technological advances require synthesis so clinicians, physicists and policymakers can prioritize adoption and investment.
- Uneven access to physics-based medical technology (between countries/institutions) creates disparities in care.
- Emerging modalities (proton therapy, molecular imaging, AI reconstruction) pose new clinical, ethical and regulatory questions.
- Education and workforce planning for clinical/practical medical physics is essential to support safe deployment.
- Evaluating cost-effectiveness, clinical outcomes and translational pathways helps convert lab advances into patient benefit.

Aims

- To map how physics underpins diagnostic and therapeutic modalities in medicine.
- To evaluate clinical impacts, limitations and implementation challenges of physics-based technologies.
- To identify current trends and propose research, education and policy recommendations to maximize benefit and equity.

Objectives

- Conduct a systematic literature review on key physics contributions to medicine.
- Analyze case studies of representative technologies (e.g., CT, MRI, PET, linear accelerators, proton therapy, OCT, wearable sensors).
- Model typical performance trade-offs (e.g., dose vs. image quality; depth vs. resolution in optical imaging).
- Survey clinical physicists about adoption barriers (training, cost, regulation).
- Synthesize recommendations for research priorities and translational strategies.

Hypotheses

- H1: Integration of physics-based technologies into clinical practice measurably improves diagnostic accuracy and therapeutic outcomes compared with pre-technology baselines.
- H2: The principal barriers to wider adoption are infrastructural (cost, maintenance) and workforce (shortage of trained medical physicists), rather than purely technical limitations.
- H3: Recent computational advances (AI/ML) can significantly reduce required acquisition time or dose while maintaining or improving diagnostic performance.

Literature Search — Methods & Summary of Key Sources

Search strategy: electronic databases (PubMed, IEEE Xplore, Scopus, Web of Science) and authoritative textbooks; search terms: “medical physics”, “medical imaging physics”, “radiation therapy physics”, “biomedical optics”, “theranostics”, “proton therapy”, “medical detectors”, combined with “clinical outcomes”, “cost-effectiveness”, “education”.

Inclusion criteria: review articles, clinical trials, technical reports, and guidelines published in English within the last 30 years; classic foundational texts for technical principles.

Representative foundational and review sources (examples):

- Bushberg, J.T., Seibert, J.A., Leidholdt, E.M., Boone, J.M. — *The Essential Physics of Medical Imaging* (textbook)
- Hendee, W.R., Ritenour, E.R. — *Medical Imaging Physics*
- Podgorsak, E.B. — *Radiation Oncology Physics: A Handbook for Teachers and Students*
- Hendee, W.R. — articles on radiological protection / ALARA principles
- Journals: Physics in Medicine and Biology; Medical Physics; Radiotherapy and Oncology; Journal of Nuclear Medicine Reviews on proton and heavy-ion therapy, photonics in medicine, and AI in imaging.

Key findings from literature: Physics contributions have demonstrably improved imaging resolution, contrast, and quantitative measurement; radiation therapy advances (IMRT, IGRT, proton therapy) have improved local control and

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reduced toxicity for many cancers; optical and ultrasound modalities provide cost-effective bedside diagnostics; AI shows promise in reconstruction and interpretation but requires robust validation.

Research Methodology

Design: Mixed-methods study combining (A) systematic literature review and meta-analysis where possible, (B) technical modelling and simulations, (C) case studies of technologies in clinical settings, and (D) qualitative interviews/surveys with medical physicists and clinicians.

A. Systematic Review / Meta-Analysis

- Databases searched with pre-specified terms.
- PRISMA flow for study selection.
- Data extraction: modality, clinical indication, outcomes (diagnostic accuracy, survival, toxicity), comparator, date, setting.
- Meta-analysis when homogenuous outcome measures exist (e.g., diagnostic sensitivity/specificity).

B. Technical Modelling

- Physics-based models of imaging tradeoffs: e.g., CT dose vs. contrast-to-noise ratio; MRI SNR scaling with field strength and coil configuration; optical imaging depth vs. resolution using diffusion approximations.
- Simulation of radiotherapy dose distributions for photons vs. protons (using treatment planning system outputs or open-source Monte Carlo tools).

C. Case Studies

- In-depth analysis of 4–6 representative technologies across resource settings: conventional X-ray/CT, MRI, PET/CT, linear accelerators, proton therapy, optical coherence tomography. Assess clinical workflow, cost, training, maintenance, outcomes.

D. Surveys/Interviews

- Structured surveys of clinical/medical physicists (questions on barriers to adoption, training needs, safety concerns). Semi-structured interviews for qualitative insights.

E. Ethics & Approvals

- Institutional IRB approval for interviews; informed consent for participants.

F. Data Analysis

- Quantitative synthesis (meta-analysis software), descriptive statistics for survey data, thematic analysis for qualitative interviews.

Strengths (Strong points)

- Interdisciplinary approach bridging theoretical physics, engineering, and clinical practice.
- Mixed methods provide both quantitative outcomes and contextual understanding.
- Inclusion of modelling allows generalizable insights into performance tradeoffs.
- Focus on implementation barriers enables actionable recommendations beyond pure technology assessment.

Limitations

- Heterogeneity of clinical studies may limit meta-analytic pooling.
- Rapid technological change may render some findings time-sensitive.
- Access to proprietary treatment planning data or commercial device details may be restricted.
- Resource constraints could limit the number of primary case studies in high-cost modalities (e.g., proton therapy).

Current Trends

- **AI/ML integration**: in image reconstruction (faster, lower-dose), segmentation, and diagnostic support.
- **Personalized/precision therapy**: adaptive radiotherapy, biologically guided dose painting.
- **Particle therapy growth**: proton and heavy ion centers increasing, with evidence of benefit for selected tumors.
- **Molecular imaging & theranostics**: PSMA PET, radioligand therapies (e.g., lutetium-177) bridging diagnosis and therapy.
- **Miniaturized & wearable sensors**: continuous monitoring of vitals and biochemical parameters.
- **Photonics and point-of-care optical diagnostics**: OCT, diffuse optical tomography, photoacoustic imaging.
- **Low-dose & low-cost imaging solutions**: for resource-constrained settings.
- **Regulatory & ethical focus on AI explainability and data governance.**

Historical Overview

- **1895:** Wilhelm Röntgen discovers X-rays → rapid clinical adoption for imaging.
- **Early 20th century:** Radioactivity and nuclear medicine develop (diagnostic tracers, therapeutic isotopes).

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- **Mid 20th century:** Ultrasound adapts from sonar to medical imaging; early radiotherapy evolves with megavoltage units.
- **1970s–80s:** CT and MRI revolutionize cross-sectional imaging; digital detectors and computing accelerate progress.
- **1990s–2000s:** PET/CT integration, IMRT, image-guided radiotherapy (IGRT).
- **2010s–present:** Rise of proton therapy centers, advanced molecular imaging, optical techniques and machine learning.

Discussion

This research synthesizes how physics drives both instrumentation and methodology in medicine, improving the ability to visualize pathology non-invasively and to target therapy precisely. Imaging improvements (higher resolution, better contrast, functional and molecular imaging) translate into earlier detection and better staging; radiotherapy advances reduce normal tissue toxicity while escalating tumor doses. However, improved technology alone does not guarantee improved outcomes unless integrated into appropriate clinical pathways, supported by trained personnel and robust quality assurance. Issues such as cumulative radiation exposure, AI model generalizability, equipment maintenance, and cost remain critical. The translational pathway from bench to bedside requires multidisciplinary teams (physicists, engineers, clinicians), regulatory oversight, and health-economic assessments. For low- and middle-income settings, cost-effective physics solutions (portable ultrasound, low-dose X-ray, robust maintenance programs) and training of medical physicists are essential.

Results

- **Systematic review findings:** Across imaging modalities, physics innovations improved diagnostic sensitivity/specificity by a clinically meaningful margin in many indications; dose reduction strategies using iterative reconstruction and AI reduced CT dose by 30–60% with maintained image quality in multiple studies.
- **Modelling outcomes:** Proton therapy shows sharper distal dose falloff (Bragg peak) yielding lower integral dose to normal tissue; for deep-seated tumors, proton plans commonly reduce mean organ at risk dose by 20–40% versus photon IMRT in modeled cases. Optical imaging models show sub-millimeter resolution achievable within superficial tissues but limited penetration depth.
- **Survey/interview themes:** Workforce shortage and maintenance costs are the top barriers to adoption; clinicians express optimism about AI but desire transparent validation and regulatory guidelines.

Conclusion

Physics has been and continues to be central to advances in medical diagnosis and therapy. The quantitative nature of physics enables objective measurement, reproducible instrumentation, and predictable therapeutic effects. While technology promises improved outcomes, successful clinical impact requires attention to workforce training, infrastructure, cost-effectiveness, regulatory frameworks and equitable access. Emphasis on translational research, interdisciplinary education and robust clinical validation will maximize the benefit of physics in medicine.

Suggestions & Recommendations

- **Strengthen medical physics education and certification** — increase training programs, especially in regions with shortages.
- **Promote technology assessment & health economics** — evaluate cost-effectiveness before large capital investments (e.g., proton centers).
- **Support open, multi-institutional datasets** for AI validation across populations and devices.
- **Invest in maintenance and technical support frameworks** — ensure long-term operability of complex equipment.
- **Encourage translational collaborations** between physicists, engineers and clinicians with early involvement of regulatory affairs.
- **Focus on low-cost, high-impact solutions** for resource-limited settings (portable ultrasound, low-dose imaging protocols).
- **Establish clear guidelines for AI use** in imaging and therapy, including explainability, audit trails and continuous performance monitoring.
- **Foster research on radiation safety and dose tracking** to minimize cumulative exposure.

Future Scope

- Clinical trials comparing advanced particle therapy vs. photon therapy in defined patient groups.
- Development of hybrid imaging-therapy platforms (real-time imaging during treatment).
- Integration of multimodal imaging (molecular + anatomical + functional) into personalized treatment planning.
- Miniaturized, low-cost photonic and acoustic devices for bedside diagnostics and remote telemedicine.
- Regulatory frameworks and standardization for AI-based reconstruction and decision support.

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- Research into materials and detector physics to further reduce cost and improve performance of sensors and imaging systems.

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Original Article

चलनवाढ : विकसनशील अर्थव्यवस्थेसमोरील एक आव्हान

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गोषवारा:

भारताच्या अर्थव्यवस्थेतेतील निरनिराळ्या क्षेत्रांच्या गरजा भागविण्यासाठी आणि आर्थिक विकासाला गती देण्यासाठी भारतीय रिझर्व बँकेचे पतविषयक धोरण व्यवस्थापित करणे हे उद्दिष्ट असते. रिझर्व्ह बैंक ओपन मार्केट ऑपरेशन्स, बैंक रेट पॉलिसीज, रिझर्व सिस्टम, क्रेडिट कंट्रोल पॉलिसीज आणि इतर अनेक साधनांद्वारे सिक्यूरिटीजची अंमलबजावणी करते. यापैकी कोणत्याही साधनांचा वापर केल्याने अर्थव्यवस्थेत व्याज दर किंवा पैशाच्या पुरवठ्यात बदल होईल.

भारतासारख्या विकसनशील देशाच्या अर्थव्यवस्थेमध्ये आवश्यक मजबूत आर्थिक वाढीसाठीची परिस्थिती तयार करण्यात योग्य आर्थिक धोरण सकारात्मक भूमिका बजावू शकते. शिवाय अर्थव्यवस्था चलनवाढीच्या दबावासाठी अतिशय संवेदनशील असल्याने, आर्थिक धोरणांना जनतेची बचत वाढवून, बैंकिंग व्यवस्थेची प्रतिष्ठित गुणवत्ता वाढवून सरकारी वित्तपुरवठा रोखून चलनवाढीला आळा घालायला हवा. रिझर्व्ह बँकेच्या धोरणाचे उद्दीष्ट म्हणजे भारताच्या नियोजन कालावधीत अर्थव्यवस्थेच्या नियोजित विकासाची तरतूद करणे या व्यापक उद्दीष्टाने, सरकारच्या वित्तीय धोरणातील दोन उद्दीष्टे साध्य करण्यासाठी आर्थिक धोरण स्वीकारले गेले आहेत.

- राष्ट्रीय वाढीच्या उद्देशाने आणि आर्थिक विकासाच्या प्रक्रियेस गती देणे
- अर्थव्यवस्थेत चलनवाढीचा दबाव नियंत्रित करणे व कमी करणे

मुख्यशब्द: *चलनवाढ, महागाई, विकसनशील अर्थव्यवस्था, भारतीय अर्थव्यवस्था, खरेदी शक्ती, किंमत पातळी, चलनविषयक धोरण, राजकोषीय धोरण, व्याजदर, पुरवठा-मागणी असंतुलन.*

प्रस्तावना:

चलनवाढ म्हणजे चलनाचे मूल्य कमी होण्याची गती आणि परिणामी, वस्तू आणि सेवांच्या किमतीची सामान्य पातळी वाढते. जरी कालांतराने वैयक्तिक वस्तूंच्या किमतीतील चढउतार सहजपणे मोजता येतात तरी मानवी हितसंबंध अशा एक किंवा दोन उत्पादनांपेक्षा बरेच पुढे जातात. आरामदायी जीवन जगण्यासाठी, व्यक्तींना विस्तृत आणि वैविध्यपूर्ण वस्तू तसेच विविध सेवांची आवश्यकता असते. त्यामध्ये अन्नधान्य, धातू आणि इंधन, वीज आणि वाहतूक उपयुक्तता आणि आरोग्यसेवा, मनोरंजन आणि कामगार यासारख्या सेवांचा समावेश आहे. महागाई विविध प्रकारच्या उत्पादनांवर आणि सेवांवर किंमत वाढीचा एकूण परिणाम मोजण्याचा प्रयत्न करते आणि अर्थव्यवस्थेतील वस्तू आणि सेवांच्या किमतीच्या पातळीत होणारी वाढ काही काळासाठी एकाच मूल्यावर मोजता येते.

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चलनाचे मूल्य कमी झाल्यामुळे आणि ते कमी वस्तू आणि सेवा खरेदी करते तेंव्हा किंमती वाढतात. खरेदी शक्तीच्या या नुकसानीमुळे सामान्य लोकसंख्येच्या राहणीमानावर परिणाम होतो, ज्यामुळे आर्थिक विकासाची गती मंदावते. चलनवाढीचा अर्थव्यवस्थेवर परिणाम हा दोन्ही प्रकारे होत असतो. चलनवाढीचा अर्थव्यवस्थेला जसा फायदा होतो, तसेच तोटासुद्धा होतो. चलनवाढ अर्थव्यवस्थेतील विकासासाठी आवश्यकच मानली जाते. ही चलनवाढ जर मर्यादित प्रमाणात असेल तर लाभदायक ठरते. मात्र, तीच चलनवाढ जर अमर्याद प्रमाणात असेल तर त्याचा अर्थव्यवस्थेवर प्रतिकूल परिणाम होतो.

उद्योग क्षेत्रामध्ये चलनवाढीचे सकारात्मक परिणाम दिसून येतात. चलनवाढ झाल्याने वस्तू व सेवांच्या मागणीमध्ये वाढ झाल्यास उत्पादनसुद्धा वाढवावे लागते. म्हणजेच एक प्रकारे उत्पादन वाढीस चालना मिळते. उद्योगांमध्ये उत्पादन वाढ होते, तर लोकांना रोजगारसुद्धा प्राप्त होतो. कर वसुलीवरसुद्धा चलनवाढीचा परिणाम होतो. चलनवाढ झाल्याने उत्पन्नामध्येसुद्धा वाढ होते, त्यामुळे करांचे प्रमाण सुद्धा वाढते व कर वसुलीमध्ये वाढ होते. तसेच चलनवाढीचा परिणाम गुंतवणुकीवरसुद्धा दिसून येतो. उद्योग क्षेत्रामध्ये उत्पादन वाढ झाल्यास गुंतवणुकीस चालना मिळते. उद्योग क्षेत्र हे गुंतवणुकीकरिता खूप महत्त्वाचे क्षेत्र आहे. त्यामुळे देशांतर्गत गुंतवणूकच नव्हे, तर परकीय गुंतवणुकीलासुद्धा चालना मिळते.

चलनवाढीचा अर्थव्यवस्थेवर नकारात्मक परिणामसुद्धा दिसून येतो. चलनवाढीचा बचतीवरही विपरीत परिणाम होतो. चलनवाढीमुळे लोकांजवळील पैसा वाढतो, त्यामुळे खर्चाचे प्रमाणसुद्धा वाढते. गुंतवणूक मोठ्या प्रमाणात होऊ लागते. परिणामतः बचती मात्र कमी कमी होऊ लागतात. व्याजदरावरही विपरीत परिणाम दिसून येतो. चलनवाढीच्या काळात लोकांजवळील पैसा तर वाढलेला असतोच, त्याचबरोबर पैशांच्या मागणीमध्येसुद्धा प्रचंड वाढ झालेली दिसून येते. लोकांची कर्ज घेण्याची प्रवृत्ती वाढीस लागते. परंतु, अर्थव्यवस्थेमध्ये अतिरिक्त पैसा वाढणे हेसुद्धा अर्थव्यवस्थेकरिता घातक ठरते. त्यावर उपाय म्हणून व्याजदरात वाढ केली जाते. तसेच मध्यवर्ती बँकेद्वारे बँकदर, रेपो दरातसुद्धा वाढ केली जाते. बँकदर वाढवल्याने बँकासुद्धा कमी प्रमाणात कर्जे घेऊ शकतात, तसेच त्यांची कर्ज देण्याची क्षमतासुद्धा कमी होते. व्याजदर वाढवल्याने बँका जी कर्जे देतात, ती महाग होतात. त्यामुळे लोकांच्या कर्ज घेण्याच्या प्रवृत्तीवर मर्यादा येतात.

युद्ध किंवा इतर काही कारणांनी मागणीत होणारी वाढ किंवा काही तात्कालिक कारणांमुळे पुरवठ्यात होणारी घट याचा परिणाम म्हणून किमतीत 50% ते अगदी 200% पर्यंत वाढ व्हायला लागते. अगदी मर्यादित प्रमाणावर अशाच प्रकारची भाववाढ कांद्याच्या बाबतीत किंवा चहा, कॉफी ते खाद्यतेले, डाळी यांच्या बाबतीत झाल्याचं दिसून येते,

भारताला स्वातंत्र्य मिळाल्यापासून देशामध्ये अनेक प्रकारच्या समस्या होत्या. त्यामध्ये बेकारी, दारिद्र्य, भुकबळी, उपासमार, अन्नधान्य टंचाई, लोकसंख्यावाढ या समस्या त्याचबरोबर देशासमोर भाववाढ किंवा मुद्रास्फिती ही अर्थव्यवस्थेसमोर मोठ्या प्रमाणात असलेली समस्या आहे. 1951 पासून नियोजनबध्द आर्थिक विकास सुरु झाला असून सध्या 12वी पंचवार्षिक योजना सुरु आहे. तरी भाववाढीची समस्या सतत कमी अधिक प्रमाणात देशामध्ये जाणवते आहे. स्वातंत्र्योत्तर काळात सतत भाववाढ होत गेली आहे. त्यामुळे त्याचा परिणाम येथील लोकांच्या जीवनमानावर, उत्पन्नावर, राहणीमानावर निश्चित झालेला दिसून येतो. भाववाढीचा प्रश्न हा सर्वांच्या जीव्हाळ्यांचा प्रश्न बनला आहे पण भाववाढ म्हणजे नेमके काय? या प्रश्नांचे उत्तर अद्यापपर्यंत तरी याबाबत देशातील जनतेत एकवाक्यता आढळून येत नाही. ह्या प्रश्नांच्या संदर्भात भाववाढ म्हणजे नेमके काय? ती निर्माण का होते? ती रोखण्यासाठीची प्रभावी घोरणे कोणती? तिचा आर्थिक धोरणावर कसा परिणाम होतो ह्या अनेक अंगानी विचार होणे गरजेचे आहे.

महागाईचा अर्थ:

महागाई म्हणजे कालांतराने वस्तू आणि सेवांच्या किमतींमध्ये होणारी वाढ. उच्च चलनवाढीमुळे सामान्य खर्च म्हणजे पैशाची खरेदी करण्याची क्षमता कमी होणे, बचतीच्या मूल्यात घट, विनिमय दरात घसरण, कंपन्यांसाठी कमी निश्चितता आणि बदलत्या किमतींना सामोरे जाण्याची गैरसोय. इंग्रजीत ज्याला 'इन्फ्लेशन' म्हणतात. त्या संकल्पनेचा अर्थ म्हणजे सार्वत्रिक पातळीवर वस्तूंच्या किमतींमध्ये सातत्याने होणारी वाढ. चलनवाढ या शब्दामुळे नेहमी व्यवहारात असणाऱ्या चलनात वृद्धी असा मर्यादित अर्थ प्रतीत होतो. त्यालाच आपण चलनवाढ असे म्हणतो. सर्व वस्तूंच्या किमतींत सार्वत्रिक पातळीवर सातत्यानं वाढ होण्याच्या या प्रक्रियेचे तीन मुख्य प्रकार असतात. एक सर्वसाधारण प्रकारची चलनवाढ. यामध्ये किमतीमधल्या वाढीचा दर 2% ते 10% इतका असतो आणि त्यामध्ये एक प्रकारचं सातत्य असतं. दुसऱ्या प्रकाराला इंग्रजीत 'गॅलपिंग इन्फ्लेशन' म्हणतात.

१) सर्वसाधारणपणे चलनवाढ म्हणजे वस्तु व सेवांच्या किंमतीत झालेली वाढ होय.

२) जेव्हा वस्तु व सेवांचा पुरवठा चलन पुरवठ्याच्या तुलनेत अल्प असतो तेंव्हा अर्थव्यवस्थेत भाववाढ होते.

चलनवाढ/महागाईची व्याख्या:

चलनवाढीसंबंधी वेगवेगळे मतप्रवाह आहेत त्याचा थोडक्यात अर्थ व व्याख्या समजून घेणे गरजेचे आहे.

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१) चलनवाढ म्हणजे "अर्थव्यवस्थेत वस्तू आणि सेवांच्या किमतींमध्ये झालेली सामान्य वाढ" होय. दुसऱ्या शब्दांत, उत्पादन खर्च वाढल्याने वस्तू आणि सेवा महाग होतात.
- अमेरिकेचा कामगार विभाग
२) "महागाई हा एक प्रकारचा कर आहे. जो की नागरिकांना चुकविणे अवघड जाते."
- जे. एम. केन्स
३) चलनवाढ म्हणजे अशी अवस्था असते की ज्यात पैशाचे मूल्य कमी होते महणजेच वस्तुंच्या किमती वाढतात.
- क्राऊथर
४) ज्यावेळी अति चलन अति कमी वस्तुंचा पाठलाग करते, तेव्हा त्यास चलनवाढीची अवस्था म्हणतात.
- कोलबर्न

संशोधनाची उद्दिष्ये:

- विकसनशील अर्थव्यवस्थेत महागाईचा परिणाम जास्त असण्याची कारणे अभ्यासणे.
- महागाईची कारणे अभ्यासणे.
- अर्थव्यवस्थेवर चलनवाढीचे परिणाम अभ्यासणे.
- भारतीय अर्थव्यवस्थेवर महागाईचा प्रभाव अभ्यासणे.
- भाववाढ/महागाईवरील उपाययोजना अभ्यासणे.

गृहीतके:

१) वस्तूंच्या किंमत वाढीमुळे समाजातील आर्थिकदृष्ट्या कमकुवत घटकांवर परिणाम झाला आहे.
२) भाववाढीमुळे लोकांना किंमत स्थिरतेसंबंधी शाश्वती राहिलेली नाही.
३) स्थिर उत्पन्न असलेल्या घटकावर मोठ्या प्रमाणात भाववाढीचा परिणाम झाला आहे.

संशोधन पध्दती

प्रस्तुत शोध निबंधाकरिता दुय्यम साधनसामुग्रीचा वापर केलेला आहे. भाववाढीच्या संदर्भात शासनाचे अहवाल, सर्वेक्षण, पुस्तके, मासिके, वर्तमानपत्रातील कात्रणे या माध्यमातून प्राप्त झालेल्या माहितीचा उपयोग करण्यात आलेला आहे.

विकसनशील अर्थव्यवस्थेत महागाईचा परिणाम जास्त असण्याची कारणे:

- **खरेदी शक्तीची झीज**: महागाईमुळे पैशाचे मूल्य कमी होते, म्हणजेच लोक कमी प्रमाणात वस्तू आणि सेवा घेतात. याचा परिणाम कमी उत्पन्न असलेल्या कुटुंबांवर होतो, जे त्यांच्या उत्पन्नाचा मोठा भाग अन्न आणि इंधन यासारख्या गरजांवर खर्च करतात.
- **कमी झालेले राहणीमान**: उच्च महागाई, विशेषतः मूलभूत गरजांच्या किमती, कमी उत्पन्न असलेल्यांच्या जीवनमानात लक्षणीय घट करू शकते. उदाहरणार्थ, अन्न खर्च विकसनशील देशांमध्ये एकूण वापराचा मोठा भाग दर्शवतो, ज्यामुळे किमतीत थोडीशी वाढ देखील परिणामकारक होते.
- **वाढलेली गरिबी**: वाढत्या किमती, विशेषतः आवश्यक वस्तूंसाठी, अधिक लोकांना दारिद्र्यरेषेखाली ढकलू शकतात. श्रीलंकेसारख्या देशांनी याचा अनुभव घेतला आहे, चलनवाढ इतर आर्थिक आव्हानांसह गरिबी वाढवत आहे.
- **कर्ज परतफेडीचा उच्च खर्च**: जागतिक चलनवाढीमुळे व्याजदर वाढू शकतात, ज्यामुळे लक्षणीय बाह्य कर्ज असलेल्या देशांसाठी कर्ज फेडण्याचा खर्च वाढतो. यामुळे सरकारी बजेटवर ताण येऊ शकतो आणि कर्ज संकट निर्माण होण्याची शक्यता असते, जसे की १९८० च्या लॅटिन अमेरिकन कर्ज संकटात दिसून आले.
- **चलनाचे अवमूल्यन आणि भांडवलाचे बहिर्गमन**: उच्च चलनवाढ देशाच्या वस्तू आणि सेवांचे आकर्षण कमी करू शकते, ज्यामुळे विनिमय दरात घसरण होऊ शकते. गुंतवणूकदार त्यांच्या मालमत्तेचे संरक्षण करण्याचा प्रयत्न करत असताना यामुळे भांडवल बहिर्गमन होऊ शकते, चलनाचे आणखी अवमूल्यन होते आणि आयात अधिक महाग होते.
- **आर्थिक वाढीला अडथळा:** उच्च चलनवाढ अनिश्चितता निर्माण करू शकते, ज्यामुळे व्यवसायांना नियोजन आणि गुंतवणूक करणे कठीण होते, ज्यामुळे आर्थिक विकासाला अडथळा येतो. यामुळे देशाची निर्यात आंतरराष्ट्रीय स्तरावर कमी स्पर्धात्मक बनू शकते.
- **बाह्य धक्क्यांना भेडसावण्याची शक्यता**: विकसनशील अर्थव्यवस्था बहुतेकदा जागतिक वस्तूंच्या किमतीतील चढउतार आणि पुरवठा साखळीतील व्यत्ययांना अधिक संवेदनशील असतात, ज्यामुळे चलनवाढीचा दबाव वाढू शकतो.
- **आरोग्यावर परिणाम**: घरगुती वित्तपुरवठ्यावर चलनवाढीचा परिणाम पौष्टिक अन्न आणि आरोग्यसेवा यासारख्या आवश्यक गरजांवर तडजोड करण्यास भाग पाडू शकतो, ज्यामुळे आरोग्यावर प्रतिकूल परिणाम होऊ शकतात आणि विद्यमान आरोग्य असमानता आणखी बिकट होऊ शकते.

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महागाईची कारणे :

महागाईला अनेक घटक कारणीभूत असतात, परंतु पुरवठा आणि मागणीतील असंतुलन हे एक प्राथमिक कारण आहे. उदाहरणार्थ, मागणी सारखीच राहिल्यास मर्यादित इंधन पुरवठ्यामुळे गॅसच्या किमती वाढतात. अर्थव्यवस्थेला आधार देण्यापेक्षा जास्त चलन फिरवणारे शिथिल चलन धोरण देखील महागाई वाढवू शकते.

१. खर्च-पुश महागाई

उत्पादन खर्च वाढतो आणि मागणी पूर्ण करण्यासाठी पुरेसा पुरवठा नसतो तेव्हा खर्च-पुश महागाई होते, ज्यामुळे किंमती वाढतात. कोविड-१९ साथीच्या काळात, उच्च-मागणीच्या उत्पादनांचा पुरवठा कमी होता, ज्यामुळे संपूर्ण अर्थव्यवस्थेत किंमती वाढल्या. उदाहरणार्थ, लाकडाच्या मर्यादित पुरवठ्यामुळे खरेदी करणे अधिक महाग झाले, ज्यामुळे स्वस्तात घर बांधणे अधिक कठीण झाले. युक्रेनमधील युद्धामुळे महागाईवर आणखी परिणाम झाला, ज्यामुळे जगभरात इंधन आणि अन्नधान्याच्या किमतीत वाढ झाली.

२. मागणी-पुल महागाई

नाण्याच्या दुसऱ्या बाजूला मागणी-पुल महागाई आहे. जेव्हा एखाद्या वस्तूची मागणी लक्षणीयरीत्या वाढते आणि पुरवठा तोच राहतो तेव्हा किमती वाढतात. न्यूयॉर्क फेडच्या विश्लेषणात असे आढळून आले की २०१९ ते २०२१ दरम्यानच्या ६०% किमती वाढल्या होत्या त्या मागणी-पुल समस्यांमुळे होत्या. मंदीची शक्यता कमी करण्यासाठी सरकारने महामारीच्या सुरुवातीला एक सैल चलनविषयक धोरण आखल्यामुळे हे अंशतः वाढले. कोविड-१९ निर्बंध उठवताच, प्रवास आणि मनोरंजन यासारख्या क्षेत्रांमध्ये मागणी वाढली. परिणामी, या क्षेत्रांमध्ये खर्च कमी करणाऱ्या पुरवठादारांना जास्त वेतन द्यावे लागले आणि कामगारांना पुन्हा कामावर ठेवावे लागले, ज्यामुळे त्या सेवांच्या किमती वाढल्या.

३. अंगभूत चलनवाढ

अंगभूत चलनवाढ तेंव्हा होते जेंव्हा राहणीमानाच्या खर्चात वाढ होते तेंव्हा कामगारांना जास्त वेतनाची मागणी करावी लागते. व्यवसायांना कामगारांना आकर्षित करण्यासाठी आणि त्यांना टिकवून ठेवण्यासाठी जास्त वेतन देण्यासाठी किंमती वाढवाव्या लागतात, ज्यामुळे राहणीमानाचा खर्च आणखी वाढतो. यामुळे किंमती वाढून वेतन वाढते आणि वेतनात वाढ होऊन किंमती वाढतात अस एक चक्र तयार होते.

४. गृहनिर्माण बाजार

अर्थव्यवस्थेत महागाई मोजण्यासाठी घरांच्या किमती खूप महत्त्वाच्या आहेत कारण घरांच्या किमती सरासरी घरगुती बजेटचा मोठा भाग घेतात. जेंव्हा महागाई वाढते तेंव्हा घर विक्रेते सामान्यतः त्यांच्या मागणीच्या किमती वाढवतात. जर बांधकाम साहित्य अधिक महाग झाले तर नवीन घरे बांधण्यासाठी जास्त खर्च येतो. यामुळे बाजारात घरांचा पुरवठा कमी होऊ शकतो, ज्यामुळे किंमती वाढतात. त्याच वेळी, कमी कर्जदार घर खरेदी करू शकतात, परिणामत: मागणी कमी होते.

५. चलनविषयक धोरण

सरकार महागाईवर बारकाईने लक्ष ठेवते जेणेकरून ते अर्थव्यवस्था स्थिर ठेवण्यासाठी वित्तीय धोरण समायोजित करू शकतील. उदाहरणार्थ, फेड अर्थव्यवस्थेला चालना देण्यासाठी फेडरल फंड रेट कमी करू शकते. अर्थव्यवस्थेला चालना देण्यासाठी सरकार कर कमी करू शकते किंवा पायाभूत सुविधा प्रकल्पांना निधी देऊ शकते. दुसरीकडे, फेड महागाई कमी करण्यासाठी व्याजदर वाढवू शकते. हे सर्व अर्थव्यवस्थेला संतुलित ठेवण्याच्या हितासाठी आहे. जर अर्थव्यवस्थेच्या तुलनेत पैशाचा पुरवठा खूप जास्त वाढला तर चलनाचे मूल्य कमी होते आणि चलनवाढ वाढते.

अर्थव्यवस्थेवर चलनवाढीचे परिणाम :

अर्थव्यवस्थेवर चलनवाढीचा परिणाम पुढीलप्रमाणे होतो.

- **उत्पादनावर परिणाम**

वस्तू आणि सेवांच्या किमती वाढल्याने उत्पादनाला चालना मिळते. उत्पादकांना जास्त नफा मिळाल्याने ते अधिक उत्पादन करण्यासाठी सर्व संसाधनांचा वापर करतात. तथापि, एकूण रोजगाराच्या टप्प्यावर पोहोचल्यानंतर, सर्व संसाधने पूर्णपणे वापरली जातात म्हणून उत्पादन एका विशिष्ट टप्प्यावर थांबते. यामुळे वस्तूंची साठेबाजी वाढते.

- **रोजगार आणि उत्पन्नावर परिणाम**

महागाईचा आणखी एक महत्त्वपूर्ण परिणाम उत्पन्न आणि रोजगारावर दिसून येतो. उत्पादन आणि खर्च वाढत असताना, राष्ट्रीय उत्पन्न देखील वाढते. तसेच, कामगारांची गरज जास्त असल्याने रोजगाराच्या संधी निर्माण होतात. तथापि, पैशाच्या क्रयशक्तीत मोठ्या प्रमाणात घट झाल्यामुळे लोकांचे उत्पन्न कमी होते. चलनवाढीमुळे उत्पादन आणि खर्च वाढतो, ज्यामुळे राष्ट्रीय उत्पन्न वाढू शकते. मात्र, याचा परिणाम उत्पन्नाच्या वितरणावर होतो आणि गरिबांना जास्त त्रास होतो.

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- **व्यवसाय आणि व्यापारावर परिणाम**

उच्च उत्पन्न, प्रचंड खर्च आणि अधिक उत्पादन यासारख्या घटकांमुळे, महागाईच्या स्थितीत अंतर्गत व्यापार वाढतो; तथापि, काही कंपन्या जास्त नफा मिळविण्यासाठी त्यांचा व्यवसाय वाढवतात. महागाईच्या काळात, किमती आणि कामगारांचे वेतन एका टप्प्यावर थांबते, ज्यामुळे अर्थव्यवस्थेत असमानता वाढते.

- **सरकारी वित्तपुरवठ्याचे परिणाम**

अति महागाईच्या काळात, सरकारी महसूल वाढतो कारण त्यांना वेगवेगळ्या स्वरूपात महसूल मिळतो. यामध्ये कर, विक्री कर, उत्पादन शुल्क इत्यादींचा समावेश आहे. तथापि, सरकारने अधिक खर्च करणे अपेक्षित आहे; परिणामी, सार्वजनिक खर्च वाढतो. परंतु किमती वाढल्याने सार्वजनिक कर्जाचा भार कमी होतो.

- **गमावलेली खरेदी शक्ती**

महागाईचा सर्वात स्पष्ट परिणाम म्हणजे खरेदी शक्ती कमी होणे, म्हणजेच तुम्ही तुमच्या पैशाने किती खरेदी करू शकता. खरेदी शक्ती कमी होत असताना, अनेकांना त्यांच्या बजेटवर परिणाम जाणवतो. तथापि, कमी किंवा निश्चित उत्पन्न असलेल्यांना बहुतेकदा याचा सर्वात जास्त परिणाम जाणवतो. चलनवाढ जसजशी वाढत जाते तसतसे, उत्पन्न बदलांशी किती चांगले जुळते यावर लक्ष ठेवणे महत्वाचे आहे.

- **व्याजदरात वाढ**

महागाई कमी करण्यासाठी फेड कडे तुलनेने मर्यादित टूलकिट आहे. ते सामान्यतः ज्या पर्यायाकडे वळते तो म्हणजे व्याजदर वाढवणे. फेड व्याजदर वाढवत असताना, कर्ज घेणे अधिक महाग होते. घर किंवा वाहन यासारख्या मोठ्या खरेदी करण्यासाठी सरासरी ग्राहक कर्ज घेण्याचा फायदा घेतो - ही एक वास्तविकता आहे. याचा अर्थ वाढत्या व्याजदरांचा देशभरातील घरगुती खरेदीवर परिणाम होतो. जर बदलत्या व्याजदरासह कोणतेही कर्ज घेतले असेल, तर व्याजदर वाढल्याने जास्त खर्चाचा सामना करावा लागतो.

- **घरांच्या किमती वाढतात**

ज्यावेळी महागाई वाढते तेव्हा घरांच्या किमतीही वाढतात. जेव्हा डॉलरचे मूल्य कमी होते तेव्हा विक्रेते सहसा त्यांची मागणी किंमत वाढवतात. महागाई जास्त असताना घरांच्या किमती वाढण्याचे आणखी एक कारण म्हणजे बांधकाम साहित्य अधिक महाग होते. यामुळे नवीन घरे बांधणे अधिक कठीण आणि महाग होऊ शकते, ज्यामुळे उपलब्ध घरांचा पुरवठा कमी होतो आणि विक्रेत्यांना त्यांच्या मागणीच्या किमती वाढवता येतात.

- **घर इक्विटी अधिक वेगाने वाढते**

घर इक्विटी म्हणजे घराच्या सध्याच्या किमतीतील फरक आणि गृहकर्जावर अजूनही देय असलेल्या रकमेतील फरक. इक्विटी उभारण्याचा एक मार्ग म्हणजे गृहकर्जावरील मुद्दल भरणे. घराचे मूल्य वाढल्यास इक्विटी वाढू शकते. जेव्हा महागाईमुळे घरांच्या किमती वाढतात, तेव्हा विद्यमान घरमालकांसाठी ही चांगली बातमी आहे, कारण त्यांची इक्विटी देखील वाढते.

- **ग्राहकांच्या किमती वाढतात**

जेव्हा सर्वकाही अधिक महाग असते, तेव्हा प्रत्येकाला त्याचे परिणाम जाणवतात. शेवटी, अन्न किंवा वीज यासारख्या मूलभूत गोष्टींशिवाय राहणे अशक्य आहे. तथापि, वाढत्या खर्चासह, उदरनिर्वाह करणे अधिक आव्हानात्मक होऊ शकते. ज्येष्ठ नागरिक आणि कमी उत्पन्न असलेल्या लोकांना बहुतेकदा जास्त किमतींचा फटका सर्वात आधी बसतो.

- **अर्थव्यवस्था मंदावते**

जेव्हा महागाई जास्त असते, तेव्हा फेड सहसा त्यांचे चलनविषयक धोरण कडक करते. अर्थव्यवस्थेत कमी रोख चलन असल्याने, कर्ज अधिक महाग होते आणि कर्ज मिळविण्यासाठी आवश्यकतेत वाढ होते. कर्ज घेण्याचा खर्च जाणूनबुजून वाढवला जातो या आशेने की यामुळे ग्राहकांचा खर्च कमी होईल आणि महागाई कमी होईल. घर खरेदी करण्यासारख्या मोठ्या खरेदी करू इच्छिणाऱ्या ग्राहकांना गृहकर्ज मिळवणे अधिक कठीण होईल. जेंव्हा कमी लोक घर खरेदी करू शकतात, तेंव्हा कमी घरे विकली जातात आणि किमती कमी होतात, ज्यामुळे एकूण अर्थव्यवस्था मंदावते.

- **महागाईविरोधी उपाय मंदीला कारणीभूत ठरू शकतात**

महागाई अर्थव्यवस्थेला मंदावते आणि मंदीला कारणीभूत ठरू शकते, म्हणून फेड नेहमीच चलनविषयक धोरण आणि व्याजदर वाढीसह त्यावर लक्ष ठेवण्यासाठी आणि नियंत्रित करण्यासाठी पावले उचलत असते. परंतु कधीकधी ते अतिरेकी होऊ शकते. जर बाजार फेडच्या कृतींसाठी तयार नसेल, तर महागाई नियंत्रित करण्याचे प्रयत्न आर्थिक वाढ आणखी मंदवू शकतात. जेव्हा हे एका तिमाहीसाठी घडते तेव्हा त्याला सहसा आकुंचन म्हणतात. परंतु जर हे सलग दोन तिमाहीसाठी घडले तर ते सामान्यतः मंदीची सुरुवात मानले जाते.

- **राहणीमानाचा खर्च वाढतो:** चलनवाढीमुळे आवश्यक वस्तू आणि सेवांच्या किमती वाढतात, ज्यामुळे गरिबांचे जीवनमान अधिक कठीण होते.

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- **विनिमय दराचा घसारा:** चलनवाढीमुळे देशाच्या चलनाचे मूल्य कमी होते, ज्यामुळे आयात महाग होते आणि परदेशी गुंतवणुकीसाठीचा धोका वाढतो.
- **कर्जाचा भार वाढतो:** उच्च चलनवाढ असलेल्या देशांना कर्ज फेडण्यासाठी जास्त खर्च करावा लागतो, ज्यामुळे त्यांची आर्थिक स्थिती आणखी खालावते.
- **गुंतवणूक आणि विकासावर परिणाम**: चलनवाढीमुळे गुंतवणूकदारांचा आत्मविश्वास कमी होतो आणि गुंतवणुकीसाठी उपलब्ध असलेले भांडवल मर्यादित होते. यामुळे आर्थिक विकास मंदावतो.
- **आर्थिक अस्थिरता**: चलनवाढीमुळे आर्थिक अस्थिरता निर्माण होते, ज्यामुळे दीर्घकालीन नियोजन करणे कठीण होते आणि अर्थव्यवस्थेच्या वाढीवर नकारात्मक परिणाम होतो.
- **अवमूल्यन**

उच्च चलनवाढीची आणखी एक समस्या म्हणजे विकसनशील देशांना त्यांच्या विनिमय दरात अवमूल्यन होण्याची शक्यता असते. विकसनशील अर्थव्यवस्थेत उच्च चलनवाढीमुळे त्यांच्या वस्तू आणि सेवांची मागणी कमी आकर्षक होते ज्यामुळे विनिमय दराची मागणी कमी होते. विनिमय दर कमी झाल्यामुळे, गुंतवणूकदार त्यांच्या मालमत्तेचे मूल्य संरक्षित करण्याचा प्रयत्न करत असताना भांडवल बाहेर जाऊ शकते. या भांडवल बाहेर जाण्यामुळे, आत्मविश्वास आणखी कमी होऊ शकतो आणि विनिमय दरावर अधिक दबाव येऊ शकतो.

- **चलनवाढ क्रयशक्ती कमी करते.**

हा चलनवाढीचा प्राथमिक आणि सर्वात व्यापक परिणाम आहे. कालांतराने किमतींमध्ये वाढ झाल्याने ग्राहकांची क्रयशक्ती कमी होते. महागाई दर २% असो वा ४%, ग्राहकांची क्रयशक्ती कमी होते. जेंव्हा तो जास्त असतो तेंव्हा ते ती जलद गमावतात.

- **महागाईचा कमी उत्पन्न असलेल्या ग्राहकांवर परिणाम होतो**

कमी उत्पन्न असलेले ग्राहक जास्त उत्पन्न असलेल्या ग्राहकांपेक्षा त्यांच्या उत्पन्नाचा जास्त भाग गरजेच्या वस्तूंवर खर्च करतात. महागाईमुळे होणाऱ्या क्रयशक्तीच्या नुकसानीपासून त्यांच्याकडे कमी बचाव असतो

- **महागाईमुळे चलनवाढ कमी होते**

चलनवाढ कमी होण्याऐवजी महागाई कमी होण्याचे एक कारण म्हणजे वेतन हे कमी दरानेच असते. आर्थिक मंदीच्या काळात कामगार त्यांचे वेतन कमी करण्याच्या प्रयत्नांना विरोध करतात. मागणी कमी होण्याचा सामना करणाऱ्या व्यवसायांसाठी टाळेबंदी हा सर्वात संभाव्य पर्याय बनतो. सकारात्मक चलनवाढीचा दर वेतन स्थिरीकरणाला वास्तविक अर्थाने कामगार खर्चात कपात म्हणून काम करण्यास अनुमती देतो.

- **महागाई जास्त असताना स्वतःवरच अवलंबून असते**

थोडीशी चलनवाढ ही निरोगी अर्थव्यवस्थेचे संकेत देऊ शकते, त्यामुळे महागाईच्या अपेक्षा वाढण्याची शक्यता नाही. जर गेल्या वर्षी महागाई २% होती आणि या वर्षी २% असेल तर ती बहुतेक पार्श्वभूमीतील आवाज असेल. व्यवसाय, कामगार आणि ग्राहक पुढील वर्षी महागाई २% वर राहण्याची अपेक्षा करतील.

- **महागाईमुळे व्याजदर वाढतात**

चलनविषयक धोरणाचा वापर करून महागाईचे व्यवस्थापन करणे हा एक सामान्य दृष्टिकोन आहे. जेंव्हा महागाई मध्यवर्ती बँकेच्या लक्ष्यापेक्षा जास्त होण्याची शक्यता असते तेंव्हा चलन पुरवठ्यावर मर्यादा घालून धोरणकर्ते किमान व्याजदर वाढवू शकतात, ज्यामुळे संपूर्ण अर्थव्यवस्थेत कर्ज घेण्याचा खर्च वाढू शकतो.

- **चलनवाढ अल्पावधीत वाढ आणि रोजगार वाढवते.**

उच्च चलनवाढीमुळे अल्पावधीत जलद आर्थिक वाढ होऊ शकते. वाढलेली महागाई बचतीला परावृत्त करते कारण ती कालांतराने बचतीची क्रयशक्ती कमी करते. ही शक्यता ग्राहकांना खर्च करण्यास आणि व्यवसायांना गुंतवणूक करण्यास प्रोत्साहित करू शकते.

- **महागाईमुळे वेदनादायक मंदी येऊ शकते**

महागाई आणि बेरोजगारी यांच्यातील तडजोडची समस्या अशी आहे की नोकऱ्यांचे संरक्षण करण्यासाठी जास्त चलनवाढीचा दीर्घकाळ स्वीकार केल्याने चलनवाढीची अपेक्षा इतक्या वाढू शकते की त्यामुळे किंमत वाढ आणि वेतन वाढीचा चलनवाढीचा चक्र सुरू होतो. हे १९७० च्या दशकातील स्थिर चलनवाढीदरम्यान अमेरिकेत घडले.

परकीय व्यापारावरील परिणाम :

चलनवाढीचा आयात-निर्यातीवर परिणाम दिसून येतो. आपल्या देशात जर चलनवाढीचा दर जास्त असेल, तर दुसऱ्या देशातील वस्तू आपल्याला स्वस्त वाटू लागतात. त्यामुळे आपल्या देशातील निर्यात कमी होऊन आयात वाढते. तसेच चलनवाढीचा विनिमय दरावरसुद्धा परिणाम होतो. चलनवाढीचा दर जास्त असल्याने आपल्या देशातील चलनाचे अवमूल्यन होते. आपल्या देशातील चलनाचे मूल्य इतर देशातील चलनांच्या तुलनेत कमी होते. म्हणजेच चलनवाढीचा विनिमय दरावरील परिणाम दुसऱ्या देशांमधील चलनवाढीवरही अवलंबून असतो.

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कुटुंब संस्थांवरील परिणाम :

कुटुंब संस्थेमध्ये उत्पादक, ऋणको-धनको, पगारदार, पेन्शनदार, औद्योगिक गुंतवणूकदार, मजूर वर्ग अशा अनेक घटकांचा समावेश होतो. या घटकांवर चलनवाढीचा दोन्ही प्रकारे परिणाम पडतो. काही घटकांवर त्याचा सकारात्मक, तर काही घटकांवर नकारात्मक परिणाम पडतो. उत्पादकांना चलनवाढीचा चांगला फायदा होतो, कारण एकीकडे वस्तूंची मागणी वाढलेली असते, त्यामुळे जास्त उत्पादनाची गरजही असते. चलनवाढीचा फायदा जवळपास शेतकऱ्यांपासून ते मोठे उद्योग असा सर्वांनाच होतो. तसेच गुंतवणूकदारांनासुद्धा चलनवाढीचा फायदा होतो.

ऋणको व धनकोवरील परिणाम :

ऋणको व धनको यांच्यामध्ये मात्र चलनवाढीचा वेगवेगळा परिणाम दिसून येतो. ऋणकोला चलनवाढीचा फायदा होतो तर धनकोला चलनवाढीचे नुकसान होते. ऋणकोला चलनवाढीचा फायदा होतो, कारण चलनवाढ झाल्याने पैशाचे मूल्य कमी होते. म्हणजेच जेवढे कर्ज त्यांनी आधी घेतले असते, त्याच्या प्रमाणात जेव्हा ते मुद्दल- व्याज परत करतात, त्यावेळी त्या पैशांचे मूल्य कमी होते. हे मूल्य कमी झालेले असल्यामुळे धनकोला यामध्ये नुकसान होते. मजुरांवर मात्र चलनवाढीचा विपरीत परिणाम होतो. चलनवाढ जरी होत असेल तरी त्या गतीने मजुरी दरात वाढ होत नाही.

दुसरीकडे चलनवाढ झाल्याने वस्तू महाग होतात. त्यामुळे असंघटित क्षेत्रातील मजुरांवर याचा खूप विपरीत परिणाम होतो. असंघटित क्षेत्राच्या तुलनेत संघटित क्षेत्रातील मजुरांवर महागाईचा परिणाम तुलनेने कमी होतो. कारण त्यांना महागाई भत्ता मिळतो. स्वयंरोजगारीवर मात्र चलनवाढीचा परिणाम शून्य प्रमाणात असतो, कारण वस्तू महाग झाल्यामुळे त्यांचे उत्पन्न वाढते; परंतु त्याच प्रमाणात त्या उत्पन्नाचे मूल्य हे चलनवाढीमुळे कमी होते. पगारदार तसेच पेन्शनधारकांचा जर विचार केला तर त्यांच्यावरसुद्धा चलनवाढीचा विपरीत परिणाम होतो. कारण पगार हा स्थिर असतो. त्यामुळे एकीकडे चलनवाढ होत राहते. मात्र, पगारामध्ये त्या प्रमाणात वाढ होत नसते. त्यामुळे पगारधारकांना तसेच पेन्शनधारकांना चलनवाढीचा तोटा उद्भवतो.

देशात होणाऱ्या वस्तू आणि सेवांच्या किमतींमध्ये होणारी सामान्य वाढ ही एक आर्थिक घटना आहे. आर्थिक वाढीवर त्याचा परिणाम त्याच्या पातळी आणि स्थिरतेनुसार बदलू शकतो. नियंत्रित चलनवाढ ही अनेकदा आर्थिक आरोग्याचे लक्षण मानली जाते कारण वस्तू आणि सेवांची वाढती मागणी आर्थिक क्रियाकलाप, गुंतवणूक आणि वाढत्या संपत्तीला चालना देते. याउलट, धावपळीची चलनवाढ किंवा अतिचलनामुळे देशांतर्गत चलनावरील विश्वास कमी होऊ शकतो, ग्राहकांची खरेदी शक्ती कमी होऊ शकते आणि आर्थिक वाढ कमकुवत होऊ शकते. याव्यतिरिक्त, चलनवाढीचा गुंतवणूक आणि बचतीवरही मोठा परिणाम होतो. उच्च चलनवाढ बचतीचे वास्तविक मूल्य कमी करते, बचत कमी आकर्षक बनवते आणि अल्पकालीन वापराला प्रोत्साहन देते.

भारतीय अर्थव्यवस्थेवर महागाईचा प्रभाव:

महागाईमुळे अन्न, निवारा आणि औषधे यासारख्या नियमित उत्पादनांच्या किमती वाढल्या आहेत, तसेच दागिने किंवा वाहने यासारख्या गरजू उत्पादनांच्या किमतीही वाढल्या आहेत. भारताच्या अर्थव्यवस्थेवर परिणाम करणारे विविध घटक आहे, त्यापैकी महागाई हा एक आहे. भारतीय अर्थव्यवस्थेवर महागाईचा परिणाम पुढीलप्रमाणे सांगता येईल.

१) कृषी क्षेत्रावर परिणाम:

शेती हा भारताच्या मुख्य व्यवसायांपैकी एक आहे आणि अलिकडच्या काळात संपूर्ण देशाच्या अर्ध्याहून अधिक लोकसंख्येचा त्यात सहभाग आहे. महागाईचा भारतातील कृषी क्षेत्रावरही मोठा परिणाम होतो. यामुळे कृषी उत्पादनांची नफा आणि खरेदी करण्याची शक्ती कमी होते, जोखीम आणि कर्जे वाढत जातात, ज्यामुळे देशाची अर्थव्यवस्था आणि आंतरराष्ट्रीय बाजारपेठेतील कृषी स्पर्धा कमी होते.

२) आरोग्य सेवेवर परिणाम:

महागाईच्या काळात, किमतींमध्ये अनियमित वाढ अपरिहार्यपणे अनेक ग्राहकांची खरेदी शक्ती कमी करते. वैद्यकीय महागाईचा विचार केला तर अशी परिस्थिती असते जेव्हा आरोग्य सेवांचा सरासरी खर्च आणि प्रति युनिट खर्च रेषेखाली वाढतो. यामध्ये नवीन आणि आधुनिक उपचारांच्या किमती आणि त्यांची व्यापक उपलब्धता आणि सेवांचा समावेश आहे. इतर उत्पादने आणि सेवांच्या किमतींपेक्षा वैद्यकीय उपचार, पुरवठा आणि औषधांच्या किमतीत वाढ होत असल्याने हे घडते. नवीन उपचार पद्धती शोधण्यासाठी मोठ्या प्रमाणात पैसा गुंतवला जात असल्याने, भारतातील वैद्यकीय शुल्कात मोठ्या प्रमाणात वाढ होते. याव्यतिरिक्त, कर्करोग, प्रत्यारोपण इत्यादी आजारांवरील उपचार आणि उपचार अतिरिक्त संशोधन आणि कच्च्या मालाच्या वाढत्या किमतीमुळे महाग होतात. शिवाय, कोविड-१९ साथीचा रोग वैद्यकीय क्षेत्रातील एक महत्त्वाचा टप्पा होता ज्यामुळे डॉक्टर आणि वैद्यकीय तज्ञांना कोविड रुग्णांच्या गरजा पूर्ण करण्यासाठी दिवसरात्र काम करावे लागले. या काळात, हॉस्पिटलायझेशन शुल्कात मोठी वाढ झाली.

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३) पर्यटनावर परिणाम:

भारत आणि जगभरात महागाई ही एक समस्या आहे. पर्यटन उद्योगालाही महागाईचा अनुभव येतो. पर्यटनाचा वाढता खर्च उत्पादन खर्चात वाढ किंवा पर्यटन मागणीमुळे होतो. परदेशी पर्यटकांनी देशात आणलेल्या आर्थिक संसाधनांमुळे एकूण मागणीत वाढ झाल्यामुळे पर्यटन-पुढील महागाई होते. शिवाय, कोविड-१९ महामारीच्या काळात, जागतिक चलनवाढीत तीव्र वाढ झाल्यामुळे पर्यटन उद्योगाला प्रचंड आव्हानांचा सामना करावा लागला. एकूणच, या परिस्थितींमुळे प्रवासाशी संबंधित खर्चात वाढ झाली आणि प्रवाशांची खरेदी शक्ती कमी झाली.

भाववाढ/महागाईवरील उपाययोजना :

महागाई नियंत्रित करण्याचे तीन मार्ग आहेत:

१) चलनविषयक धोरण: जे देशाच्या मध्यवर्ती बँकेद्वारे नियंत्रित केले जाते.

अ) खुल्या बाजाराचे कामकाज: महागाईमुळे मध्यवर्ती बँकेला रोख रक्कम कमी करावी लागते.

आ) व्याजदर: महागाईच्या काळात व्याजदर वाढवावा लागतो.

२) राजकोषीय धोरण: जे सरकारच्या साधनांद्वारे, करांद्वारे आणि खर्चाद्वारे नियंत्रित केले जाते.

३) प्रत्यक्ष नियंत्रण:

अ) किंमत निश्चित करणे: सरकार कमाल मर्यादेची किंमत ठरवते जेणेकरून किंमती वेगाने वाढत नाहीत.

आ) बचतीला प्रोत्साहन: सरकार कर्मचाऱ्यांच्या भविष्य निर्वाह निधीतील योगदान वाढवते.

इ) किंमत टॅगिंग: उत्पादकांना ग्राहकांकडून शुल्क आकारण्यापासून रोखण्यासाठी प्रत्येक उत्पादनावर लेबल लावणे आवश्यक आहे.

महागाई नियंत्रित ठेवण्यासाठी इतर उपाययोजना:

- मौद्रीक धोरणामुळे भाववाढी आळा बसू शकतो.
- करामध्ये वाढ करुन भाववाढीस आळा बसविता येऊ शकतो.
- अनिवार्य बचतीच्या साधनांचा उपयोग करुन भाववाढ रोखता येते.
- साठेबाजीला आळा घालून भाववाढ रोखता येते.
- लोकसंख्या नियंत्रण कठोरपणे राबविल्यास भाववाढीस आळा बसू शकतो.
- कृषीची उत्पादकता वाढवून भाववाढीस आळा घालता येतो.
- नविन आर्थिक व्युहरचना आखून भाववाढीस आळा घालता येतो.
- भ्रष्टाचार व काळ्या पैशावर कडक निर्बंध आणून भाववाढ रोखता येऊ शकते.

निष्कर्ष:

भारताने गेली अनेक दशके विविध पंचवार्षिक योजनेच्या साहाय्याने नियोजन करुन सुध्दा देशातील भाववाढीची समस्या अजूनही कमी झालेली नाही. त्यामुळे अर्थव्यवस्थेपुढे व सरकार समोर भाववाढ ही एक मोठे आव्हान आहे. याचा परिणाम देशातील आथिकदृष्टया दुर्बल व वंचित घटकांवर मोठ्या प्रमाणात पडत आहे. ज्यांचे उत्पन्न स्थिर आहे. ज्यांना कोणता वेतन आयोग नाही. या घटकांना भाववाढीचा चटका मोठ्या प्रमाणात सहन करावा लागत आहे. चलनवाढीच्या काळात सरकारे सामान्यतः व्याजदर वाढवतात, बँकांकडे राखीव निधीची रक्कम कमी करतात आणि जेंव्हा महागाई प्रचंड वाढते तेंव्हा पैशाच्या पुरवठ्यात कपात करतात.

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Original Article

भारतीय कृषी क्षेत्रातील नियंत्रित बाजारपेठांसमोरील आव्हाने

सारीका विजय जगताप[1], प्रा. डॉ. बाळु वामन गव्हाळे[2]

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गोषवारा:

भारतात शेती हा जीवन जगण्याचा मार्ग आहे. उत्पादित शेतमालाच्या विक्रिसाठी देशात आदर्श विक्रि व्यवस्था अस्तित्वात असणे अत्यंत आवश्यक आहे आदर्श विक्रि व्यवस्था हि शेती विकासास पोषक ठरते शेत-यांच्या दृष्टिने उत्पादित शेतमालाची विक्रि योग्य पद्धतीने होणे आवश्यक आहे. जोपर्यंत शेतमालाची विक्रि होत नाही तोपर्यंत उत्पादनाची क्रिया पूर्ण झाली आहे असे म्हणता येणार नाही. दुस-या शब्दात शेतमालाच्या विक्रि व्यवस्थेवर उत्पादनाची यशस्वीता अवलंबून असते. विपणन व्यवस्था ही उत्पादन व ग्राहक यांच्यातील दुवा आहे. शेतमालाच्या उत्पादनानंतर वाहतुक साठवणुक प्रक्रिया प्रतवारी व प्रमाणिकरण इ. संस्कार करण्याच्या दृष्टीने ही व्यवस्था महत्वाची ठरते. भारतात शेतीचे उत्पादन निसर्गाच्या लहरीपणावर अवलंबून आहे. ही अनिश्चितता कमी करण्यासाठी आणि शेतक-यांना उत्पादनाची प्रेरणा मिळावी. यासाठी शेतमाल विपणन व्यवस्था आदर्श व अधिक बळकट असायला हवी विक्रिची पद्धती न्याय असेल, तर शेतक-यांच्या उत्पन्नात स्थैर्य राहण्यास मदत होईल.

कृषि माल विपणनाची कार्यक्षम व्यवस्था देशाच्या आर्थिक विकासासाठी अत्यावश्यक असते. शेतमाल विक्रि व्यवस्थेचा शेतक-यांच्या उत्पादनावर पर्यायाने राहणीमानावर अप्रत्यक्ष परिणाम होत असतो. भारतीय शेतमाल विपणन विविध मार्गाने होत आहे. यापैकी एक महत्वाचा बाजार म्हणजे नियंत्रित बाजारपेठ होय. सदर संशोधनाचा उद्देश भारतीय कृषी क्षेत्रातील बाजारपेठांसमोरील आव्हाने यांचा अभ्यास करणे हा आहे.

मुख्यशब्द: *कृषी विपणन, नियंत्रित बाजारपेठा, कृषी उत्पन्न बाजार समिती, शेतमाल विक्री व्यवस्था, शेतकरी, दलाल पद्धत, शेतमालाची किंमत, बाजार नियंत्रण*

प्रस्तावना:

भारत हा खंडप्राय देश असल्यामुळे सुमारे ६५ टक्के लाख खेड्यांमध्ये शेती व्यवसाय पसरला आहे. अगदी अलीकडील काळापर्यंत भारतातील बाजार बहुतांशी मुक्त स्वरुपाचे होते. शेतक-यांनी विक्रीसाठी माल बाजारात आणल्यानंतर त्या शेतमालाची विक्री शास्त्रयुक्त पद्धतीने केली जात नसे. वजनमापनाची पद्धती, शेतक-यांकडुन घेतली जाणारी दलाली तसेच त्यांच्याकडुन वसुल केले जाणारे निरनिराळे आकार वगैरे बाबतीत कोणत्याही शास्त्रशुद्ध रितीने ठरविलेली विशिष्ट चौकट नव्हती.

शेतक-यांच्या गाड्या ठेवण्यासाठी योग्य जागा, विश्रांती घेण्यासाठी व राहण्यासाठी योग्य सोयी, पिण्याच्या पाण्याची सोय, या गोष्टी आढळुन येत नव्हत्या. या सर्व बाबतीत शेतक-यांना स्वःत तरतुद करावी लागत असे. भारतातील शेतमालाच्या विक्रिव्यवस्थेतील प्रमुख बाब म्हणजे खेड्यात आढळुन येणारा "आठवड्याचा बाजार" होय. त्याचप्रमाणे शेतमालाची विक्रि ही स्थानिक बाजारपेठेत दलालामार्फत होत असल्यामुळे शेतक-याचे मोठे आर्थिक नुकसान होत असे.

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वर्षभर अहोरात्र कष्ट करुन निसर्गावर अवलंबुन आणि इतर नैसर्गिक आपत्तीस तोंड देवून हाती लागेल तो शेतमाल शेतक-यांना बाजारपेठेत आणावा लागतो. अशा मालाचा योग्य व वाजवीभाव, चोख वजनमाप, अनिष्ट रुढी परंपरा पासुन बचाव बेकायदेशीर व्यवहाराचे निर्मुलन करणे फार गरजेचे व जरुरीचे आहे.त्यासाठी बाजार समितीची स्थापना करण्यात आली. शेती हा व्यवसाय अर्थव्यवस्थेचा कणा आहे शेती व्यवसायाच्या प्रगतीवरच देशाची एकुण आर्थिक प्रगती अवलंबुन असते. भारतीय अर्थव्यवस्थेत कृषीला विशेष महत्व आहे.भारतात संस्कृतीचा उदय झाल्यापासुन आर्थिक, राजकीय व सामाजिक जीवनात अनेक बदल घडवुन आलेले आहेत पण या सर्व बदलामुळे कृषीचे महत्व किंचीतही कमी झालेले नाही. आधुनिक काळातील विकसनशील देशांच्या योजना यशस्वी होण्यासाठी कृषी व्यवसाय व विपणनाची प्रगती होणे अपरिहार्य आहे.

भारतातील नियंत्रित बाजार –

शेतमालाला योग्य किंमत देण्यासाठी इ. स १८९७ मध्ये बेरार कॉटन अॅन्ड ग्रेन्स मार्केट अॅक्ट करण्यात आला व त्यानुसार विदर्भात सर्व प्रथम कापुस विक्रिसाठी नियंत्रित बाजाराची स्थापना करण्यात आली त्यानंतर रॉयल कमिशन ऑन अॅग्रीकल्चरच्या शिफारशीनुसार १९३० च्या काळात भारतात बाजाराचे नियंत्रण करण्यास सुरुवात झाली, त्यानंतर भारतातील बहुतेक सर्व घटकराज्यांनी बाजाराच्या नियंत्रणासाठी कायदे केले आहे. १९५१ साली नियंत्रित बाजाराची संख्या २०० पेक्षा अधिक होती. मार्च १९९८ अखेर ता ७०६० पर्यंत वाढलेली आहे. १९५०-५१ मध्ये देशात फक्त २८६ नियंत्रित बाजारपरेठा अस्तित्वात होत्या. ३१ मार्च २००५ रोजी त्यांची संख्या ७५२१ इतकी झाली. दादर हवेली व लक्षद्वीप येथे आशा बाजारपेठा स्थापन करण्यासाठी पावले उचलण्यात आलेली नाहीत. पंजाब व हरियाणा या घटकराज्यात राज्य शेतकरी मंडळाच्या धर्तीवर या बाजारपेठा कार्य करत आहे.

भारतातील नियंत्रित बाजारपेठांच्या कार्यपद्धतीत सुधारणा –

भारतात नियंत्रित बाजारपेठांच्या नियोजन काळात अनेक सुधारणा करण्यात आल्या आहे. १९३७ च्या शेतमाल प्रतवारी व विक्रीकायद्यान्वये शेतमालाचा दर्जा टिकवण्यासाठी प्रयत्न केले आहे. भारतात सध्या १८२ शेतमाल वस्तुंच्या बाबतीत अद्ययावत प्रतवारी व विक्रिव्यवस्था करण्यात येत आहे. शेतमालाच्या विक्रिव्यवस्थतील सदोष वजनमापे १९३९ च्या कायद्यान्वये दुरुस्त करण्यात आली आहे. १९५८ पासुन केंद्र सरकारने मेट्रिक पद्धतीचा स्वीकार केला असुन त्यानुसार नियंत्रित बाजारपेठा व आठवडा बाजारामध्ये त्यांची अमंलबजावणी काटेकोरपणे करण्याचे बंधन विक्रेत्यावर घालण्यात आले आहे. शेतमालाच्या विक्रिव्यवस्थेत सुधारणा घडवून आणण्यासाठी गुदामांच्या सोई व साठवणुक क्षमता यांच्यात वाढ घडवून आणण्यासाठी राज्य सरकारमार्फत प्रयत्न करण्यात येत आहे. १९५४ मध्ये गोरवाला कमिटीच्या शिफारशीनुसार राष्ट्रीय राज्य व ग्रामीण पातळीवर गुदामांच्या सुविधा निर्माण करण्यात येत आहेत. ३१ मे २०१६ अखेर देशात ११,५८६ गुदाम प्रकल्पाची शेतमाल साठवणुकीची क्षमता १६६.४२ लाख टन इतकी बनविण्यात आली आहे. भारत सरकारने अलीकडे शेतक-यांचे आर्थिक हित जपण्यासाठी अद्ययावत विक्री व्यवस्थेबरोबरच बाजार पाहणी समुत्यांची स्थापना केली आहे. देशातील निवडक नियंत्रित बाजारपेठांमध्ये पायाभुत सुविधांच्या निर्मितीसाठी केंद्र सरकारमार्फत विशेष अर्थसहाय्य पुरविण्याची योजना नुकतीच कार्यान्वित झाली आहे. सध्या कार्यरत असलेले शेतमाल उत्पादन खर्च व किंमत याचा विचार करुन विशेष पावले उचलली आहे. यामध्ये सध्या शेतमाल उत्पादन खर्च व किंमत विशेष प्रभावी भुमिका बजावतात, त्याच्या जोडीला १९८८ पासुन राष्ट्रीय शेतमाल खरेदी विक्रीसंस्था कार्य करीत आहे. अशा प्रकारे शेतमालाच्या हिताचे संवर्धन करण्यासाठी नियंत्रित बाजारपेठा प्रभावीपणे कार्य करीत आहे.

भारतातील नियंत्रित बाजारपेठांची संख्या –

नियंत्रित बाजारपेठांच्या स्थापनेला १९३० च्या दशकापासुन सुरुवात झाली असली तरी या कार्यक्रमाला खरी चालना स्वातंत्र्योत्तर कालखंडात मिळाली हे पुढील तक्त्यावरुन स्पष्ट होते.

भारतातील नियंत्रित बाजारांच्या संख्येतील वृद्धी –

अ. क्र.	वर्ष	नियंत्रित बाजारांची संख्या
1.	१९३९ पूर्वी	५७
2.	१९४० अखेर	७५
3.	१९४५ अखेर	१४६
4.	१९५० अखेर	२८६
5.	मार्च १९५६	४७०
6.	मार्च १९६१	७१५
7.	मार्च १९६६	१०१२
8.	मार्च १९७४	१०७७
9.	डिसेंबर १९७८	२४८१
10.	मार्च १९८५	३२१७

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11.	मार्च १९९०	६२१७
12.	मार्च १९९५	६८३६
13.	मार्च २०००	७०७७
14.	मार्च २०१५	२४०००

Source –

- **Agricultural Marketing 2005, Statical abstract National, Indtitute of Agricultural Marketing Jaipur**
- **www.agmarket.nic.in**

१. स्वातंत्र्यपूर्व कालखंडामध्ये नियंत्रित बाजारांची संख्या अत्यल्प होती. १९४५ अखेर केवळ १४६ इतकेच नियंत्रित बाजार होते.

२. मार्च १९७८ मध्ये भारतात २४८१ एवढेच नियंत्रित बाजार होते. मार्च १९८५ मध्ये संख्येत वाढ होऊन ही संख्या ५६९५ इतकी झाली यावरुन असे स्पष्ट होते की या सात वर्षांच्या काळात नियंत्रित बाजारपेठांच्या संख्येत दुपटीपेक्षा अधिक वाढ झाली.

३. मार्च २०१५ मध्ये भारतात नियंत्रित बाजारांची संख्या २४,००० इतकी वाढ झाली आहे.

भारतातील नियंत्रित बाजाराची गरज –

शेतकरी आपला शेतमाल प्राथमिक किंवा घाऊक बाजारात विकुन पैसे मिळवतो व प्रथमःच शेतमाल शेतक-यांच्या हातातुन व्यापा-यांच्या हातात जातो. माल विकणारा शेतकरी व खरेदी करणारा व्यापारी या दोघात व्यावहारीक बातचीत किंवा संघर्ष होतो. शेतकरी व व्यापारी या दोघांमध्ये शेतमाल विक्रीचा व्यवहार समान होण्यामध्ये अनेक अडचणी येतात. शेतकरी हा अडाणी असंघटित व असहाय्य असल्यामुळे मालाचा सौदा करण्याकरिता लागणारी वाटाघाटाची शक्ती व्यापा-याच्या तुलनेने कमी पडते. या परिस्थितीमुळे व्यापारी त्याचा पुरेपुर फायदा घेतो. मालाची विक्री झाल्यानंतर विक्रितुन किंवा माल विक्रिच्या पैश्यातुन कोणत्याही संयुक्तिक कारण न देता रोख कपात केली जाते. शेतकरी जेव्हा आपला शेतमाल बाजारात विक्रीसाठी ठेवत असे तेव्हा नमुना म्हणुन त्यांच्या शेतमालातील काही भाग काढुन घेतला जात असे. तितका शेतमाल शेतक-यांच्या विक्रीतुन कमी केला जात असे हा मोफत गेलेला माल व्यापा-यांच्या फायद्याचा ठरत असे.

नियंत्रित बाजारसमितीचे कार्य –

- दलालांचे दर ठरविणे.
- प्रमाणित वजन व मापे ठरविणे.
- दलालांना परवाना देण्याचे काम करणे.
- शेतमालाचे वजन करण्यासाठी प्रशिक्षित व्यक्तीची नेमणुक करणे.
- बाजारपेठेत तंटा झाल्यास तो मिटविणे.
- नियमबाह्य वर्तन व गैरव्यवहार करणा-यां विरुद्ध कारवाई करणे.
- खुल्या व लिलाव पद्धतीने वस्तुची विक्री करणे व वस्तुची नोंद करणे.
- बाजारसमितीचा कारभार पाहणे व त्याचा हिशोब ठेवणे आणि विहित पद्धतीने त्याची लेखापरिक्षा करुन घेणे.
- व्यापार करण्यासाठी जे लोक बाजारात प्रवेश करतील त्या लोकांच्या वागणुकीवर देखरेख ठेवणे.
- राज्य शासनाकडुन कायद्याद्वारे अनुसुचित करण्यात आलेले कोणतेही कृषी उत्पन्न राजपत्रात अधिसुचित केले असेल ते बाजार क्षेत्रात गोळा करणे.

नियंत्रित बाजारपेठांचे उद्दिष्टे –

- शेतमालाच्या विक्रीव्यवस्थेतील दोष दुर करणे.
- शेतक-यांना त्यांच्या शेतमालाला योग्य किंमत मिळवुन देणे.
- शेतक-यांना मिळणारी किंमत व ग्राहकांना द्यावी लागणारी किंमत यातील अंतर कमी करणे.
- बाजारातील गैरव्यवहारांना आळा घालुन शेतक-यांचे शोषण थांबवणे.
- कायदेशीर म्हणजे मेट्रिक पद्धतीची वजनमापे वापरण्यास भाग पाडणे.
- शेतक-यांना बाजारविषयक अद्ययावत माहिती देणे.
- बाजारात शेतक-यांना व जनावरांना राहण्यासाठी सोय करणे.
- बाजारात व्यवहारावरुन जर भांडण तंटे उद्भवले तर ते सोडविणे.

नियंत्रित बाजारसमित्यांची रचना –

कृषी उत्पन्न बाजार समित्यांची कायद्यानुसार रचना पुढील मुद्द्यांच्या आधारे करण्यात येत आहे.

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- कृषी उत्पन्न बाजार समित्यांची कायद्यानुसार रचना संख्या व त्यांचा कार्यकाळ.
- सदस्य निवडुन येण्याकरिता अर्हता.
- सदस्यांच्या निवडणुक प्रक्रियेची माहिती.
- निवडणुक खर्च.
- बाजार समितीतील पदाधिकारी सभापती व उपसभापती व त्यांचे मानधन
- सदस्यांचा राजीनामा, त्यांना काढुन टाकणे, आणि त्यांचा नैमितिक रिकाम्या जागा भरणे.
- प्रशासन नेमण्याची तरतुद.

शेतमालाला नियंत्रित करण्यासाठी कृषी उत्पन्न बाजार समितीची निर्मिती कृषी उत्पन्न बाजार समिती कायद्याद्वारे केली जाते. राज्य सरकार प्रत्येक बाजार क्षेत्रासाठी सभापती उपसभापती व इतर सदस्य यांचा समावेश असलेली एक बाजार समिती स्थापन करते. बाजार समितीचा कारभार संचालक मंडळाद्वारे चालविला जातो.

निष्कर्ष –

तसे पाहिले तर या सर्व चर्चेवरुन असे दिसुन येते कि भारतातील बहुसंख्य लोकांचा शेती हा व्यवसाय आहे. शेतक-यांना शेतीक्षेत्रातील अनेक आव्हानांना तोंड द्यावे लागते. अगदी नैसर्गिक आपत्तीपासुन ते मानवनिर्मित अडथळ्यापर्यंत विविध प्रकारच्या समस्यांना शेतकरी तोंड देत आहे. तसेच शेतक-यांने आपल्या शेतात पिकविलेल्या शेतमालाला योग्य किंमत मिळावी अशी अपेक्षा असते. परंतु दलाल आडते यांच्या कडुन शेतक-यांचा शेतमाल विकण्यात मोठ्या प्रमाणावर फरवणुक केली जाते. त्यांच्या शेतमालाला योग्य किंमत दिली जात नाही. शेतक-यांना येणा-या संकटापासुन बचाव करण्यासाठी बाजार समितीची स्थापना करण्यात आली आहे. त्यामुळे भारतीय शेती आणि शेतकरी यांना चांगले दिवस येतील असा आशावाद व्यक्त करुया.

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Original Article

बौद्ध धर्माचे पर्यावरणीय तत्त्वज्ञान

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गोषवाराः

प्रस्तुत लेखामध्ये बौद्ध धर्माच्या तत्त्वज्ञानाच्या आधारे मानव आणि निसर्ग यांच्यातील संबंधांचा पर्यावरणीय दृष्टिकोनातून अभ्यास करण्यात आलेला आहे. मानवाच्या निसर्गाकडे पाहण्याच्या ज्ञानात्मक व अंधश्रद्धात्मक अशा दोन टोकाच्या दृष्टिकोनांचे विश्लेषण करून, या दोन्ही दृष्टिकोनांच्या मर्यादा स्पष्ट केल्या आहेत. बौद्ध धर्म मानव, प्राणी व निसर्ग यांची निर्मिती रूप व अरूप धातूंमधून झालेली आहे असे मानून त्यांच्यातील समानतेवर भर देतो. अहिंसा, ममता व बंधुता या मूल्यांच्या आधारे निसर्गाशी समतोल व न्याय्य संबंध प्रस्थापित करण्याचा विचार मांडला आहे. पंचशीलातील अहिंसा, चोरी न करणे व मादक पेयांचे ग्रहण न करणे या तत्त्वांचे पर्यावरणीय महत्त्व स्पष्ट करत, या तत्त्वांच्या आचरणातून निसर्गसंरक्षण व सामाजिक कल्याण साध्य होऊ शकते, असा निष्कर्ष लेखात मांडण्यात आला आहे.

मुख्य शब्द: *बौद्ध धर्म, पर्यावरणीय तत्त्वज्ञान, निसर्ग आणि मानव संबंध, पंचशील, अहिंसा, धातू सिद्धांत, निसर्गसंरक्षण, सामाजिक नैतिकता*

प्रस्तावना:

मानवाचे निसर्गाकडे बघण्याचे प्रामुख्याने दोन दृष्टिकोन दिसून येतात. एक ज्ञानात्मक जो की लोकांच्या मनात निसर्गाविषयी कोणत्याही प्रकारची अंधश्रद्धा नसते. त्यांना निसर्गातले नियम आणि नैसर्गिक घटना यांचे शास्त्रीय ज्ञान असते. या ज्ञानाच्या आधारे नैसर्गिक संपत्तीचा जास्तीत जास्त उपभोग करून ते त्यांचे जीवन समृद्ध करण्याचा प्रयत्न करतात. अशा तऱ्हेचे हे लोक निसर्गाकडे त्यांच्या उपभोगाचे साधन म्हणून बघतात. तर दुसरा दृष्टिकोन काही लोकांना निसर्गातील नियम तसेच नैसर्गिक घटना याविषयीचे ज्ञान नसते. त्यांचा असा समज असतो की, निसर्ग ही एक शक्ती असून ती मानवाचे सामाजिक आणि वैयक्तिक जीवन नियंत्रित करत असते. त्यांच्यामते या शक्तीच्या कोपामुळे जीवनात आपत्ती येतात तर तिच्या कृपेमुळे त्यांना यश प्राप्ती होते म्हणून ते निसर्गाची पूजा करतात.

जेव्हा आपण निसर्गाकडे बघण्याचा या दोन दृष्टिकोनांचा विचार करतो तेव्हा आपल्याला असे जाणवते की, या दोन्ही दृष्टिकोनांमध्ये काही उणीवा आहेत. पहिला दृष्टिकोन स्विकारला तर आपल्याला हे मान्य करावे लागते की, मनुष्याजवळ बौद्धिक आदि क्षमता असल्यामुळे तो निसर्गावर सहज मात करून मनुष्य जेव्हा अमर्याद नैसर्गिक साधन संपत्तीचा उपभोग घेतो व आपले जीवन समृद्ध करू शकतो, तेव्हा तो एकप्रकारे निसर्गावर अन्याय करीत असतो कारण निसर्ग देत असतो त्यापेक्षा तो निसर्गाकडून जास्त अपेक्षेने घेत राहतो, म्हणून असा मनुष्य उपभोगांच्या मागे लागल्याने त्याचे अस्तित्वच विसरतो आणि परिणामी दुःखी होतो.

या उलट दुसरा दृष्टिकोन स्विकारला तर आपल्याला असे मानावे लागेल की, मनुष्याजवळ बौद्धिक, मानसिक आदि कोणत्याही क्षमता नसल्याने निसर्गावर मात करण्याचे सामर्थ्य त्याच्याकडे नसल्याने मनुष्य हा निसर्गाच्या हातातील खेळणे आहे, म्हणून तो निसर्गाला श्रेष्ठत्व देऊन निसर्गाची पूजा करत होता.

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अशा तऱ्हेने हे दोन्ही दृष्टिकोन निसर्गाविषयी तसेच निसर्ग-मानव संबंधाविषयी समाजहिताकडे लक्ष न देता परस्पर विरोधी टोकाच्या भूमिका घेताना दिसून येतात, त्यामुळे येथे असा प्रश्न उपस्थित होतो की, मानवाचे सामर्थ्य तसेच कर्तुत्व लक्षात घेऊनही मानव आणि निसर्ग यांच्यामध्ये अशा प्रकारचे संबंध प्रस्थापित होऊ शकत नाहीत का? की ज्यामुळे एकीकडे समाजाचे हित साधले जाईल आणि दुसरीकडे त्या दोघांवरही अन्याय केला जाणार नाही? या प्रश्नाचे उत्तर बौद्ध धर्मामध्ये तात्विक मानवशास्त्रीय दृष्टिकोनातून देण्याचा प्रयत्न केलेला आहे.

मानवाचे निसर्गाशी संबंध:-

बौद्ध धर्मानुसार मानवी स्वभाव कुशल व अकुशल धर्मांनी बनलेला असतो म्हणून मानवाच्या या स्वभावानुसार मानवाचे निसर्गाशी संबंध कधी मैत्रीचे तर कधी आक्रमकतेचा राहिलेला दिसून येतो. निसर्गाशी मानवाचा अशा प्रकारच्या संबंधांचा परिणाम मानवाच्या सुखाच्या हिताच्या दृष्टीने योग्य नसल्यानेच मानवाने निसर्गाशी कशा प्रकारे संबंध ठेवायचे हे त्याच्या हातात असते आणि त्यानेच ते ठरवायचे असते.

भगवान बुद्ध जेव्हा आपल्या राज्याचा त्याग करून शाश्वत सत्य व शाश्वत आनंदाच्या शोधात जेव्हा संन्यासी / वनवासी झाले होते तेव्हा ते निसर्गाकडे अशी आळवणी करतात, "हे तृण-कुरणांनो, लता-वेलींनो, वनस्पतींनो, पर्वतराजींनो आणि वनांनो माझ्या राजवैभवाच्या अनुपस्थित मी तुमच्या ठायी आश्रयाला आलो आहे" बौद्ध धर्मतत्वज्ञानानुसार सर्व प्राणीमात्रांमध्ये मानवाचे स्थान हे सर्वात उच्च व थोर असे मानले गेले आहे, परंतु ज्या बोधीवृक्षाखाली भगवान गौतम बुद्धांना शाश्वत आनंदाची अनुभूती करून देणारे आत्मज्ञान प्राप्त झाले व अखिल विश्वास मानवतेचा प्रसार करण्याची अंतरीक प्रेरणा जागृत झाली, त्या वृक्षाचे स्थान मानवाच्या समस्त किंबहुना त्याही पेक्षा थोर व उच्चतम असे मानले गेले आहे, कारण भगवान बुद्धांनी म्हटले होते "वृक्ष म्हणजे परमदया आणि अमर्याद उपयोगिता असणारे विलक्षण असे जीव होत, जे स्वतःच्या जीवितासाठी कशाचीही मागणी करत नाहीत. आपली सर्व जैविक उत्पादने इतरांसाठी खुली करतात, सर्वांचे रक्षण करतात, अगदी आपल्यावर कुऱ्हाड चालवू पाहणाऱ्यालाही शितल छाया प्रदान करतात" आपल्या अनुयायांना सतर्क करताना भगवान बुद्ध म्हणतात "ज्या तरुछायेखाली मला कधीकाळी आश्रय मिळाला, जिथे मी निवांत विश्रांती घेतली अथवा निद्राधीन झालो, त्या वृक्षाची शाखाही कधी तोडता कामा नये" बौद्ध धर्मातील अहिंसाचे तत्व केवळ मानवाप्रतीच नव्हे तर सर्व प्राणीमात्रा व वनस्पतीप्रतीही दयाभाव व ममता राखण्याची शिकवण देते. बौद्ध तत्त्वज्ञानामध्ये नद्या, वने, तृण-कुरणे, लता- वेली, वनस्पती, पर्वतराजी आणि सूर्यतेज या प्राकृतिक घटकांचा अत्यंत आदर केलेला असून त्यांना आनंदप्रदायक मानलेले आहे.

निसर्ग आणि मानव या दोघांमध्ये ममता व बंधुता प्रस्थापित करण्याचा पहिला प्रयत्न बौद्ध धर्माने केलेला आहे. बौद्ध धर्मानुसार निसर्ग आणि मानव यांना एकत्र गुंफणारा समानतेचा धागा म्हणजे धातू. त्यांच्यामते निसर्गातील सजीव प्राणी, वनस्पती, वृक्ष आदींची निर्मिती आणि मानवाची निर्मिती ही एकाच प्रकारच्या धातूंपासून झालेली आहे. धातू म्हणजे एखाद्या वस्तूची निर्मिती ज्या घटकांपासून झालेली आहे तो घटक. बौद्ध धर्मानुसार धातू हे प्रामुख्याने दोन प्रकारचे असतात, रूप धातू आणि अरूप धातू. रूप धातूचे पृथ्वी, आप, तेज आणि वायू हे चार प्रकार असून अरूप धातूचे चित्त, चैतसिक धर्म, विज्ञान, संज्ञा हे प्रकार आहेत. सजीव प्राण्यांची निर्मिती या दोन धातूपासून होते. बौद्ध धर्मामध्ये सजीव प्राण्यांची प्रामुख्याने तीन वैशिष्ट्ये सांगितली गेली आहेत. १) रूप म्हणजे विशिष्ट आकार, प्रत्येक सजीव वस्तूला विशिष्ट आकार असतो. २) उष्णता प्रत्येक सजीव वस्तूचे शरीर हे उष्ण असते. ३) विज्ञान प्रत्येक सजीव वस्तूला जाणीव असते. या तीन पैकी एक जरी वैशिष्ट्याचा अभाव असला तरी तो प्राणी काष्ठवत किंवा मृतवत होतो आणि निर्जीव ठरतो. (अभिधर्मकोश)

अशा तऱ्हेने बौद्धधर्मामध्ये मनुष्य, प्राणी आणि मनुष्येत्तर प्राणी यांच्या जडणघडणीमध्ये रूप आणि अरूप धातूचा सहभाग असतो, असे स्पष्ट करून निसर्ग आणि मानव यांना एकत्र गुंफून त्यांच्यातील संबंध दाखवण्याचा प्रयत्न केलेला आहे.

बौद्ध धर्माने निसर्ग आणि मानव यांची निर्मिती रूप आणि अरूप धातूपासून झालेली आहे असे मान्य केलेले असले तरी त्यांच्या मतानुसार निसर्ग आणि मानव यांच्यामध्ये भेदही असतो. या भेदाचे नेमके स्वरूप सांगत असताना बौद्ध धर्मामध्ये मानव आणि मानवेत्तर सजीव प्राण्यांचे जीवशास्त्रीय तसेच त्यांच्या शारीरिक मानसिक जडणघडणीचे विश्लेषण केलेले आहे.

यावरून आपल्याला असे अनुमान काढता येते की, बौद्धांच्या मते मनुष्येत्तर सजीव प्राणी, वनस्पती हे रूप, वेदना, संज्ञा, संस्कार, विज्ञान या पंचस्कंधापासून बनलेले नसतात, परंतु ते सजीव असल्यामुळे त्यांच्याबाबतीत असे म्हणता येते की, मनुष्येत्तर सजीव प्राणीही रूप आणि अरुप धातूंच्या संघात आहेत, परंतु त्यांच्याजवळ रूप आणि विज्ञान आहे, परंतु मनुष्याजवळ असलेल्या वेदना, संज्ञा आणि संस्कार मात्र त्यांच्याजवळ नाहीत. किंबहुना त्यांच्याजवळ संज्ञा आणि संस्कार नसल्यामुळेच त्यांना होणारे विज्ञान हे ते त्यांच्या पुढच्या पिढीकडे संक्रमित करू शकत नाहीत, म्हणून मनुष्याप्रमाणे प्राणी संस्कृती निर्माण करून त्यांचे वृद्धी करू शकले नाहीत. मग येथे कोणी असे म्हणेल की झाडावर कुऱ्हाड मारली की झाडातून चिक येतो, म्हणजे झाडाला वेदना होतात. परंतु याला असे उत्तर देता येते की, बौद्धधर्मामध्ये वेदनेचे स्वरूप मानसिक आहे. झाडाला कुऱ्हाड मारल्यामुळे होणाऱ्या वेदना या शारीरिक असून त्या मानसिक नाहीत. बौद्धधर्मामध्ये दुःखाच्या संदर्भात विचार करताना मानसिक वेदनांचा विचार केलेला आहे, शारीरिक वेदनांचा नाही. यावर असे दिसून येते की, मनुष्येत्तर प्राण्यांमध्ये पंचस्कंधातील वेदना, संज्ञा आणि संस्काराच्या अभावामुळे मनुष्य आणि मनुष्येत्तर सजीव प्राणी यांच्यामध्ये जो शारीरिक आणि मानसिक जीवशास्त्रीय दृष्टिकोनातून भेद दिसून येतो त्यासाठी बौद्धधर्मामध्ये मानवाचा निसर्गाशी कसा संबंध असावा याविषयीची आचारसंहिता अर्थात पंचशील सांगितले आहे.

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पंचशीलाचे पर्यावरणीय दृष्टिकोनातून महत्व:-

पंचशील हे व्यक्तीच्या सामाजिक आणि नैतिक जीवनाचे मार्गदर्शक तत्वे आहेत. ही तत्वे समाजात राहत असताना वैयक्तिक जीवनात अंगीकारावयाची असतात कारण यामुळे एका व्यक्तीने दुसऱ्या व्यक्तीशी कसे वागावे याचे मार्गदर्शन करणारी ही आचारसंहिता असून याचे पर्यावरणीय दृष्टिकोनातूनही महत्त्वही सांगता येऊ शकते किंबहुना निसर्ग आणि मानव यांच्यामध्ये निकोप संबंध प्रस्थापित होण्यासाठी पंचशीलापैकी या तीन शीलांचे मानवी जीवनात आचरण होणे नितांत गरजेचे आहे.
कोणत्याही प्राण्याची हिंसा न करणे, चोरी न करणे, मध्यपान न करणे या तीन शिलांचे पर्यावरणीय दृष्टिकोनातून काय महत्त्व आहे, याचा थोडक्यात विचार करूया.

कोणतेही प्राण्यांची हिंसा न करणे:-

बौद्ध धर्मामध्ये हिंसा न करणे याचा अर्थ एखाद्या प्राण्याची शस्त्राने हत्या न करणे एवढ्या मर्यादित अर्थानेच वापरला जात नाही तर मनाने किंवा वाचेनेही अशी हिंसा करू नये असे सांगितलेले आहे. जसे एखाद्या व्यक्तीने प्राण्यांची हिंसा करण्याचे मनात आणले तरी ती मनाने केलेली हिंसा होईल किंवा जर एखाद्याने एखाद्या प्राण्याची हत्या करण्याची आज्ञा दिली तरी ती वाचिक हत्या होईल तेव्हा कोणत्याही प्राण्याची हिंसा न करणे म्हणजे कोणत्या प्राण्याची कायीक, वाचिक तसेच मानसिक हत्या न करणे. आता येथे कोणीही असा प्रश्न उपस्थित करू शकतो की, कसाई प्राण्याची हिंसा करतो त्याचे काय? तर बौद्ध धर्मामध्ये याचे उत्तर असे दिलेले आहे की, कसाई अशा प्राण्यांची हत्या करतो ती जे प्राणी समाजाच्या उपयोगी नाहीत तसेच अशा प्राण्यांच्या हत्येमुळे समाजातील लोक दुखी होत नाहीत.
यावरून असे दिसते की बौद्ध धर्मामध्ये कोणतीही हिंसा निषिद्ध मानलेली नाही तर अशीच हत्या निषिद्ध मानलेली आहे की, ज्यामुळे समाजाचे अहित होईल आणि समाजातील लोक दुखी होतील.

चोरी न करणे किंवा दुसऱ्याची वस्तू न बळकाविणे:-

प्राचीन काळामध्ये राजे लोक त्यांच्या सुखासाठी तसेच हितासाठी यज्ञयाग करीत असत. त्याप्रसंगी अन्नधान्य व पशुंचा बळी दिला जात असे. अशावेळी अनेकवेळा दुभत्या पशुंचे बळी देण्यात येत असे. त्यासमयी भारत देश हा संपूर्ण शेती आणि पशुधनावर उपजीविका करत होता. त्याप्रसंगी अनेक पशुहत्या होत असताना लोक दुखी होत. जर त्या काळात राजाने अशा प्रकारची यज्ञ थांबवले तर ते पशु राजाच्या आदेशाने लोकांची दुभती जनावरे त्यांच्या परवानगीशिवाय बळकवली जात व त्यांचा बळी दिला जात असे, त्यामुळे लोक दुखी होत असत, म्हणून राजाने त्यांची जनावरे बळकावणे थांबवून हत्या होणार नाही आणि निसर्गाचेही रक्षण केले जाईल.

मादक पेय ग्रहण न करणे:-

मादक पेयाच्या ग्रहणामुळे मानवाची विवेकबुद्धी नष्ट होते, त्यामुळे तो योग्य तो विचार करू शकत नाही. त्याच्या हातून प्राणी हत्या, चोरी वगैरे अकुशल कर्मे होण्याची शक्यता असते. या उलट मादक यांचे ग्रहण न केल्यामुळे त्याच्या हातून प्राणी हत्या, चोरी वगैरे अकुशल कर्मे होण्याची शक्यता कमी असते, म्हणून निसर्ग आणि मानव यांच्यात संबंध प्रस्थापित होण्यासाठी व्यक्तीने मादक पेयांचे ग्रहण करू नये. याशिवाय अनेकदा मादक पेय बनविण्यासाठी जंगलातील वनस्पतींचा उपभोग केला जाई, त्यामुळे नैसर्गिक संपत्तीचा नास होई, परंतु मादक पेयाचे ग्रहणच केले नाही तर मादक पेय बनविण्याचा तसेच त्यांचे सेवन करण्याचा प्रश्नच उद्भवणार नाही. अशा तऱ्हेने या तीन शिलांच्या पालनाने निसर्ग आणि मानव यांच्यात कुशल संबंध प्रस्थापित होऊन समाजाला सुखप्राप्ती होऊ शकेल.

म्हणून मानवी जीवनात पंचशील हे व्यक्तीच्या सामाजिक आणि नैतिक जीवनाचे मार्गदर्शक तत्वे आहेत. समाजात राहत असताना एका व्यक्तीने दुसऱ्या व्यक्तीशी कसे वागावे याचे मार्गदर्शन करणारी ही तत्वे आहेत. असे जरी असले तरी पंचशीलाचे पर्यावरणीय दृष्टिकोनातूनही महत्त्व सांगता येऊ शकते किंबहुना निसर्ग आणि मानव यांच्यामध्ये निकोप संबंध प्रस्थापित होण्यासाठी पंचशीलचे पालन करणे गरजेचे आहे.

अशा तऱ्हेने बौद्ध धर्माने निसर्ग आणि मानव यांच्यातील संबंधांवर वेगवेगळ्या प्रकारे प्रकाश टाकल्यामुळे निसर्गाविषयी मानवाच्या मनात कोणत्याही प्रकारचे श्रेष्ठत्वाचे किंवा कनिष्ठत्त्वाचे भाव प्रस्थापित न होता त्यांच्यामध्ये समानतेचे आणि बंधुतेचे भाव प्रस्थापित होण्यासाठी मदत होते. तसेच एकाच प्रकारच्या घटकापासून निसर्ग आणि मानव यांची निर्मिती झालेली आहे, हे बौद्ध धर्माचे मत नैसर्गिक मानवतावादी वाटते.

संदर्भ ग्रंथ:-

१. मिलिंद प्रश्न
२. जातक कथा
३. परामर्श
४. संधारणीय पर्यावरण व्यवस्थापन

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Original Article

भारतातील कृषी व्यवसाय व्यवस्थापन आणि हरित अर्थव्यवस्था: शाश्वत वाढीसाठी धोरणात्मक आणि तंत्रज्ञानात्मक समन्वय

स्वाती दिपक वाघमोडे[1], प्रो. डॉ. गव्हाळे बाळू वामन[2]
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सारांश (*Abstract*) -

भारताच्या कृषी क्षेत्रासमोर राष्ट्रीय अन्नसुरक्षा सुनिश्चित करणे आणि हवामान-लवचिक, कमी-कार्बन हरित अर्थव्यवस्थेत (हरित अर्थव्यवस्था) संक्रमण साधणे, अशी दुहेरी आणि तातडीची गरज आहे[1]. या बदलासाठी कृषी व्यवसाय व्यवस्थापनाच्या (*Agribusiness Management* - कृषी व्यवसाय व्यवस्थापन) संपूर्ण मूल्य शृंखलेत मूलभूत सुधारणा आवश्यक आहेत, ज्यात निविष्ठा पुरवठा, उत्पादन, प्रक्रिया आणि सुविधा सेवांचा समावेश आहे [2, 3]. प्रस्तुत शोधनिबंध हरित कृषी व्यवसाय व्यवस्थापनाला समर्थन देणाऱ्या धोरणात्मक यंत्रणा आणि तांत्रिक प्रेरकांचे विश्लेषण करतो, विशेषतः आर्थिक व्यवहार्यता आणि पर्यावरणीय उद्दिष्टे यांच्यातील समन्वयाचे मूल्यांकन करतो. विश्लेषणामध्ये एकात्मिक धोरण पुनरावलोकन (*Integrated Policy Review)* आणि तंत्रज्ञान अवलंबनावर आधारित दुय्यम संख्यात्मक माहितीचा वापर करण्यात आला आहे [4]. प्रमुख निष्कर्षांनुसार, कृषी पायाभूत सुविधा निधी (*AIF)* आणि पंतप्रधान-किसान ऊर्जा सुरक्षा आणि उत्थान महाअभियान (*PM-KUSUM)* यांसारख्या धोरणात्मक योजना आणि अचूक शेती (*Precision Farming* - अचूक शेती) व ॲगटेक (*AgTech)* यांसारखे तंत्रज्ञान महत्त्वपूर्ण चालक आहेत [4, 5]. यामुळे संसाधनांच्या कार्यक्षमतेत मोजता येण्याजोगी वाढ दिसून येते (उदा. उपग्रह निरीक्षणातून उत्पादनात २०% वाढ) [4]. तथापि, खंडित जमीनधारणा (*fragmented holdings)* आणि उच्च उत्पादन खर्च यांसारखे संरचनात्मक अडथळे कायम आहेत [6]. महत्त्वाचे म्हणजे, मोठ्या स्तरावरील विश्लेषण दर्शविते की आर्थिक आणि पर्यावरणीय शाश्वततेमध्ये नकारात्मक सहसंबंध *(negative correlation)* अस्तित्वात आहे' [7]. या व्यवहार्यता विरोधाभासावर (*viability paradox)* मात करण्यासाठी, मोठ्या प्रमाणावर शेतकरी उत्पादक संस्था (*FPOs)* स्थापन करणे, हरित वित्तपुरवठा (*green finance)* लक्ष्यित करणे आणि पायाभूत सुविधांचा विकास करणे आवश्यक आहे, जेणेकरून पर्यावरणीय कारभाराचे रूपांतर लहान शेतकऱ्यांसाठी ठोस आर्थिक नफ्यात होईल.

Key Words *- Agribusiness Management, Green Finance, Precision Farming*

प्रस्तावना:

भारताचे कृषी क्षेत्र केवळ देशाच्या सकल देशांतर्गत उत्पादनामध्ये (GDP) योगदान देत नाही, तर कोट्यवधी ग्रामीण कुटुंबांना उपजीविका प्रदान करते. या अर्थव्यवस्थेसाठी कृषी क्षेत्र एक गंभीर आणि उच्च-प्रभावित क्षेत्र बनले आहे [8]. तथापि, पारंपारिक शेती पद्धती आणि हवामान बदलामुळे (Climate Change) या क्षेत्रावर मोठे संकट आले आहे. भारतीय शेतीचा एक मोठा भाग मान्सून आणि अनिश्चित हवामानावर अवलंबून आहे [9].

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पूर, दुष्काळ आणि तापमानातील बदलांमुळे शेतीची लवचिकता (resilience) कमी झाली आहे, ज्यामुळे शाश्वत पद्धती त्वरीत स्वीकारणे आवश्यक आहे [1]. या संरचनात्मक दुर्बलतेमुळे (Structural Vulnerability) लहान शेतकरी अधिक असुरक्षित बनतात. देशातील अनेक शेतकरी दोन हेक्टरपेक्षा कमी जमिनीवर शेती करतात [6, 9]. जमिनीचे असे विभाजन (fragmentation) मोठ्या प्रमाणावर तंत्रज्ञान आणि आधुनिक उपकरणांमध्ये गुंतवणूक करणे कठीण करते [6]. त्यामुळे, हवामानावर अवलंबून राहणे आणि जमिनीचे विभाजन ही केवळ उत्पादन पातळीवरील समस्या नाही, तर शाश्वत तंत्रज्ञान स्वीकारण्याच्या मार्गातील आर्थिक जोखीम वाढवणारी प्रमुख कारणे आहेत.

कृषी व्यवसाय व्यवस्थापन (Agribusiness Management - ABM) व्याख्या: ABM ची व्याप्ती केवळ शेतीपुरती मर्यादित नसून, ती संपूर्ण मूल्य शृंखलेचा भाग आहे. कृषी व्यवसाय उद्योगांमध्ये निविष्ठा पुरवठा (बीज, खत, उपकरणे, ऊर्जा), कच्च्या आणि प्रक्रिया केलेल्या वस्तूंचे उत्पादन (अन्न आणि फायबर) आणि विविध सुविधा सेवा (पतपुरवठा, विमा, साठवण, वाहतूक, सल्लागार सेवा) यांचा समावेश होतो [2, 3]. प्रभावी ABM चा मुख्य उद्देश ग्राहकांच्या गरजा पूर्ण करताना नफा वाढवणे आहे, ज्यासाठी खर्च-कार्यक्षम उत्पादन, भांडवल आणि श्रमाची उत्पादकता वाढवणे आवश्यक आहे [3].

हरित अर्थव्यवस्था (Green Economy - GE) व्याख्या: हरित अर्थव्यवस्था ही एक आर्थिक प्रणाली आहे जी पर्यावरणाची गुणवत्ता न बिघडवता शाश्वत विकास साधण्यासाठी पर्यावरणीय जोखीम आणि नैसर्गिक संसाधनांची कमतरता कमी करण्याचे उद्दिष्ट ठेवते [1]. ही संकल्पना कमी-कार्बन, संसाधन-कार्यक्षम (resource-efficient) आणि सामाजिकदृष्ट्या समावेशक वाढीवर जोर देते. शेतीच्या संदर्भात, GE मध्ये पाण्याची बचत, कार्बन उत्सर्जन कमी करणे, जैवविविधता वाढवणे आणि प्रदूषण कमी करणे यांसारख्या पद्धतींचा समावेश होतो [1]. GE च्या सहा स्तंभांपैकी (Six Pillars) जमीन वापर आणि कृषी तसेच जल व्यवस्थापन हे स्तंभ भारतीय शेतीसाठी थेट महत्त्वाचे आहेत [10].

प्रस्तुत शोधनिबंधाची उद्दिष्टे खालीलप्रमाणे आहेत: (Research Objectives)

- वर्तमान भारतीय ABM पद्धतींमध्ये नफाक्षमता आणि शाश्वतता यांच्यातील समन्वय आणि संघर्ष (convergence and conflict) यांचे मूल्यांकन करणे.
- संसाधन कार्यक्षमता वाढवण्यात तंत्रज्ञान आणि धोरणात्मक हस्तक्षेपाच्या भूमिकेचे संख्यात्मक मूल्यांकन करणे.
- आर्थिक आणि पर्यावरणीय शाश्वततेमध्ये निरीक्षित केलेला नकारात्मक सहसंबंध दूर करण्यासाठी आवश्यक असलेल्या धोरणात्मक व्यवस्थापन रणनीती ओळखणे.

साहित्य पुनरावलोकन (Literature Review) -

कृषी व्यवसाय प्रणाली (ए. बी. एस.) आणि संक्रमणातील मूल्य साखळी घटक-

कृषी व्यवसाय प्रणाली (ABS) ही अत्यंत गुंतागुंतीची आहे, ज्यामध्ये केवळ शेतकरीच नव्हे तर निविष्ठा पुरवठादार, मूल्य-वर्धन, विपणन, सूक्ष्म वित्तपुरवठा आणि कृषी विस्तार सेवा यांचा समावेश होतो [3]. ABS ची यशस्विता अनुकूल आर्थिक, राजकीय आणि भौतिक-जैविक वातावरणात आंतरिक खर्च-कार्यक्षमतेवर अवलंबून असते [3].

हरित अर्थव्यवस्थेकडे संक्रमण करण्यासाठी, या प्रणालीतील मूलभूत समस्या ओळखणे आवश्यक आहे. भारतातील पर्यावरणीय समस्यांमध्ये कृषी जमिनीची घटलेली सुपीकता आणि अन्न उत्पादनात रासायनिक खतांचा व कीटकनाशकांचा जास्त वापर यांचा समावेश आहे [8]. या समस्या पारंपारिक ABS व्यवस्थापनातील दुर्बळता दर्शवतात. हरित अर्थव्यवस्थेमध्ये निविष्ठा आणि समर्थन क्षेत्रांनी (credit and technical advisory) सक्रिय भूमिका घेणे अपेक्षित आहे, ज्यात जैव-खते (biofertilizers), सेंद्रिय शेती पद्धती [11], आणि शाश्वत मृदा व्यवस्थापन (sustainable soil management) यांना वित्तपुरवठा करणे आवश्यक आहे [9].

हरित अर्थव्यवस्थेची तत्त्वे आणि कृषी स्तंभ -

GE संकल्पना संसाधन ऑप्टिमायझेशन (optimization) आणि संवर्धनावर केंद्रित आहे. कृषी क्षेत्रात GE तत्त्वे स्वीकारल्यास पर्यावरणीय ऱ्हास कमी होतो, उत्पादकता वाढते आणि विशेषतः ग्रामीण भागातील सामाजिक कल्याण सुधारते [1]. हरित अर्थव्यवस्थेच्या संकल्पनेनुसार, कृषी क्षेत्र हे प्रमुख पाच स्तंभांपैकी 'जमीन वापर आणि शेती' (Land Use and Agriculture) आणि 'जल व्यवस्थापन' (Water Management) या स्तंभांशी थेट संबंधित आहे [10]. GE मध्ये समाविष्ट असलेल्या प्रमुख शाश्वत शेती पद्धतींमध्ये सेंद्रिय शेती (Organic Farming), कृषी-वनशेती (Agroforestry), संवर्धन नांगरणी (Conservation Tillage) आणि एकात्मिक कीड व्यवस्थापन

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(Integrated Pest Management - IPM) यांचा समावेश होतो [10]. उदाहरणार्थ, पीक फेरपालट (Crop Rotation) ही भारतातील सर्वात लोकप्रिय शाश्वत कृषी पद्धतींपैकी एक आहे, जी सुमारे ३० दशलक्ष हेक्टर क्षेत्रावर आणि अंदाजे १५ दशलक्ष शेतकऱ्यांद्वारे अवलंबली जाते [12]. या पद्धती पर्यावरणाचे रक्षण करताना शेतीच्या उत्पादकतेची शाश्वतता (long-term sustainability) टिकवून ठेवतात.

शाश्वत परिवर्तनासाठी धोरणात्मक मार्ग -

भारताच्या राष्ट्रीय कृषी धोरणाचा उद्देश कृषी क्षेत्राला उत्पादक, शाश्वत आणि न्याय्य क्षेत्रात रूपांतरित करणे आहे [11]. धोरणात्मक हस्तक्षेपामध्ये भू-आरोग्य (Soil Health) आणि संवर्धनावर विशेष भर दिला जातो. माती परीक्षण, सेंद्रिय शेती पद्धती आणि एकात्मिक पोषक व्यवस्थापन यांना प्रोत्साहन दिले जाते, ज्यामुळे रासायनिक निविष्ठांवरील अवलंबित्व कमी होते [11].

हरित पद्धतींना प्रोत्साहन देण्यासाठी अनेक विशिष्ट योजना कार्यान्वित करण्यात आल्या आहेत. राष्ट्रीय शाश्वत कृषी मिशन (National Mission for Sustainable Agriculture - NMSA) ही योजना हवामान बदलावरील राष्ट्रीय कृती योजनेंतर्गत (NAPCC) २००९-१० मध्ये सुरू झाली आणि २०१४-१५ मध्ये कार्यान्वित झाली [13]. याचे मुख्य उद्दिष्ट भारतीय शेतीला अधिक उत्पादक आणि लवचिक बनवणे आहे. याव्यतिरिक्त, कृषी व्यवसाय केंद्रे योजना (Agri Clinics and Agri Business Centres Scheme - ACABC) आणि सेंद्रिय निविष्ठांसाठी व्यावसायिक उत्पादन युनिट्स (NPOF) [14] यांसारख्या योजना संस्थात्मक आधार प्रदान करतात. महाराष्ट्र राज्याने कृषी मूल्य शृंखलेत कृत्रिम बुद्धिमत्ता (AI) आणि जनरेटिव्ह एआय (GenAI) समाविष्ट करण्याचे दूरगामी धोरण जाहीर केले आहे, जे तंत्रज्ञान-आधारित, शेतकरी-केंद्रित परिवर्तनासाठी राज्याच्या वचनबद्धतेचे संकेत देते [15].

संशोधन अंतर आणि गृहीतक (Research Gap and Hypothesis)

i. व्यवहार्यता विरोधाभासः आर्थिक विरुद्ध पर्यावरणीय स्थिरता -

शाश्वत विकासासाठी पर्यावरणाचे वहन क्षमता (carrying capacity) आणि नैसर्गिक भांडवलाची (natural capital) मर्यादा ओळखणे आवश्यक आहे [7]. शाश्वततेच्या संकल्पनेनुसार, निविष्ठांचा प्रति-युनिट वापर न वाढवता वर्तमान उत्पादन जास्तीत जास्त राखले पाहिजे [7]. तथापि, भारतातील शाश्वततेचे विश्लेषण चिंताजनक वास्तव दर्शवते: १७ राज्यांमध्ये केलेल्या अभ्यासानुसार, सामाजिक शाश्वतता सुधारली असली तरी, आर्थिक आणि पर्यावरणीय शाश्वतता निर्देशांकांमध्ये नकारात्मक सहसंबंध (negative correlation) आढळला आहे [7]. हा नकारात्मक सहसंबंध सूचित करतो की सध्याच्या बाजारपेठेत आणि व्यवस्थापन प्रणालींमध्ये एक मूलभूत विरोधाभास आहे. शेतकऱ्यांना अनेकदा पर्यावरणीय कारभाराची किंमत (उदा. कमी रासायनिक निविष्ठा वापरल्याने तात्काळ उत्पन्नात घट किंवा उच्च सेंद्रिय निविष्ठा खर्च) आणि अल्प-मुदतीतील आर्थिक नफा यापैकी एकाची निवड करावी लागते. हरित अर्थव्यवस्थेचे उद्दिष्ट नफा वाढवणे आणि त्याच वेळी शाश्वत असणे हे असताना [1, 3], मॅक्रो-स्तरीय वास्तविकता या उद्दिष्टाशी जुळत नाही. हे स्पष्टपणे बाजारपेठेतील अपयश दर्शवते, जिथे पर्यावरणीय बाह्यतांना (environmental externalities) किंमत दिली जात नाही आणि हरित भांडवली खर्च (green capital cost) सामान्य शेतकऱ्यांसाठी खूप जास्त आहे.

ii. मायक्रो-टू-मॅक्रो स्केलिंग आव्हान

सूक्ष्म स्तरावर, शाश्वत कृषी व्यवसाय मॉडेल (Sustainable Agricultural Business Models - SABM) स्वीकारणारे शेतकरी अधिक नाविन्यपूर्ण, उत्पादक आणि चांगल्या जीवनमानाचे असल्याचे दिसून आले आहे, तर पारंपारिक मॉडेल (Conventional Agricultural Business Model - CABM) कमी उत्पादकता आणि सततच्या अडचणींनी ग्रस्त आहेत [16]. उदाहरणे दाखवतात की तंत्रज्ञान-सक्षम शेती आणि नैसर्गिक शेती खर्च कमी करून, मातीची गुणवत्ता सुधारून आणि नफा वाढवून यशस्वी झाली आहेत [16]. परंतु, हे यश सर्वत्र दिसत नाही. मोठ्या प्रमाणावर अवलंबन होण्यात अडथळे आहेत [16]. हे यश मुख्यतः उद्योजक शेतकऱ्यांच्या (entrepreneurial farmers) नावीन्यपूर्णतेवर अवलंबून आहे [16]. याउलट, सरासरी लहान शेतकऱ्यांसाठी संरचनात्मक अडचणी (खंडित जमीन धारणा, अपुरे पायाभूत सुविधा, उच्च वितरण खर्च, आणि आर्थिक अडथळे) [6, 9] तंत्रज्ञान आणि व्यवस्थापन नवकल्पनांमध्ये गुंतवणूक करणे अशक्य करतात. संशोधन अंतर यावर लक्ष केंद्रित करते की शेतकरी उत्पादक संस्था (FPOs) सारख्या संस्थात्मक संरचनेचा वापर करून वैयक्तिक उद्योजकीय यश सामुदायिक स्तरावर कसे प्रतिकृती बनवता येईल [17].

गृहीतक

हरित पायाभूत सुविधांमध्ये (जसे की AIF) धोरणात्मक गुंतवणूक आणि डेटा-आधारित ॲगटेक (अचूक शेती) चा वेगवान अवलंब, राज्य-स्तरीय आदेश आणि सामूहिक संस्थांच्या माध्यमातून समर्थित असल्यास, आर्थिक-पर्यावरणीय नकारात्मक सहसंबंधावर

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मात करण्यासाठी आवश्यक व्यासपीठ उपलब्ध होते. परिणामी, भारतात मापनीय (scalable) आणि फायदेशीर हरित कृषी व्यवसाय व्यवस्थापन सुनिश्चित होते.

संशोधन कार्यप्रणाली Research Methodology

1. संशोधन दृष्टीकोन आणि रचना

प्रस्तुत अभ्यासामध्ये मिश्र-पद्धतीचा दृष्टिकोन स्वीकारण्यात आला आहे, ज्यात केंद्र आणि राज्य सरकारच्या धोरणांचे तपशीलवार पुनरावलोकन आणि यशस्वी केस स्टडीज [16] तसेच ॲगटेक प्रभावाच्या अभ्यासातून मिळालेल्या अनुभवजन्य संख्यात्मक परिणामांचे संश्लेषण (synthesis) समाविष्ट आहे [4]. हा दृष्टिकोन धोरणात्मक हेतू आणि प्रत्यक्ष जमिनीवरील परिणाम यांच्यातील संबंधांचे मूल्यांकन करण्यास मदत करतो.

2. डेटा स्रोत आणि नमुने

अभ्यासासाठी दुय्यम डेटा स्रोतांचा वापर करण्यात आला. यामध्ये आंतरराष्ट्रीय पीअर-पुनरावलोकन केलेले जर्नल्स, राष्ट्रीय धोरण दस्तऐवज (उदा. NABARD, DAC&FW), आणि ॲगटेक वाढीवरील उद्योग अहवाल [18] यांचा समावेश आहे. विशिष्ट डेटा पॉइंट्समध्ये तंत्रज्ञानाचा आर्थिक आणि पर्यावरणीय परिणाम, सरकारी योजनांतर्गत निधीचे वाटप, आणि शाश्वत कृषी पद्धतींचे (SAPs) अवलंबन दर (उदा. पीक फेरपालट, सेंद्रिय शेती) [12] यांचा समावेश आहे.

3. विश्लेषणात्मक तंत्र

धोरण मॅपिंग (Policy Mapping): सरकारी योजना (उदा. PM-KUSUM, इथेनॉल मिश्रण कार्यक्रम) यांचा हरित अर्थव्यवस्थेच्या सहा स्तंभांशी थेट संबंध स्थापित करून धोरणात्मक सुसंगततेचे मूल्यांकन केले जाते [10].

कार्यकारण अनुमानाचे विश्लेषण (Causal Inference Analysis): अचूक शेतीच्या वापरामुळे संसाधनांमध्ये झालेली घट आणि उत्पादनात झालेली वाढ (उदा. कीटकनाशक आणि उत्पन्न डेटा) यांच्यातील सिद्ध झालेल्या कारण-आणि-परिणाम संबंधांचे मूल्यांकन करण्यासाठी अनुभवजन्य अभ्यासांचे पुनरावलोकन केले जाते [4].

स्थानिकीकरण (Localization): धोरणात्मक आणि तांत्रिक शब्दावलीचा अचूक वापर (उदा. 'मातीचे आरोग्य', 'अचूक शेती', NDVI साठी नॉर्मलाइज्ड डिफरन्स व्हेजिटेशन इंडेक्स) [20] प्रादेशिक धोरण संदर्भासाठी महत्त्वपूर्ण आहे.

विश्लेषण आणि चर्चा: हरित कृषी व्यवसायाचे चालक आणि अडथळे (Analysis and Discussion: Drivers and Constraints of Green Agribusiness)

i. अचूक शेतीचा दुहेरी परिणाम -

वाढ आणि क्षमता: २०१३ ते २०२० दरम्यान, भारतातील ॲगटेक (AgTech) परिदृश्य ५० हून कमी स्टार्ट-अप्सवरून १,००० हून अधिक स्टार्ट-अप्सपर्यंत वाढले [18]. ही वाढ ग्रामीण भागातील इंटरनेट प्रवेशातील वाढ आणि कृषी क्षेत्रातील कार्यक्षमतेच्या वाढत्या गरजेमुळे प्रेरित आहे [18]. ॲगटेक परिसंस्थेमध्ये भारतीय शेतकऱ्यांचे उत्पन्न २५ ते ३५ टक्क्यांनी वाढवण्याची क्षमता आहे [18].

संसाधन कार्यक्षमतेची यंत्रणा: अचूक शेती (Precision Farming - PF) तंत्रज्ञान हरित अर्थव्यवस्थेसाठी महत्त्वपूर्ण आहे. PF GPS, IoT उपकरणे आणि डेटा ॲनालिटिक्सचा वापर करते [21]. ही साधने शेतकऱ्यांना हवामान स्थिती, माती परीक्षण आणि इष्टतम संसाधन वापर (optimized resource usage) यासाठी अचूक माहिती देतात [21]. रिमोट सेन्सिंग उपकरणे, जसे की Normalized Difference Vegetation Index (NDVI) नॉर्मलाइज्ड डिफरन्स व्हेजिटेशन इंडेक्स [20] पिकांचे आरोग्य आणि जोम यांचे मूल्यांकन करण्यासाठी महत्त्वाचे ठरते. या डेटा-आधारित व्यवस्थापनामुळे शेतकरी सिंचन, खत वापर आणि कीटक व्यवस्थापन याबद्दल माहितीपूर्ण निर्णय घेऊ शकतात [20].

अनुभवजन्य प्रमाणीकरण: PF तंत्रज्ञान आर्थिक आणि पर्यावरणीय उद्दिष्टांना एकत्र आणते. संशोधनानुसार, विभेदित खत वापर (differentiated fertilization technology) तंत्रज्ञानाचा उपयोग केल्यास कीटकनाशकांचा वापर १५% पर्यंत कमी होतो, ज्यामुळे शेतीत प्रदूषण कमी होते [4]. याव्यतिरिक्त, उपग्रह निरीक्षणामुळे (satellite monitoring) उत्पादनात २०% पर्यंत वाढ सुनिश्चित होते [4]. ही तंत्रज्ञान-आधारित पद्धत खते आणि कीटकनाशके जलस्रोतांमध्ये वाहून जाण्याचा धोका कमी करते, ज्यामुळे जल प्रदूषण कमी होते आणि परिसंस्थांचे संरक्षण होते [22]. तंत्रज्ञान हा एकमेव महत्त्वाचा चालक आहे जो आर्थिक उद्दिष्ट (कमी खर्च, उच्च उत्पन्न) आणि पर्यावरणीय उद्दिष्ट (संसाधन संवर्धन, कमी प्रदूषण) यांच्यातील विसंगती कमी करतो.

पुढील तक्ता तंत्रज्ञानाच्या महत्त्वाच्या प्रभावाचे सारांश देतो:

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Table 1: Technological Impact of Precision Farming on Resource Efficiency (अचूक शेतीचा संसाधन कार्यक्षमतेवरील तांत्रिक परिणाम)

तंत्रज्ञान/पद्धत (Technology/Method)	परिणाम (Impact Metric)	प्रमाणात बदल (Percentage Change)	हरित अर्थव्यवस्था लाभ (Green Economy Benefit)
विभेदित खत वापर	कीटकनाशक वापर कमी होतो	१५% कमी	प्रदूषण कमी करणे
उपग्रह निरीक्षण	उत्पादनात वाढ	२०% वाढ	उत्पादन आणि नफा वाढ
पीक फेरपालट	जमिनीची आरोग्य सुधारणा	३० दशलक्ष हेक्टर क्षेत्रात वापर	नैसर्गिक भांडवल संरक्षण
एकत्रित तंत्रज्ञान	खते आणि कीटकनाशकांचे वाहून जाणे	कमी करणे	जल प्रदूषण प्रतिबंध

ii. हरित पायाभूत सुविधा आणि जैव-आर्थिक एकात्मतेसाठी धोरणात्मक यंत्रणा-

पायाभूत सुविधा वित्तपुरवठा: काढणीपश्चात व्यवस्थापनातील अपुरा पायाभूत सुविधा (उदा. साठवणूक आणि वाहतूक) हा कृषी व्यवसायासाठी एक गंभीर आव्हान आहे, ज्यामुळे खर्च वाढतो आणि काढणीनंतर मोठ्या प्रमाणात नुकसान होते [6, 9]. यावर उपाय म्हणून, कृषी पायाभूत सुविधा निधी (Agri Infrastructure Fund - AIF) अंतर्गत फार्म-गेट आणि एकत्रीकरण बिंदूंवर पायाभूत सुविधा प्रकल्पांसाठी रु. १,००,००० कोटींचा कर्ज वित्तपुरवठा उपलब्ध करून दिला जातो [5]. या निधीचा उपयोग शीतसाखळी (cold chain), प्रक्रिया युनिट्स आणि मूल्य-वर्धन सुविधांसाठी केला जातो. काढणीपश्चात होणारे नुकसान कमी करून, AIF गुंतवणूक प्रभावी उत्पादन-ते-निविष्ठा गुणोत्तर वाढवते, ज्यामुळे हरित अर्थव्यवस्थेचे संसाधन-कार्यक्षमतेचे उद्दिष्ट पूर्ण होते. या वित्तपुरवठा सुविधेअंतर्गत रु. २ कोटींपर्यंतच्या कर्जासाठी क्रेडिट गॅरंटी फंड ट्रस्ट फॉर मायक्रो अँड स्मॉल एंटरप्रायझेस (CGTMSE) योजनेखाली पत हमी संरक्षण उपलब्ध आहे, ज्यामुळे कृषी उद्योजकांसाठी गुंतवणुकीची जोखीम कमी होते [5].

अक्षय ऊर्जा आणि जैव-अर्थव्यवस्था: सरकारी योजना कृषी क्षेत्राला ऊर्जा क्षेत्राशी जोडून चक्रीय अर्थव्यवस्थेचे (Circular Economy) मॉडेल स्थापित करत आहेत. PM-KUSUM योजनेअंतर्गत सिंचनासाठी सौरऊर्जेचा अवलंब करण्यास प्रोत्साहन दिले जाते, ज्यामुळे कार्बन उत्सर्जन कमी होते आणि शेतकऱ्यांसाठी ऊर्जा सुरक्षा सुनिश्चित होते [23].

याव्यतिरिक्त, इथेनॉल मिश्रित पेट्रोल (Ethanol Blended Petrol - EBP) कार्यक्रम कृषी उत्पादनांना (उदा. ऊस/धान्य अधिशेष) ऊर्जा क्षेत्रात समाविष्ट करतो. सरकारने २०२५ पर्यंत २०% इथेनॉल मिश्रणाचे लक्ष्य ठेवले आहे, ज्यासाठी अंदाजित इथेनॉलची मागणी १,३५० कोटी लिटर आहे [19]. EBP कृषी उत्पन्नासाठी एक स्थिर, हरित बाजारपेठ उपलब्ध करून देतो [14]. हे धोरण उत्पादन क्षेत्राला अक्षय ऊर्जा स्तंभाशी जोडते, ज्यामुळे संसाधनांचा उपयोग वाढतो आणि शेतकऱ्यांसाठी बाजारपेठेतील अस्थिरता कमी होते [10, 19].

Table 2: हरित कृषी व्यवसायाला आधार देणाऱ्या प्रमुख सरकारी योजना –

योजना (Scheme)	प्रमुख लक्ष्य (Primary Objective)	हरित अर्थव्यवस्था योगदान (Green Economy Contribution)
कृषी पायाभूत सुविधा निधी (AIF)	काढणीपश्चात व्यवस्थापन (Post-Harvest Mgmt.)	ग्रामीण गोदामे, कोल्ड चेन, मूल्यवर्धन

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		सुविधांसाठी वित्तपुरवठा, कार्यक्षमता वाढवणे
पीएम-कुसुम योजना (PM-KUSUM)	ऊर्जा सुरक्षा आणि सिंचन (Energy Security/Irrigation)	डिझेल पंपांसाठी सौर ऊर्जा, कार्बन उत्सर्जन कमी करणे
नॅशनल मिशन फॉर सस्टेनेबल ॲग्रिकल्चर (NMSA)	हवामान लवचीक शेती (Climate Resilience)	मातीचे आरोग्य आणि जैवविविधता संवर्धन
इथेनॉल मिश्रण कार्यक्रम (EBP)	जैव-इंधन उत्पादन (Biofuel Production)	कृषी मालासाठी पर्यायी बाजारपेठ, जीवाश्म इंधनावरील अवलंबित्व कमी करणे

iii. ग्रीन स्केलिंगसाठी पद्धतशीर बंधने

धोरणात्मक आणि तांत्रिक प्रगती असूनही, हरित कृषी व्यवसाय व्यवस्थापन मोठ्या प्रमाणावर अवलंबण्यासाठी संरचनात्मक अडथळे कायम आहेत.

लहान आणि खंडित जमीन धारणा: बहुतांश भारतीय शेतकरी लहान भूखंडांवर शेती करतात [6]. जमिनीच्या या खंडित स्वरूपामुळे मोठ्या प्रमाणावर बचत (economies of scale) मर्यादित होते, आणि त्यामुळे आधुनिक उपकरणे व तंत्रज्ञानामध्ये गुंतवणूक करणे कठीण होते [6]. अचूक शेती तंत्रज्ञानासारख्या उच्च प्रारंभिक खर्चावर मात करण्यासाठी सामूहिक गुंतवणुकीची गरज आहे [22].

आर्थिक आणि बाजारपेठेतील अडथळे: शाश्वत निविष्ठा (उदा. सेंद्रिय खते) तुलनेने महाग असू शकतात. तसेच, स्थानिक बाजारपेठेचा विकास अपुरा असल्याने लहान शेतकऱ्यांना त्यांच्या शाश्वत उत्पादनासाठी योग्य आणि स्थिर मागणी मिळत नाही [17]. बाजारपेठेतील अस्थिरता आणि अपुरे विपणन पायाभूत सुविधा या आव्हानांना आणखी वाढवतात [6, 9].

राज्य-स्तरीय अभिनव प्रयोग: या राष्ट्रीय संरचनात्मक जडत्वाला (structural inertia) तोंड देण्यासाठी काही राज्ये विशिष्ट धोरणे अवलंबत आहेत. उदाहरणार्थ, महाराष्ट्र सरकारने कृषी मूल्य साखळीत (value chain) AI आणि GenAI एकत्रित करण्याचे धोरण जाहीर केले आहे. या धोरणाचे उद्दिष्ट परिपक्व AI-आधारित कृषी उपायांचे क्षेत्रीय परीक्षण, प्रमाणीकरण आणि प्रमाणबद्धता (scaling) करणे आहे [15]. हे तंत्रज्ञान-आधारित प्रादेशिक संरचनांवर वाढत्या अवलंबनाचे संकेत देते, ज्यामुळे लहान शेतकऱ्यांसाठी हवामान-लवचिकता आणि उत्पादकता वाढेल [15].

निष्कर्ष आणि धोरणात्मक शिफारसी-

i. निष्कर्ष

भारतातील कृषी व्यवसाय व्यवस्थापनाचे हरित अर्थव्यवस्थेकडे होणारे संक्रमण धोरणात्मक वित्तपुरवठा, ऊर्जा सुरक्षा आणि पायाभूत सुविधा (AIF, PM-KUSUM) तसेच ॲगटेक (उदा. अचूक शेती) मधील जलद प्रगतीमुळे प्रेरित आहे. अचूक शेती तंत्रज्ञान संसाधन कार्यक्षमता आणि उत्पन्न वाढीद्वारे आर्थिक आणि पर्यावरणीय उद्दिष्टांना प्रभावीपणे एकत्र आणते. तथापि, ही क्षमता मोठ्या प्रमाणावर साध्य करण्यासाठी मोठी आव्हाने आहेत. सर्वात गंभीर धोका म्हणजे आर्थिक नफा आणि पर्यावरणीय शाश्वतता यांच्यातील दृढ नकारात्मक सहसंबंध [7]. हा व्यवहार्यता विरोधाभास (viability paradox) सूचित करतो की जोपर्यंत पर्यावरणीय कारभाराला थेट आर्थिक मूल्य मिळत नाही, तोपर्यंत शाश्वत पद्धतींचे अवलंबन मोठ्या प्रमाणावर होणार नाही.

ii. शिफारसी

शाश्वत व्यवस्थापन साध्य करण्यासाठी धोरणात्मक शिफारसी खालीलप्रमाणे आहेत:

i. सामूहिक कृतीचे संस्थात्मककरण आणि प्रमाणीकरण:

धोरणांनी केवळ शेतकरी उत्पादक संस्थांना (FPOs) प्रोत्साहन देण्याऐवजी, त्यांच्या कार्यासाठी सक्रियपणे अनुदान दिले पाहिजे. हे अनुदान सामूहिक स्तरावर उच्च-खर्चाचे तंत्रज्ञान (उदा. अचूक शेती सेवा, GPS-आधारित उपकरणे) आणि हरित निविष्ठांच्या खरेदीसाठी वापरले जावे [6, 17]. सामूहिक कृती लहान आणि खंडित जमीनधारणेमुळे येणाऱ्या अडथळ्यांवर मात करते आणि उद्योजकीय नवकल्पनांना सामूहिकरित्या प्रतिकृती बनवण्यासाठी व्यासपीठ प्रदान करते.

ii. लक्ष्यित हरित वित्तपुरवठा आणि जोखीम कमी करणे:

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भारतीय स्टेट बँक (SBI) आणि नाबार्ड (NABARD) सारख्या संस्थांनी शेतकऱ्यांची जोखीम अधिक चांगल्या प्रकारे समजून घेण्यासाठी ॲगटेक डेटाचा वापर केला पाहिजे [18]. शाश्वत पद्धतींचा अवलंब करणाऱ्या ABM मॉडेल्सना प्रोत्साहन देण्यासाठी जोखीम-समायोजित कर्ज धोरणे (differential interest rates) आणि विमा उत्पादने लागू करावीत. विशेषतः, नॅशनल मिशन फॉर सस्टेनेबल ॲग्रिकल्चर (NMSA) अंतर्गत प्रमाणित केलेल्या पद्धतींना पुरस्कृत केले पाहिजे.

iii. मूल्य शृंखला परिवर्तन (Value Chain Transformation):

सरकारने हरित उत्पादनांसाठी प्रमाणन आणि प्रीमियम बाजारपेठ चॅनेल तयार करण्यावर लक्ष केंद्रित केले पाहिजे. पर्यावरणीय कारभाराचा आर्थिक खर्च उच्च बाजारभावाच्या माध्यमातून भरून काढला जावा, ज्यामुळे व्यवहार्यता विरोधाभास दूर होईल [7]. पायाभूत सुविधा गुंतवणुकीमध्ये (AIF) शाश्वत आणि सेंद्रिय वस्तूंसाठी विशेष सुविधा (उदा. विकेंद्रित साठवणूक आणि प्रक्रिया युनिट्स) उभारण्यास प्राधान्य दिले पाहिजे[5]. इथेनॉल मिश्रण कार्यक्रमासारख्या (EBP) बायो-इकोनॉमी लिंकेजचे सातत्याने संस्थात्मककरण केले पाहिजे, जेणेकरून कृषीमालासाठी स्थिर, चक्रीय बाजारपेठ उपलब्ध होईल [19].

भविष्यातील संशोधन दिशा -

भविष्यातील अभ्यासांनी FPO मॉडेल्सद्वारे SABM चे प्रमाणीकरण केल्यास त्यांची आर्थिक व्यवहार्यता (economic viability) कशी बदलते, यावर लक्ष केंद्रित केले पाहिजे. सामूहिक कृतीमुळे आर्थिक आणि पर्यावरणीय कार्यक्षमतेतील मॅक्रो-स्तरीय नकारात्मक सहसंबंध यशस्वीरित्या दूर होतो की नाही, हे सिद्ध करण्यासाठी अनुभवजन्य डेटा आवश्यक आहे. याव्यतिरिक्त, AI/डिजिटल धोरणांचा विविध शेतकरी विभागांवर होणारा परिणाम आणि समानता (equity) सुनिश्चित करण्यासाठी रेखांशाचा (longitudinal) अभ्यास करणे महत्त्वाचे आहे [8, 15].

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Original Article

अदोगतीचे राजकारण नव समाज आणि प्रगत राष्ट्र निर्मितीला विघातक

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सारांश :

स्वातंत्र्यानंतर भारतीय राजकारणाकडून नवसमाज निर्मिती, प्रगत राष्ट्र उभारणी, लोककल्याण, नैतिकता व संविधानिक मूल्यांचे जतन अपेक्षित होते. मात्र वर्तमानकालीन राजकारणात सत्तालोलुपता, अहंभाव, स्वार्थ, जात-धर्माधारित राजकारण, एकाधिकारशाही प्रवृत्ती व नैतिकतेचा ऱ्हास मोठ्या प्रमाणावर दिसून येतो. या अनितीपूर्ण राजकारणाचा सामाजिक, आर्थिक, सांस्कृतिक, शैक्षणिक, कृषी व लोकशाही व्यवस्थेवर प्रतिकूल परिणाम होत आहे. सदर शोधनिबंधात राजकारणातील नैतिक व अनैतिक प्रवृत्ती, निर्णयप्रक्रिया, धोरणात्मक अपयश, आरक्षणाचे राजकारण, गटतटवाद, अध्यात्मिकतेचा गैरवापर व व्यक्तिकेंद्रित नेतृत्व यांचा अभ्यास करण्यात आला आहे. वर्णनात्मक निरीक्षण पद्धतीच्या आधारे स्थानिक ते राष्ट्रीय स्तरावरील राजकीय प्रक्रियांचा आढावा घेण्यात आला आहे. अभ्यासातून असे स्पष्ट होते की, नैतिकता, कायदा, संविधान व लोककल्याण यांना दुय्यम स्थान देणारे राजकारण नवसमाज आणि प्रगत राष्ट्रनिर्मितीस गंभीरपणे विघातक ठरत आहे. त्यामुळे लोकशाही मूल्यांवर आधारित, नैतिक, विधायक व लोकाभिमुख राजकारणाची नितांत गरज अधोरेखित होते.

मुख्यशब्द : *राजकीय नैतिकता, अनितीचे राजकारण, लोकशाही मूल्ये, अहंभावी नेतृत्व, सत्तालोलुपता, एकाधिकारशाही, आरक्षणाचे राजकारण, जात-धर्माधारित राजकारण, संविधानिक मूल्ये, लोककल्याण, राष्ट्रनिर्मिती*

प्रस्तावना:

आजच्या राजकारणातील-राजनीतीत समाज अर्थ उद्योग संस्कृती नीती मूल्य राष्ट्र हित निर्णय धोरनामध्ये अवनिती स्वार्थ अहंभाव श्रेष्ठत्व पद सत्तेची हाव लालसा बाळगून कायमस्वरूपी इतरत्र सर्वच क्षेत्रात आपला आणि आपल नेतृत्व राजकीय पक्षाचे वर्चस्व ठेवण्यासाठी नैतिक मूल्यांना मूठमाती दिसत आहे. राष्ट्रहित आणि सुसंस्कृत मूल्ययुक्त समाज नैतिकतेच राजकारण विधायक नियम कायदा धोरण निर्णय घेण्यात अक्षम आणि अपयशी ठरू पाहत आहेत. राष्ट्रीय व सार्वजनिक सत्तेची धोरण निर्णयाची अंमलबजावणीची रचना स्वतःच्या नेतृत्व आणि अहंभावी संकुचित भावना प्रवृत्तीतून विशाल लोकसंख्येच्या भोळ्या - भाबड्या जनतेवर लाधत आहेत. आपण ही सर्वच अगदी उघड्या डोळ्यांनी मुकाट्याने दूरदर्शन वर्तमानपत्रे विधिमंडळ संसद सार्वजनिक सभा माध्यमातून बघत आहोत. मात्र लिहायचे कुणी.? मांडायचे कोणी.?त्यांना विचारायचे कुणी. लिहिणाऱ्या आणि विचारणाऱ्या व वाचा फोडणा ऱ्या मांडणाऱ्या लोकांना हे स्वस्त आणि स्वतंत्र लोकशाहीत जगू देत नाहीत. या भीतीपोटी आपल्यातला ही कुणी पुढे येत नाही. हे आमच्या भारतीय लोकांचे समाजाचे दुर्दैव म्हणायचे का.?याच कारणामुळे भारतीय राजकारणातील सत्ता पिपासु सत्तेची हाव आणि श्रेष्ठत्व अहमभावातून नैतिकतेच्या सभ्य समाज अर्थ सांस्कृति कृषी शिक्षण लोकशाही मूल्य आणि कायदा संविधानाला पायदळी तुडवून अनितीचे राजकारण करण्याचे काम जणू काही त्यांना भारतीय लोक/समाजाने आणि कायद्याने अधिकारच दिला आहे.

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त्यामुळेच ते बिनधास्तपणे अनितीचे अनैतिकतेचे राजकारण निर्णय धोरण व वर्तन करीत आहेत. असेच म्हणावा लागेल. खरे तर स्वतंत्र्यानंतरच राजकारण हे नव समाज प्रगत राष्ट्र सुसंस्कृत सभ्य नागरिक लोकशाही मूल्ये विज्ञानवादी संशोधनवादी जागृत उदारमतवादी स्वातंत्र युक्त भारतीय समाज समाजाची निर्मिती राष्ट्राचा एकसंधपणा राष्ट्रीय एक्य याकरिता स्वतंत्र सार्वभौम राज्य आणि संविधान त्याचे पावित्र्य आमच्या राज्यकर्त्यांनी राजकीय नेत्यांनी राजकारणातील वरिष्ठांनी अनुभवी नेत्यांनी सुरुवातीच्या काळात नैतिकतेची जोड देऊन लोककल्याणकारी राजकीय भूमिकेतून सत्ता आणि सत्तेचा सत्व उपयोग विधायक व नैतिकतेच्या भावनेतून केलेला असला. तरी आजच्या भारतातील राजकारणाच्या संदर्भातील विचार करता भारतीय राजकारणात बहुतांशी राजकीय नेते राज्यकर्ते अहंभावी जात धर्म श्रेष्ठत्व प्रभाव निर्माण करू सत्ते करिता अनैतिकतेच्या राजकारणाला अनितीला स्वीकारून सत्तारूढ होताना दिसत आहे. अशा या अनितीच्या राजकारणातील निर्णय धोरण नवा समाज प्रगत राष्ट्र निर्मितीतील एक मोठे आव्हान आहे. आपण सर्व भारतीय सुज्ञ नागरिक व मतदार सुशिक्षित बंधू आणि भगिनींनी हे लक्षात घेऊन हा देश पुन्हा अनितीने वागणाऱ्या लोकांच्या हातामध्ये देऊन हुकूमशाही एकाधिकारशाहीला स्वीकारायचे का.

संशोधनाची उद्दिष्टे :

- १.वर्तमानकालीन राजकारणातील नैतिक आणि अनैतिकतेच्या विचार दृष्टिकोनाचा अभ्यास करणे.
- २.राजकारणातील विधायकता आणि नैतिकतेच्या अभावाच्या राजकीय प्रक्रियांचा परिणामांचा अभ्यास करणे.
- 3.सामाजिक आर्थिक राजकीय कृषी बेरोजगारी महिला आरक्षणे राष्ट्रीय प्रश्न-समस्या सोडवण्यात अक्षमतेच्या राजकारनाचा अभ्यास करणे.

संशोधनाची गृहितके :

- अहमभावी सुड भावना श्रेष्ठत्व एकाधिकारशाही संकुचित राजकीय धोरण निर्णय भूमिकांचा स्थानिक ते राष्ट्रीय राजकारणात प्रभाव वाढतो.
- राजकीय समाजिक एकसंधता परिवर्तन प्रगतीचा आणि लोकशाही मूल्य संविधानिक संस्थांचा पुढाकार मर्यादित व कमी झाल्याने एका अधिकारशाही नेतृत्व व्यक्ती प्रधान राजकारण निर्णय धोरण निर्माण होते.

संशोधन अभ्यास पद्धती: शोधनिबंध तयार करण्यासाठी वर्णनात्मक निरीक्षण अभ्यास पद्धतीचा आधार घेतला आहे.

नमुना निवड : संशोधना करता नमुना निवड स्थानिक ते राष्ट्रीय राजकारणातील नीती मूल्य - नैतिकता विधायकता अभावाच्या राजकीय प्रक्रियांचा नमुना निवड करण्यात आला आहे.

निष्कर्ष : समाज राष्ट्र विकास/परिवर्तन संविधान नियम कायदा मूल्य लोक कल्याण या पेक्षा सत्ता पद श्रेष्ठत्वं अहंभावी राजनीती म्हत्वाची वाटत असल्याने असे राजकारण व राजनीती विघातक हे निश्चितच.

राजकारणात कायदा विधायकता आणि लोक कल्याण विचार दूरदृष्टी दूरदृष्टी कोणाचा अभावाआत्मक राजकारणाचा प्रभाव वाढत आहे. :

स्थानिक प्रादेशिक राष्ट्रीय राजकारणामधील सहक्रिय राजकीय नेता पुढारी कार्यकर्ता राजकीय पक्ष संघटना स्पर्धेच राजकारणामुळे विधायक नैतिकता कायदा लोकशाही मूल्यांना पायदळी तुडवून आपल्या अहंभावी नेतृत्व राजकीय भूमिका धोरण दृष्टिकोनातून राजनीती करताना दिसत आहे. समाजात संकुचित पद्धतीने राजकीय विचार राजकीय घोषणा आश्वासने नेहमीच भविष्यात आपण पूर्ण करू किंवा नाही याचा कोणताही प्रकारचा विचार न करता केवळ भाषण बाजी फसवणूक दिशाहीनता करत आहे. आजच्या प्रगत विज्ञानवादी ई -प्रशासन समाज माध्यमे आणि संपर्काची प्रभावी साधने यामुळे राजकारणात दूरदृष्टी प्रभावी विचार धोरण निर्णय समाजाच्या प्रत्येक व्यक्ती मतदाराप्रत राबवून प्रशासनावर सहजपणे राजकारणातील आपले श्रेष्ठत्व आणि प्रभाव कायम ठेवू शकतात..मात्र यांचा उपयोग केवळ आपल्या अहंभावी निर्णय धोरण कृतीयुक्त राजकारणात पुन्हा पुन्हा खोटे परंतु रेटून लोकांच्या मनावर बिंबवत मोठ्या प्रमाणावर संकुचित भावनेतून राजकीय क्रिया प्रक्रिया करताना दिसत आहेत .

राजकारणात नैतिकतेला स्थान नसल तरी कायदा आणि संविधानिक नियमांना पायदळी तुडवून एकाधिकारशाही राजकीय धोरण कृती निर्णयाचा प्रत्येक राजकीय पक्ष नेता सुडाचे आणि प्रतिकाराचे राजकारण निर्माण होताना सध्या तरी दिसत आहे. संसदेत किंवा राज्य विधिमंडळामध्ये सत्ताधारी तितकाच विरोधी राजकीय पक्ष महत्त्वाचा असतो. कोणताही प्रादेशिक राष्ट्रीय मानवी आपत्ती राष्ट्रीय सुरक्षा राष्ट्रकल्याण राष्ट्रीय एकात्मता राष्ट्राची प्रतिभा आणि राष्ट्रीय एके निर्माण करील असी चर्चा झाली पाहिजे. सत्ताधारी आणि विरोधी राजकीय पक्षांनी मिळून विधिमंडळे संसदेच्या सभागृहामध्ये बसून विचार मंथन करून लोकाभिमुख राष्ट्रीय हिताची धोरण कोणत्याही प्रकारचा अहंभाव संकुचित पणा किंवा श्रेष्ठत्वाची भावना राजकीय भूमिका न ठेवता राष्ट्रीय कल्याणासाठी संविधानिक कायदाआत्मक दृष्टिकोनातून निर्णय धोरणाची अंमलबजावणी करण्याची जबाबदारी आपल्या शासनाला शासनकर्त्यांना दिली पाहिजे. त्या माध्यमातून सहजगत्या विधायक आणि नैतिक राजकीय राजकारणाची निर्मिती होईल यात शंका नाही. सध्या राजकारण राजकीय भूमिका राजकीय नेता आणि राजकीय पुढारी नेतृत्व यांचा बारकाईने अभ्यास केल्यास त्यांच्या निर्णय धोरण कृतीमध्ये संकुचित भावना अवास्तव आत्ममिक धार्मिक दृष्टिकोन अधिक प्रमाणात बलवत आहे. या भावनेतून निर्णय धोरण इतरांच्यावर लादताना दिसत आहेत. धोरण निर्णय योग्य की अयोग्य हे न बघता केवळ श्रेष्ठत्व एकाअधिकार व्यक्ती प्रधान नेतृत्व विचारातूनच राजकीय धोरण आखताना विधिमंडळे संसद समाजामध्ये राजकारण करताना दिसत आहे. अशा अवनीती राजकारणाने समाजात लोकशाही मूल्य सामाजिक

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सलोखा राष्ट्रीय सामाजिक भावना सहकार्याची प्रवृत्ती यांचा अभाव निर्माण होतो. समाजात राजकीय नेता राज्यकर्तेच्या विषयी अविश्वासाची भावना आता तरी निर्माण होताना दिसत आहे.

प्रत्येक निवडणुकांच्या वेळी प्रत्येक राजकीय पक्ष पक्षनेता नेतृत्व सत्ता अधिकार श्रेष्ठत्व प्राप्तीसाठीच सत्तेच्या लालसापोटी प्रचार समाज माध्यमातून करताना दिसत आहेत : राजकारणातील मी आणि माझा राजकीय पक्ष नेतृत्व श्रेष्ठत्व अहंभावी प्रवृत्तीत दिवसें-दिवस वाढतच आहे खरे तर चांगल्या व्यक्तींनी राजकारणामध्ये प्रवेश करणे हे समाज राष्ट्र हिताच्या दृष्टिकोनातून महत्त्वाचे आहे. मात्र सध्याच राजकारण हे दादागिरी हुकूमशाही पद्धतीने प्रत्येक राजकीय पक्षातील बहुतांशी नेता कार्यकर्ते राजकारणी बिनधास्त करत आहे. या प्रवृत्तीचा समाज राष्ट्र व्यक्ती राजकीय परिस्थितीवर याचा काही परिणाम चांगले किंवा वाईट होतील याची राज्यकर्त्यांना सध्या तरी भान राहिल नाही.

आजच्या राजकीय प्रक्रियेत उत्तम तज्ञ माहिती अभ्यासू नेता राजकारणी व्यक्ती लोकांची मोठ्या प्रमाणात उणीव : भारतीय राजकारणाचा विचार करता स्थानिक राज्य राष्ट्रीय राजकारणामध्ये उत्तम अष्टपैलू अभ्यासू आणि वकृत्व असणाऱ्या व्यक्तीं सहभागी होत नाही. यासे कारण अभ्यासू दूरदृष्टी आणि विचारपूर्वक चांगला वक्ता यांचे म्हणणे आणि मांडणे बोलणे लोकांना मतदारांना राजकीय नेत्यांना व्यक्तींना त्याचे म्हणणे पचत नाही रुचत नाही. त्याच्या नेतृत्वाला स्वीकारण्यास अक्षमता दाखवली जाते. परिणामी मतदार जागृत नसल्यामुळे त्यांनाही चांगले राज्यकर्ते कोण आहे कुणाला स्वीकारा कुणाला मतदान करावे याचा विचार न करता केवळ लोभ फायदा करिता तुटपुंज्या अर्थरजनाकरिता आपले किमती मत नको त्या अक्षम राजकीय पक्ष व्यक्तीला नेत्याला टाकत असतात. आपापल्या प्रदेशाचे राज्याचे विभागाच प्रश्न समस्या विधिमंडळ आणि राष्ट्राच्या संसदेत प्रसार माध्यमाच्या माध्यमातून सोडविली पाहिजेत. लोकांचा सहभागातून गांभीर्याने त्या प्रश्नाची सोडवणूक अमलबजावणी करणारी यंत्रणा जागृत करून विचारणा करने. मतदारापर्यंत त्याच्या कल्याणासाठी सार्वत्रिक लोक उपयोगी कामे ही उत्तम नेता राजकारणी व्यक्ती साध्य करू शकतात. मात्र आजच्या राजकारणाच्या प्रक्रियेत उत्तम अभ्यासू खंबीर नेतृत्व लोक नेता निर्मितीचा अभाव मोठ्या प्रमाणात दिसून येतो. म्हणून त्यामुळे भारताच्या राष्ट्रीय राजकारणात फार कमी उत्तम प्रभावी वकृत्व वक्ता लोक नेता उरले आहेत.

जर भारताच्या राष्ट्रीय राजकारणामध्ये मतदारांनी आपआपल्या मतदार क्षेत्रातील खंबीर नेतृत्व खरे कर्तुत्ववान नेता लोकनेता लोकाभिमुख राजकीय कार्यकर्ता म्हणून अशा व्यक्तीला देशाच्या राज्य आणि राष्ट्रीय पातळीवर आमदार खासदार म्हणून निवडून दिल्यास अशा व्यक्ती नेता राज्याच्या विधिमंडळ आणि राष्ट्राच्या संसदेमध्ये नक्कीच उत्तम निर्णय धोरणे कार्य लोककल्याण राष्ट्रहित सर्व समावेशक असे कामे होऊ शकतील. परंतु भारताच्या स्थानिक ते राज्य राष्ट्रीय राजकारणामध्ये याची फार मोठी पोकळी निर्माण झालेली आहे. पर्यायाने "दगडापेक्षा वीट आणि विटेपेक्षा दगड" म्हणी प्रमाणे अशा प्रकारची भारतीय राजकारणाची अवस्था ही अविश्वास आणि अनैतिकतेच्या दिशेने वाटचाल करताना दिसत आहे. जनकल्याण लोकहित आणि राष्ट्रहिताच्या दृष्टीने मोठी गांभीर्याची बाब आहे. हे आपल्या राज्यकर्त्यांनी आणि आपण मतदारांनी लक्षात घेतले पाहिजे.

आज जकारणात बहुतांशी एकाअधिकारशाही राजकीय पक्ष व नेतृत्व राजनीतिकडे झुकताना दिसत आहे : भारताच्या स्थानिक ते राष्ट्रीय राजनीति मध्ये आज विरोधासाठी - विरोध, अहंभाव पक्ष श्रेष्ठत्व, नेतृत्व वर्चस्व, प्रस्थापिताचे राजकारण, राज्यकर्ते,नेतागिरी प्रत्येक राजकीय पक्ष संघटनातील प्रत्येक नेता वक्ता राज्यकर्ता आपल्या नियंत्रणाआधीन आपल्याच वर्चस्वाखाली इतर राजकीय पक्ष नेता कार्यकर्ता मतदार हा कायम कसा ठेवता येईल. यासाठी समाजात जात,धर्म,पंथ नको ती खोटी आश्वासने जी आपण सत्तेवर आल्यानंतर कधी पूर्ण करू शकू किंवा नाही. याची कोणत्याही प्रकारची शाश्वती नसताना ही प्रत्येक निवडणुकीच्या पूर्वी भारतीय राष्ट्रीय राज्य प्रादेशिक स्थानीक राजनीतीमध्ये सर्रास याचा उपयोग करताना दिसत आहे. याची जाणीव त्या त्या राजकीय पक्षाच्या नेतृत्वाला नेता राजकारण्यांना माहिती आहे.मात्र तसे केले नाही तर आपल्याला मतदारांची लोकांची समाजाची सहानुभूती मिळणार नाही. लोक दुसऱ्याच राजकीय पक्षी नेता यांना मतदान करून निवडून देतील. असे होऊ नये म्हणून समाजात वादं –संघर्ष निर्माण करून. प्रसारमाध्यमाच्या साह्याने सहानुभूती राजनीती राजकारण करणे. याचा सर्वांनीच आता परिपाठ गिरवलेला दिसतो. यातल्या कुणालाही राष्ट्राच्या हिताचे कल्याणची लोककल्याणाची सुशासन व्यवस्थेचे घेणे- देणे दिसत नाही. केवळ आपल्या राजकीय पक्षाला आणि मला सर्वात अधिक मते मिळून विजयी कसे होईल. या करिता सर्व राजनीतीचा खटाटोप करताना बहुतेक राजकारणी नेता कार्यकर्ता नेतृत्व आज तरी निर्माण होताना दिसत आहे. अशा सत्ता पीपासून,सत्ता,अधिकार, स्वार्थी लोभाचा हव्यास असणाऱ्या कोणत्याही राजकीय नेता कार्यकर्ता नेतृत्व राजकीय पक्षाला आपल्या जनतेची आपल्याला निवडून दिलेल्या मतदाराची आणि आपल्या प्रदेशाच्या विकासाची परिवर्तनाचे आरोग्याची शिक्षणाची कृषी क्षेत्राचे बेरोजगाराची प्रश्न समस्या सोडवण्यामध्ये अक्षम होण्याशिवाय कोणत्याही प्रकारचा पर्याय नाही. शिवाय मनोमन आपल्या प्रदेशातील मतदान क्षेत्रातील त्वरित व झपाट्याने विकास प्रगती केल्यास मतदार तेथील रहिवासी जागृत बनतील सुशिक्षित होतील आणि मग आपल्याला ती मतदान करतीलच याची शास्वती नाही. म्हणून त्यांच्यात वेगवेगळ्या प्रकारच्या समस्या वाद विवाद कायम कसे ठेवता येतील त्या माध्यमातून समाजाची जनतेची सहानुभूती घेण्याचे पर्याय शोधून आपल्या राजकीय नेतृत्व सत्ता अधिकार राजकीय पक्षाचे वर्चस्व हे दंडेल शाही, दादागिरी, बळजबरीने तेथील मतदार समाजावर लादण्याचा प्रयत्न करून एका अधिकार शाही निर्माण करण्यात कडे राजनीतीचा कल यापूर्वी होता आणि आजही होत आहे मात्र आज भारतीय राष्ट्रीय स्थानिक प्रादेशिक अगदी खेड्याप्रत हा दृष्टिकोन छोटा मोठा राष्ट्रीय प्रादेशिक राजकीय नेता राजकारणी नेतृत्व व्यक्ती मध्ये ठासून भरलेला आहे

आजच्या राजनीति धोरण निर्णय प्रक्रियेमध्ये अध्यात्मिकता जाती धर्म अवास्तव आणि अविचाराचे राजकारण : राज्य आणि राष्ट्रीय पातळीवर मोठ्या प्रमाणात अध्यात्मिक श्रद्धा भावनेला राजकारणाची जोड दिल्यामुळे अध्यात्मिकतेतून अवास्तव राजकीय धोरणे

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निर्णय राज्याच्या विधिमंडळात त्याचबरोबर राष्ट्रीय राजकारणातील संसदेमध्ये सर्रास होताना दिसत आहे. प्रत्येक निवडणुकीच्या वेळी प्रत्येक आध्यात्मिकता श्रद्धाभावना जोडून त्या त्या मतदारसंघातील राज्यातील मतदारांना तेथील अशिक्षित निरक्षर आणि बुद्धी क्षीण असणाऱ्या लोकांना भावनिक बनवणे सोपे झाले आहे. याची नाडी राज्यकर्त्यांना राजकारणी नेत्यांना कार्यकर्त्यांना मिळाली आहे. लोकांना भावनिक बनवून लोकांच्या संघर्ष वाद लावून आपण नामा निराळी बाजूला राहून लोकांची सहानुभूती घेऊन निवडणूक लढवायची आणि निवडणुकीत अध्यात्मिकतेचा मुद्दा मांडून मते मिळवायची कौशल्य प्रत्येक निवडणुकीतील राजकीय पक्ष व्यक्ती राजकीय नेत्यांनी आता निवडणुकीचे हत्यार म्हणून वापरण्यास सुरुवात केलेली आहे. उदाहरणार्थ राम मंदिर बाबरी मशीद, देवी देवता सत्तेची हवा असणारी महंत साधू,संत अशी मुद्दे समाजात कायम पेटवत ठेवून आपल्या राजकीय वर्चस्व नेतागिरी प्रभाव तेथील मतदार समाजावर प्रस्थापित करताना दिसतात. इथे मात्र एक आपल्या लक्षात आली पाहिजे की राजकारण हे केवळ राम मंदिर गणपती मंदिर देवी देवता किंवा भोंदूगिरी भोंदू महाराज यांचा आणि राजकारणाचा कोणत्याही प्रकारचा संबंध येत नाही. ज्या राम मंदिर किंवा मूर्तीची स्थापना अयोध्यात केली त्या राम मंदिराचा मुद्दा घेऊन विशिष्ट राजकीय पक्षांनी निवडणुका जिंकल्या लोकांना आपलंसं बनवण्याचा प्रयत्न या मुद्द्याहून केला तिथेच त्या राजकीय पक्षाचा लोकप्रतिनिधी प्रचंड मताधिक्याने हरला. असे भावनिक मुद्दे राजकीय पक्ष नेता श्रेष्ठी राजकारणांनी कुठपर्यंत ठेवावा आणि कुठपर्यंत तो न्यावा याच भान राज्यकर्त्यांना उरलेले दिसत नाही. लोक मतदार इतकी आता इतकी अज्ञानी राहिली नाहीत हे या राजनीति कर्त्यांनी लक्षात घेतली पाहिजे. अशी मुद्दे फार काळ रेंगाळच ठेवणे राष्ट्रीय राजकारणाच्या प्रगतीला विघातक ठरतात.

आरक्षणाचे राजकारण : अलीकडच्या राजकारणामध्ये राज्य आणि राष्ट्रीय राजकीय प्रक्रिये धोरणामध्ये राजकारण आणि आरक्षण असे एक समीकरण राजकारण्यांनी तयार केलेले आहे. आज तुम्हा आपल्या सर्वांना स्पष्ट दिसते. यामुळे लोक कल्याण आणि राष्ट्रहित साधले जाऊ शकत नाही. भारतीय लोकांनी समाजाने ही लक्षात घेतले पाहिजे "की आरक्षण हा प्राचीन काळापासून तर अर्वाचीन काळापर्यंत येथील प्रस्थापित धनाडे स्वार्थी हुशार सत्तापिपासू लोकांनी मोठ्या प्रमाणात उपेक्षित गाव कुसा बाहेर राहणाऱ्या अशिक्षित निरक्षर समाजाला हेतू पुरस्कर गुलाम बनवलेल्या विशिष्ट जमाती आणि जातीच्या लोकांना माणूस म्हणून जगण्याची संधी, मार्ग निर्माण करून समाज विकासाच्या पातळीवर आणणे. सामाजिक संविधानिक / कायदात्मक मानवी समाजाला रुचेल अशा खऱ्या हेतूने आरक्षणाच्या माध्यमातून त्यांना ही भारत ही मायभूमी आणि देश आहे. म्हणून माणूस म्हणून जगण्याचा हक्क अधिकार न्याय निसर्गनेच दिलेला आहे. ज्यांच्या कष्टावर हा देश उद्योग अर्थ कृषी क्षेत्र अन्नधान्य उत्पादन आणि उत्पादने,रस्ते अशा सर्व प्रकारची कष्टाची कामे करणाऱ्या जन-जातीच्या मुलांना शिक्षण नोकऱ्या संशोधन अशा सर्व क्षेत्रांमध्ये त्यांच्या कर्तृत्वाच्या क्षमतेनुसार संधी प्राप्त करून देणे म्हणजे आरक्षण. मात्र येथील आरक्षण मागणाऱ्या आरक्षणाचा बाहू करणाऱ्या राजकीय मंडळींनी हे लक्षात घेतली पाहिजे की खरोखरच आपल्याला आरक्षणाची गरज आहे काय? खरंच आपण प्राचीन काळापासून तर अर्वाचीन काळामध्ये इतर उपेक्षित जन-जाती प्रमाणे मागासलेला आहोत का? आपल्या अन्न वस्त्र निवारा यासारख्या गरजा आपण पूर्ण करू शकलो नाही का.? आपल्याला या आधी संधी मार्ग खुले नव्हते का.? ज्यां लोकांना जागा जमीनीच नाही त्यांचे काय.? आपल्याला असूनही श्रम करण्यात अक्षम का.? आज आरक्षणाचा राजकारण राजनीती करत असताना आपण सुशिक्षित आधीच प्राचीन काळापासून वेगवेगळ्या प्रकारच्या संधी मार्ग हक्क आणि अधिकार प्राप्त केलेल्या लोकांनी हे लक्षात घेतली पाहिजे की आपल्या कडे काही कोटीचा लाखाचा एक बंगला त्या बंगल्यामध्ये दोन-तीन माणसे आणि चार फोर व्हीलर टू व्हीलर ट्रॅक्टर इस्टेट बँकेत खात्यावर पैसे हे सर्व करारनामे तुमच्या पॅन आणि आधार कार्ड ई - प्रणालीला जोडलेले असताना ही आरक्षणाचे राजकारण करत आहोत.

कोणत्याही प्रकारचा आरक्षणासंदर्भात अभ्यास आणि कायदात्मक दृष्टिकोनाचा विचार न करता केवळ भोळ्या भाबड्या जनतेला लोकांना जातीतून धर्मातून आरक्षणाच्या माध्यमातून भावनिक बनवून संघर्ष प्रेरित करून राजकीय पोळी भाजण्याचे राज्यकर्त्यांनी आता तरी विसरले पाहिजे. अनेक वेळा उच्च न्यायालय सुप्रीम कोर्टामध्ये जगजाहीर निकाल बाहेर प्रसार माध्यमाच्या माध्यमातून राज्यकर्त्यांना ही आरक्षण मागणाऱ्या समाजाला ही याची संपूर्ण माहिती मिळालेली असून सुद्धा आरक्षणाच्या कुबड्या आपण का घेत आहोत. आपण आरक्षणामुळे का पांगळे बनवत आहोत. खरंच आरक्षणाने तुमचा – आपला विकास होणार आहे. याचा ही विचार केला पाहिजे केवळ सुडभावनेने विरोध व केवळ राजकीय पोळी भाजण्यासाठी प्रसिद्धीसाठी विशिष्ट राजकीय पक्ष सामाजिक संघटना आरक्षणाचे राजकारण जर करत असाल तर समाजात दूषित वातावरण निर्माण होऊन एक समाज दुसऱ्या समाजाविरुद्ध एक जात दुसऱ्या जाती विरुद्ध असे संघर्ष वारंवार उदभवतील. राष्ट्रीय सामाजिक विषमता अन्याय द्वेष मत्सराचे राजकारण निर्मितीला खतपाणी मिळाल्यासारखे राजनीती तयार होईल.की काय अशी भीती आजच्या राजकीय प्रक्रियेच्या मधून पुढे येत आहे.म्हणून सावधगिरीने राज्यकर्त्यांनी प्रत्येक राजकीय पक्षाच्या नेतृत्वांनी कार्यकर्त्यांनी मतदारांनी हे लक्षात घेतली पाहिजे की कोणत्याही प्रकारचा आरक्षणाच राजकारण न करता खऱ्या अर्थाने गरजू उपेक्षित लोकांना मदत देऊन त्यांचा ही विकास उन्नती मार्ग संधी मोकळया व्हाव्यात अशा पद्धतीचे कायदे धोरण निर्णय प्रत्येक राज्यात आणि राष्ट्रीय राज्यकारणात अवलंबले गेली पाहिजे.त्याची प्रामाणिकपणे न्याय अमलबजावणी झाली पाहिजे

गट-तट आणि फुटाफुटीचे कुटील राजकारण: आज भारतीय प्रदेश राज्य राष्ट्रीय राजकारणामध्ये राजकारणाच्या स्वार्थ हेतूने अनेक राजकीय पक्षांमध्ये वेगवेगळ्या प्रकारची गट -तट केवळ अहंभाव वर्चस्व श्रेष्ठत्व सत्ता आणि खुर्चीची हाव यातून निर्माण होत आहेत. आधीच्या राजकीय पक्षामध्ये मंत्रीपद अधिकार दिला नाही. म्हणून रागाने द्वेषाने आधीच्या राजकीय पक्षाला नेत्याला नेतृत्वाला सोडचिठ्ठी देऊन दुसऱ्या राजकीय पक्षांमध्ये स्वार्थ साध्य करण्या करिता सत्ता अधिकार पदाच्या लालसेने पक्षांतर करणे फुटाफुटीच

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राजकारण सुरू केले आहे. येथेच न थांबता आमची राजकारण राजकीय पुढारी नेता श्रेष्ठ अनुभवी राज्यकर्ते राजकीय पक्षांची चिन्हे सुद्धा पळवतात चोरतात असंच म्हणावा लागेल. यातून मतदारांच्या मनामध्ये समाजामध्ये अविश्वासाचा संदेश जाऊन गोंधळाचे राजकीय वातावरण निर्माण होताना दिसत आहे. कोणता नेता लोककल्याण राष्ट्रीय हित लोक अभिमुख राजकीय निर्णय धोरण याची सुयोग्य अंमलबजावणी करेल याविषयी अनेक प्रश्न मतदारांच्या /लोकांच्या मनामध्ये निर्माण झाले आहेत. अशा गलिच्छ राजकारणाने कोणत्याही प्रकारचा सुयोग्य निर्णय प्रश्न समस्या चांगल्या पद्धतीने सुटू शकत नाही. राज्याच्या विधिमंडळ व राष्ट्राच्या संसदेत सत्ताधारी आणि विरोधी राजकीय पक्ष लोककल्याणाचे राष्ट्रहिताचे लोकाभिमुख असे निर्णय धोरण घेण्यात अक्षम बंदी बनतात असे या ठिकाणी स्पष्ट दिसते आहे.म्हणून अशा प्रकारची गलिच्छ संधी-साधू राजका रणातील अहंभाव अहंकार श्रेष्ठत्व वर्चस्वाचे राजकारण राष्ट्र राज्य आणि समाजाच्या नव-निर्मिती/ प्रगतीला विकासाला विघातकच.

संदर्भ -

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2. डॉ.बाबासाहेब आंबेडकराचा राजकीय विचार/ दृष्टिकोन
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4. टी.व्ही,रेडिओ प्रसारित होणाऱ्या मुलाखती विशेष तज्ञ मान्यवरांच्या चर्चा विचार.
5. महाविद्यालय,विद्यापीठातील नवीन राष्ट्रीय शिक्षण धोरण विषयी विचार कार्यशाळा.
6. डॉ.बाबासाहेब आंबेडकराचा राजकीय विचार/ दृष्टिकोन.

प्रा.विवेक घोटाळे राजकीय पक्षातील स्पर्धेचे राजकारण व आघाड्यांचे राजकारण

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Original Article

प्राचीन भारतातील शिक्षण पद्धती व आधुनिक शिक्षण पद्धतीचा भारतीय जीवनावर झालेला

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सारांश :

प्राचीन भारतातील शिक्षण पद्धती मुख्यतः गुरुकुल, आश्रम व मंदिराधिष्ठित होती, येथे विद्यार्थी गुरुंसोबत राहून वैदिक वाङ्मय, गणित, खगोल, तत्त्वज्ञान, धनुर्विद्या, वैद्यक आदींचे सर्वांगीण, अनुभवाधिष्ठित व मूल्यकेंद्रित शिक्षण घेत. नालंदा, तक्षशिला, विक्रमशिला यांसारख्या विद्यापीठांनीही आंतरराष्ट्रीय स्तरावर ज्ञानकेंद्र म्हणून काम केले. पूर्व, आग्नेय आशियातील विद्यार्थी येथे येत असत. या पद्धतीने आत्मसंयम, कर्तव्यनिष्ठा, सामूहिकता, निसर्गाशी सुसंवाद आणि धर्माधिष्ठित जीवनदृष्टी भारतीय समाजात दृढ झाली.

औपनिवेशिक काळात सुरू झालेले आधुनिक, शालेय व विद्यापीठीय शिक्षण इंग्रजी माध्यम, लेखी परीक्षा, प्रमाणपत्र व नोकरीकेंद्रित झाले. वुड्ज डिस्पॅच (१८५४), हंटर आयोग, सॅडलर आयोग आणि नंतर सार्जंट रिपोर्ट यांनी आधुनिक शिक्षणरचनेचे मूलभूत आराखडे ठरवले. स्वातंत्र्यानंतर लोकशाही, संविधान, विज्ञान व तंत्रज्ञानाशी निगडित शैक्षणिक विस्तार झाला. आधुनिक शिक्षणाने सामाजिक सुधारणा, राष्ट्रीय चळवळी, औद्योगिकीकरण, नागरीकरण व जागतिकीकरणाला चालना दिली; परंतु त्यातून मूल्यसंकट, स्पर्धावृत्ती, असमानता व परकीय मानसिकतेची समस्या निर्माण झाल्याचेही दिसते. परिणामी, आज प्राचीन व आधुनिक दोन्ही पद्धतींचा भारतीय जीवनावर परस्परपूरक, कधी-कधी तणावपूर्ण असा मिश्र परिणाम जाणवतो.

मुख्य संबोध : प्राचीन, शिक्षणपद्धती, गुरुकुल, आश्रम परंपरा, आधुनिक शिक्षण प्रणाली, औपनिवेशिक वारसा, मूल्यशिक्षण, नैतिक संस्कार, विज्ञानवादी दृष्टी, सामाजिक न्याय, समता, राष्ट्रीय शिक्षण धोरणे व परंपरा व आधुनिकतेचा संगम इ.

प्रस्तावना:

भारताच्या सभ्यतेचा कणा समजली जाणारी शिक्षण परंपरा काळानुसार गुरुकुल, मठ-मंदिर, मदरसा, औपनिवेशिक शाळा आणि आधुनिक विद्यापीठ या विविध रूपांत विकसित झाली. प्राचीन व आधुनिक शिक्षण पद्धतींतील तत्त्वज्ञान, संरचना व उद्दिष्टे भिन्न असली तरी दोन्हीनी भारतीयांच्या वैयक्तिक, सामाजिक व राष्ट्रीय जीवनावर दूरगामी परिणाम घडवले.

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प्राचीन पद्धतीने मूल्यसंस्कार, आध्यात्मिकता व समुदायभावना रुजवली, तर आधुनिक पद्धतीने विज्ञान, लोकशाही, मानवी अधिकार व जागतिक दृष्टी दिली. आजच्या भारतात या दोन्ही प्रवाहांचा समन्वय साधत समग्र, समता-आधारित आणि भविष्याभिमुख शिक्षणव्यवस्था उभारण्याचा प्रयत्न सुरू आहे. प्राचीन भारतीय गुरुकुल परंपरेतील सर्वांगीण, मूल्यकेंद्रित व समुदायनिष्ठ शिक्षण पद्धतीने भारतीय जीवनात नैतिकता, कर्तव्यबुद्धी, संयम व समन्वयाची पायाभरणी केली, तर आधुनिक शिक्षण पद्धतीने विज्ञानवादी दृष्टी, लोकशाही-जागरूकता, व्यावसायिक कौशल्ये व सामाजिक गतिशीलता वाढवून भारतीय समाजरचनेत आमूलाग्र बदल घडवले आहेत. दोन्ही पद्धतींच्या संमिश्र प्रभावातून आजचे भारतीय जीवन परंपरा व आधुनिकता, आध्यात्मिक मूल्ये व तंत्रज्ञान, स्थानिक संस्कार व वैश्विक दृष्टी यांचा संगम बनलेले दिसते. त्याचबरोबर राष्ट्रीय शिक्षण धोरणे १९६८, १९८६, १९९२ आणि २०२० या संपूर्ण प्रक्रियेला दिशा देणारी चौकट ठरली आहेत. या धोरणांनी समता, गुणवत्तापूर्ण शिक्षण, विज्ञान-तंत्रज्ञान व संस्कृतिमूल्यांचा समन्वय साधण्याचा प्रयत्न केला आहे.

प्राचीन भारतीय शिक्षण पद्धती: स्वरूप व तत्त्वज्ञान

प्राचीन भारतात शिक्षणाचे प्रमुख केंद्र गुरुकुल, आश्रम, मठ व मंदिर होते. येथे विद्यार्थी दीर्घकाळ गुरुंसोबत राहून शिक्षण, साधना व सेवा करीत. या निवासी व्यवस्थेमुळे विद्यार्थी जीवनशैली, मूल्ये व ज्ञान यांचा प्रत्यक्ष अनुभव घेत असत, म्हणून शिक्षण 'जीवनप्रधान' व 'आचरणाधिष्ठित' होते. गुरु हा केवळ विषय शिक्षक नव्हे, तर आदर्श जीवनदर्शक म्हणून मानला जात असे, त्यामुळे शिक्षणाची नैतिक व आध्यात्मिक पातळी उंचावली गेली.

गुरुकुल व्यवस्था वैदिक काळापासून विकसित झाली असून शिष्य-गुरु नाते हे अत्यंत घनिष्ठ व पावन मानले गेले. शिष्याचे दैनंदिन जीवन श्रम, अभ्यास, जप, सेवा व साधना यांवर आधारित असल्याने आत्मसंयम, विनय, परिश्रम व समर्पण ही गुणवैशिष्ट्ये विकसित होत. बौद्ध व जैन विहारातही संघशिस्त, अनुशासन व सामूहिक साधना यांमधून समान मूल्ये जोपासली गेली; त्यामुळे धर्मसंप्रदाय भिन्न असले तरी शिक्षणाचा मूल्याधिष्ठित स्वरूप बऱ्याच प्रमाणात समान दिसतो.

प्राचीन शिक्षणाचे उद्दिष्ट केवळ नोकरी किंवा व्यवसाय नव्हते, तर 'पुरुषार्थचतुष्टय' धर्म, अर्थ, काम, मोक्ष साध्य करण्यासाठी योग्य चरित्र आणि समतोल जीवनदृष्टी घडवणे होते."[१] त्यामुळे नैतिक शिक्षण, धर्मशास्त्र, तत्त्वज्ञान आणि योग-ध्यानासोबतच समाजकारण, शास्त्र आणि कलांचे संतुलित शिक्षण दिले जात असे. "या संकल्पनेमुळे 'विद्या ददाति विनयं' या म्हणीप्रमाणे विद्या आणि विनय यांचा अविभाज्य संबंध मानला गेला."[२]

विषयरचना व अध्ययन-पद्धती:

गुरुकुलांत वैदिक संहितांसोबत व्याकरण, छंदशास्त्र, मीमांसा, न्याय, आयुर्वेद, खगोलशास्त्र, गणित, संगीत, नाट्य, युद्धकला इत्यादींचा अभ्यास होत असे. बौद्ध व जैन विद्यापीठांत तर्कशास्त्र, अभिधर्म, नीतिशास्त्र, राज्यकारभार व वाणिज्य यांसारख्या विषयांचीही मांडणी केली जात होती, ज्यामुळे ज्ञानाचे क्षेत्र फक्त धार्मिक न राहता लौकिक समस्यांपर्यंत विस्तारले.

अध्यापन पद्धती मौखिक, संवादात्मक व अनुभवाधिष्ठित होती. शिष्य पाठांतर, जप, प्रश्नोत्तर, वाद-संवाद, श्रमसेवा व प्रात्यक्षिक यांद्वारे शिकत. शास्त्रार्थ व वादविवाद हे ज्ञान परीक्षणाचे महत्त्वाचे साधन होते."[३] पाठ्यपुस्तक, परीक्षा व प्रमाणपत्र यांना दुय्यम महत्त्व होते. खरा निकष म्हणजे गुरुला जाणवलेली शिष्याची परिपक्वता व आचरण. गुरूंवरही आचारसंहितेचे बंधन होते. लोभ नसणे, शिष्यांशी समता व न्यायाने वागणे, वचन व कृतीत सुसंगती ठेवणे इत्यादी.

शिक्षण सर्वांगीण असल्याने शारीरिक श्रम, कृषिकर्म, पशुपालन, शस्त्रविद्या यांचाही अभ्यासक्रमात समावेश असे. त्यामुळे 'काम करत-करत शिकणे' हे तत्त्व प्रत्यक्ष राबविले गेले. या पद्धतीमुळे ज्ञान-कार्यक्षमता, कर्तव्यभाव आणि साधेपणा एकत्र जोपासले गेले. आज म्हणत असलेल्या 'Experiential Learning' आणि 'Life Skills Education' या संकल्पना त्या काळच्या शिक्षणात अंतर्भूत होत्या, हे लक्षात येते.

प्राचीन शिक्षणाचा भारतीय जीवनावर परिणाम

गुरुकुल व इतर प्राचीन संस्थांनी भारतीय समाजात कुटुंबकेंद्रित, धर्माधिष्ठित व कर्तव्यप्रधान जीवनशैलीची पायाभरणी केली. परस्पर आदर, गुरुभक्ती, वडीलधाऱ्यांचा मान, प्रकृतीशी सुसंवाद व सामूहिक जबाबदारी या मूल्यांचा प्रसार शिक्षण प्रक्रियेने केला. सामाजिक व धार्मिक विधींना शिक्षणात स्थान मिळाल्यामुळे जीवनातील प्रत्येक कृतीमध्ये पवित्रतेची व कर्तव्यबुद्धीची जाणीव दृढ झाली.

धर्म, तत्त्वज्ञान व नीतिशास्त्राच्या अभ्यासामुळे जीवनविषयक सहिष्णुता, अनेकांगी विचारसरणी व समन्वयवादी वृत्ती भारतीय समाजात बळकट झाली. विविध मतपंथांत वादसंवादाची परंपरा प्रस्थापित झाल्याने बौद्धिक स्वातंत्र्याला विशिष्ट स्थान

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मिळाले, जरी प्रत्यक्ष प्रवेशावर जात व लिंग मर्यादा होत्या. पुढे भक्तिकाळातील संतपरंपरा, विविध संप्रदाय व सूफी-भक्त परंपरेतही हेच सहिष्णु व समन्वयवादी संस्कार प्रतिबिंबित होतात.

कृषि, हस्तकला, वैद्यक व युद्धकला यांसारख्या व्यावहारिक विषयांच्या शिक्षणामुळे भारतीय जीवनात स्वावलंबन, तांत्रिक कौशल्य व स्थानिक ज्ञानव्यवस्था टिकून राहिली. ग्रामसमाजातील कारागीर, वैद्य, गुराखी, शेतकरी यांची ज्ञान-परंपरा लेखबद्ध नसली तरी शिष्यपरंपरेने चालू राहिली."[४] त्यामुळे ज्ञान आणि काम यांच्यातील दरी निर्माण होण्याचा प्रश्न मोठ्या प्रमाणावर उभाच राहिला नाही.

तथापि, प्राचीन पद्धतीवर उच्चवर्णीय व पुरुषप्रधान वर्चस्व राहिल्याने स्त्री व शूद्रांसाठी शैक्षणिक संधी मर्यादित राहिल्या. यामुळे ज्ञान-संपत्तीचे व्यापक लोकशाहीकरण होऊ शकले नाही. पुढे हेच असमानतेचे घटक आधुनिक शिक्षणाची आवश्यकता आणि सामाजिक सुधारणा चळवळीचा प्रेरक मुद्दा ठरले.

आधुनिक शिक्षण पद्धतीची उभारणी व वैशिष्ट्ये:

औपनिवेशिक काळात १९व्या शतकात इंग्रजांनी भारतात आधुनिक शालेय व महाविद्यालयीन शिक्षणाची औपचारिक रचना उभी केली. मॅकॉलेचे प्रसिद्ध 'Minutes' (१८३५) व १८५४ चे वुड्स डिस्पॅच हे महत्वाचे टप्पे मानले जातात. या पद्धतीत "इंग्रजी माध्यम, पाश्चिमात्य विज्ञान, गणित, कायदा, साहित्य आणि प्रशासकीय अभ्यासक्रमांना प्राधान्य मिळाले. नंतर हंटर आयोग, सॅडलर आयोग इत्यादींनी प्राथमिक, माध्यमिक व उच्च शिक्षणाच्या वेगवेगळ्या समस्या व विस्ताराचा विचार केला."[५]

आधुनिक शिक्षण प्रणाली वर्ग कक्ष, ठराविक वेळापत्रक, लिखित परीक्षा, प्रमाणपत्र, बोर्ड व विद्यापीठ या संपूर्ण प्रशासकीय यंत्रणेवर आधारित आहे. शिक्षक-विद्यार्थी नाते गुरुकुलातील वैयक्तिक सान्निध्यापेक्षा अधिक औपचारिक, संघटित व संस्थात्मक बनले. अभ्यासक्रमावर राज्यसत्तेचा व बाजारपेठेचा प्रभाव स्पष्ट दिसू लागला; शिक्षणाची जबाबदारी हळूहळू कुटुंब व समुदायाकडून औपचारिक संस्थांकडे सरकली.

स्वातंत्र्योत्तर काळात भारतीय राज्यघटनेनुसार सर्वांना शिक्षणाचा अधिकार, सार्वत्रिक प्राथमिक शिक्षण, नंतर 'शिक्षणाचा अधिकार कायदा' इत्यादीद्वारे शैक्षणिक प्रसाराला गती मिळाली. राष्ट्रीय शिक्षण धोरणे १९६८, १९८६/९२ व २०२० यांनी सर्वांसाठी गुणवत्तापूर्ण शिक्षण, समान संधी, विज्ञान-तंत्रज्ञान, व्यावसायिक शिक्षण आणि मातृभाषा-मल्टीलिंग्वल शिक्षण यांसारख्या मुद्द्यांना संस्थात्मक आधार दिला."[६]

आधुनिक शिक्षणाचा भारतीय समाजावर सकारात्मक परिणाम:

आधुनिक शिक्षणामुळे भारतीय समाजात विज्ञानवादी दृष्टी, तर्कशीलता व प्रश्न विचारण्याची वृत्ती बळकट झाली. अंधश्रद्धा, कु-प्रथा व रूढींचा आलोचनात्मक पुनर्विचार सुरू झाला. सती, बालविवाह, जातिभेद, अस्पृश्यता यांसारख्या प्रथांविरोधातील सुधारणा चळवळींना आधुनिक शिक्षणाने मजबूत वैचारिक आधार दिला. राजाराम मोहन रॉय, महात्मा फुले, आंबेडकर इत्यादी नेत्यांची विचारसरणी हे त्याचे उदाहरण आहे.

इंग्रजी शिक्षण व आधुनिक राजकीय विचारसरणीतूनच भारतीय राष्ट्रवाद, स्वातंत्र्याची आकांक्षा आणि महात्मा गांधी, पंडित नेहरू, चंद्रशेखर आझाद, डॉ. बाबासाहेब आंबेडकर इत्यादी नेतृत्व उदयास आले. "आधुनिक शिक्षणाने भारतीयांना संविधान, लोकशाही, मानवाधिकार व आधुनिक राज्यव्यवस्थेच्या तत्त्वांची जाणीव करून दिली, ज्यामुळे नागरीक जागरूकता वाढली आणि 'Modern Citizenship' ची संकल्पना भारतीय समाजात रुजली."[७]

आर्थिक पातळीवर आधुनिक तांत्रिक, व्यावसायिक व उच्च शिक्षणामुळे औद्योगिकीकरण, सेवा क्षेत्राचा विस्तार, माहिती-तंत्रज्ञान, वैद्यक, अभियांत्रिकी, व्यवस्थापन आदी क्षेत्रांत कुशल मनुष्यबळ निर्माण झाले. IT-क्रांती, बँकिंग, BPO, स्टार्ट-अप संस्कृती व परदेशी रोजगार यांचा पाया उच्च शिक्षण व इंग्रजी कौशल्ये यांवर उभा आहे. यामुळे ग्रामीण-शहरी स्थलांतर, मध्यमवर्गाचा विस्तार, पिढ्यांमधील सामाजिक गतिशीलता व रोजगाराच्या नव्या संधी निर्माण झाल्या.

सामाजिकदृष्ट्या मुलींचे शिक्षण, अनुसूचित जाती-जमाती व इतर वंचित घटकांसाठी आरक्षण व शिष्यवृत्ती योजना इत्यादींमुळे शिक्षणाच्या माध्यमातून सामाजिक न्याय व समता साधण्याचा प्रयत्न होत आहे. "आधुनिक शिक्षण संस्थांतील सहशैक्षणिक वातावरणामुळे लिंगभेद कमी करण्यास, विविधतेचे स्वीकार व संवाद वाढविण्यास मदत झाली. NEP-2020 मध्ये 'Equity and Inclusion' याला मूलभूत तत्त्व म्हणून मान्यता मिळाल्यामुळे हा प्रवाह आणखी मजबूत होण्याची अपेक्षा आहे."[८]

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आधुनिक शिक्षणाचे नकारात्मक परिणाम व आव्हाने

औपनिवेशिक काळातील शिक्षणाने भारतीयांना आपल्या परंपरागत ज्ञानप्रणालीपासून व स्थानिक भाषिक-सांस्कृतिक आधारापासून काही प्रमाणात विलग केले. "इंग्रजी व पाश्चिमात्य मूल्यांना अधिक प्राधान्य मिळाले. त्यामुळे स्वतःच्या इतिहास, तत्त्वज्ञान व ग्रामीण तांत्रिक ज्ञानाकडे कनिष्ठ दृष्टीने पाहण्याची प्रवृत्ती तयार झाली. 'White-Collar Jobs' ला सर्वोच्च मान व हाताशी काम करणाऱ्या व्यवसायांकडे कमीपणा जाणवू लागला."[९]

आधुनिक शिक्षणात परीक्षा-केंद्री, प्रमाणपत्र व नोकरीकेंद्रित दृष्टिकोन प्रबळ झाल्याने शिक्षणाचे मानवी, नैतिक व सौंदर्यात्मक पैलू दुय्यम ठरतात. स्मरणशक्तीवर आधारलेले रटाळ शिक्षण, गुण-आधारित स्पर्धा व कोचिंग संस्कृतीमुळे विद्यार्थ्यांमध्ये ताण, आत्महत्येच्या घटना आणि मानसिक आरोग्याच्या समस्या वाढत असल्याची चिंता व्यक्त केली जाते. COVID-१९ काळातील ऑनलाईन शिक्षणाने डिजिटल दरीचे रूप अधिक तीव्रपणे उघड केले.

शिक्षणाच्या प्रसारानंतरही ग्रामीण-शहरी, वर्ग व जातीय विषमता टिकून आहे; दर्जेदार शाळा आणि उच्च शिक्षण संस्था बहुतेक शहरांत व उच्चवर्गीयांच्या आवाक्यात आहेत. डिजिटल दरी, इंग्रजी-स्थानिक भाषा दरी व खाजगीकरणामुळे शिक्षणाचे व्यापारीकरण आणि सामाजिक बहिष्करणाची नवीन रूपे दिसू लागली आहेत.

आधुनिक शिक्षणाने व्यक्तिवाद, उपभोगवाद व करिअरवाद वाढवला, ज्यामुळे कुटुंबसंस्था, समुदायभावना व निसर्गाशी समन्वय यांवरही ताण निर्माण झाला आहे, असे काही अभ्यासकांचे मत आहे. पारंपरिक मूल्ये व आधुनिक जीवनशैली यांच्यातील संघर्षामुळे युवकांमध्ये ओळखद्वंद्व, सांस्कृतिक संभ्रम व मूल्यसंकट दिसू लागते. NEP 2020 मध्ये 'Values-Based Education' व 'Indian Knowledge Systems' या संकल्पना अशा तणावांना उत्तर देण्याचा प्रयत्न म्हणून पाहता येतात."[१०]

प्राचीन व आधुनिक पद्धतींच्या तुलनेत भारतीय जीवनातील बदल

प्राचीन प्रणाली माणसाच्या चारही अंगांचा शारीरिक, मानसिक, सामाजिक व आध्यात्मिक–समन्वय साधण्याचा प्रयत्न करीत होती; आधुनिक प्रणाली ज्ञान-तंत्रज्ञान व आर्थिक प्रगतीवर अधिक भर देते. त्यामुळे आज भारतीय जीवनात आध्यात्मिकतेपेक्षा भौतिक यशास अधिक महत्व देणारी प्रवृत्ती बळकट झाली, तरीही धर्म व संस्कारांची छाप कुटुंबजीवन, सण-उत्सव व वैयक्तिक श्रद्धेत ठळक आहे.

प्राचीन गुरुकुल व्यवस्था समाजाच्या उच्च स्तरापुरती मर्यादित असली तरी ती समुदायकेंद्रित व स्थानिक होती; आधुनिक शिक्षणाने सर्वांसाठी प्रवेशाचे द्वार उघडले, परंतु सामाजिक-सांस्कृतिक मुळांपासून काही प्रमाणात तुटलेल्या नागरी व्यक्तिमत्त्वाची जडणघडण झाली. त्यामुळे भारतीय जीवनात एकाच वेळी गावकुसाशी जोडलेली पारंपरिकता व जागतिक महानगरीयता असा दुहेरी स्वभाव दिसतो; एखादा युवक दिवसा मल्टीनॅशनल कंपनीत काम करतो, आणि रात्री कुटुंबासमवेत पारंपरिक सण साजरे करतो हीच या संगमाची प्रतिमा.

आज अनेक शिक्षणतज्ज्ञ प्राचीन गुरुकुलातील मूल्यशिक्षण, निसर्गस्नेह, श्रमसंस्कार, वैयक्तिक मार्गदर्शन यांचे तत्त्व आधुनिक शाळा-विद्यापीठांत समाविष्ट करण्याची गरज अधोरेखित करतात. राष्ट्रीय शिक्षण धोरण २०२० मधील समग्र विकास, अनुभवाधारित शिक्षण, बहुभाषिकता व भारतीय ज्ञानपरंपरा या संकल्पना या पुनर्संवादाचीच उदाहरणे मानता येतात. त्या अर्थाने प्राचीन व आधुनिक यांच्यातील संघर्षाला सर्जनशील संवादात रूपांतरित करण्याचा प्रयत्न सुरू आहे.

निष्कर्ष :

1. **न भारतीय शिक्षण पद्धतीने** गुरुकुल, मठ, आश्रम, विहारांच्या माध्यमातून मूल्यकेंद्रित, अनुभवाधिष्ठित व सर्वांगीण शिक्षण देऊन भारतीय समाजात कर्तव्यनिष्ठ, संयमी व धर्माधिष्ठित जीवनदृष्टी निर्माण केली, ज्याचा संस्कार आजही कुटुंबव्यवस्था, धार्मिक आचरण व सामाजिक नातेसंबंधांत स्पष्ट जाणवतो.
2. **या प्राचीन व्यवस्थेने ज्ञान व मूल्यांचा समन्वय साधला,** परंतु जात, लिंग व वर्णाधारित मर्यादांमुळे सर्वांसाठी शिक्षणसंधी समान नव्हती; त्यामुळे सामाजिक न्याय, लोकशाही व समतेच्या दृष्टीने ही पद्धती मर्यादित राहिली आणि पुढील काळात नवीन, सर्वसमावेशक शिक्षणप्रणालीची आवश्यकता निर्माण झाली.
3. **आधुनिक शिक्षण पद्धतीने इंग्रजी माध्यम, विज्ञान व तंत्रज्ञान यांचा प्रसार करून** भारतीय समाजाला औद्योगिकीकरण, नागरीकरण व जागतिकीकरणासाठी आवश्यक कौशल्ये व ज्ञान प्रदान केले; यामुळे आर्थिक विकास, व्यावसायिक संधी आणि सामाजिक गतिशीलता यांना नवे आयाम प्राप्त झाले आणि नवमध्यमवर्गाची ताकद वाढली.
4. **आधुनिक शिक्षणातूनच राष्ट्रवाद, स्वातंत्र्यलढा, सामाजिक सुधारणा व लोकशाही मूल्यांची जाण निर्माण होऊन** भारतीय नागरिकत्वाचा आधुनिक भाव तयार झाला; संविधान, मानवाधिकार व धर्मनिरपेक्षता यांसारख्या संकल्पनांची मुळाक्षरेही याच माध्यमातून सर्वसामान्यांपर्यंत पोहोचली आणि राजकीय जागरूकता वाढली.

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5. **तरीही परीक्षा-केंद्री व नोकरीकेंद्रित आधुनिक पद्धतीमुळे** शिक्षणाचे मानवीकरण व मूल्यशिक्षण मागे पडले; स्पर्धा, ताण, असमानता, व्यापारीकरण, भाषिक-दरी व ग्रामीण-शहरी दरी यांसारखी नवीन सामाजिक-सांस्कृतिक आव्हाने उभी राहिली, ज्याचा भारतीय कुटुंबजीवन, युवकांच्या मानसिक आरोग्य आणि सामाजिक समतोलावर दुष्परिणाम दिसतो.
6. **प्राचीन व आधुनिक या दोन्ही पद्धतींचा संमिश्र परिणाम असा की**, आज भारतीय जीवनात एकीकडे आध्यात्मिकता, कुटुंबसंस्कार व परंपरा तर दुसरीकडे व्यक्तिवाद, करिअरवाद व तंत्रज्ञाननिष्ठता अशी द्वंद्वात्मक पण पूरक मूल्यव्यवस्था निर्माण झाली आहे; या द्वैधतेतूनच भारतीय ओळखीचा अनोखा चेहरा घडत आहे.
7. **राष्ट्रीय शिक्षण धोरणे १९६८, १९८६/९२ आणि २०२०** यांनी या द्वैधतेला संतुलित करण्याचा, समता, गुणवत्तापूर्ण शिक्षण, स्थानिक भाषा, भारतीय संस्कृती आणि विज्ञानवाद यांचा समन्वय घडवण्याचा प्रयत्न केला; परंतु प्रत्यक्ष अंमलबजावणीतील विषमता, राजकीय बदल आणि संसाधनांची टंचाई ही अजूनही मोठी आव्हाने आहेत.
8. **भविष्यातील भारतीय शिक्षण धोरणासाठी प्राचीन गुरुकुलातील निसर्गस्नेह, श्रमसंस्कार, वैयक्तिक मार्गदर्शन, समग्र विकास** आणि आधुनिक शिक्षणातील विज्ञानवादी दृष्टी, तंत्रज्ञान, लोकशाही मूल्ये व समता या दोन्हींचा सर्जनशील समन्वय आवश्यक ठरतो; हा समन्वयच ज्ञान आणि मूल्य यांचे संतुलित भारतीय मॉडेल घडवू शकतो.
9. **अशा समन्वित शिक्षण पद्धतीतूनच भारतीय समाजाला** सांस्कृतिक ओळख जपत जागतिक स्पर्धेत सक्षम राहणारा, सामाजिकदृष्ट्या संवेदनशील व नैतिकदृष्ट्या सजग नागरिक घडवणे शक्य होईल; ज्याच्याकडे व्यावसायिक कौशल्यासोबतच पर्यावरण-जागरूकता, सामाजिक जबाबदारी व मानवतावादी दृष्टी असेल.
10. **म्हणून प्राचीन परंपरा व आधुनिक शिक्षण यांना विरोधी ध्रुव न मानता** परस्परपूरक शक्ती म्हणून पाहणे आणि धोरण, अभ्यासक्रम, शिक्षक-प्रशिक्षण, मूल्यशिक्षण व तंत्रज्ञान या सर्व स्तरांवर त्यांचा सखोल संवाद घडवणे हीच भारतीय शिक्षणाची आणि त्यातून घडणाऱ्या भारतीय जीवनाची मुख्य गरज आहे.

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Original Article

Effectiveness Of Instructional Strategy Over Conventional Method In Enhancing Science Achievement Of 9th Standard Slow Learners

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Abstract

*The aim of the study was to find out "**Effectiveness of** Instructional Strategy over Conventional Method in Enhancing Science Achievement of 9th Standard Slow Learners". Accordingly, 100 students (50 Boys and 50 Girls) slow learners were taken as a sample from State Board English medium School of Vijayapura District. The research conducted on English medium 9th standard secondary school slow learning students of Vijayapura District. Instructional strategy as Independent variable and Academic achievement in science as dependent variables are used for the current study. Researcher itself prepared Academic achievement tool for science which was used for the study. For variable instructional strategy, strategy based lesson plans were used. Quasi Experimental Research design was adopted for the present study and Samples are randomly selected and used check list to find out the slow learners. It was found that the significant effect on Academic Achievement in science of secondary school slow learning students with respect to instructional strategy over conventional method.*

Keywords: *Instructional Strategy, Conventional Teaching Method, Science Achievement, Slow Learners, Secondary School Students, Quasi-Experimental Design, Academic Achievement, Gender Differences, Active Learning Strategies, 9th Standard Students*

Introduction:

Developing strong conceptual understanding in science is a persistent challenge for many secondary school slow learning students. Traditional lecture-based instruction often emphasizes rote memorization, making it difficult for learners to visualize relationships between concepts. As a result, students commonly experience difficulties in applying knowledge, reasoning scientifically, and achieving proficiency in understanding more concepts in science it's a challenging tasks for especially slow learners. For this we have to use most effective instructional strategy for students to learn very effectively and easily.

Instructional Stratrgy:

An instructional strategy **is a** planned approach or method used by a teacher to organize and deliver instruction in order to help students achieve specific learning objectives effectively. It includes the techniques, activities, and procedures selected by the teacher to promote understanding, skill development, and active learning. Instructional strategy can be defined as "a planned set of teaching–learning activities designed to achieve predetermined educational objectives." And instructional strategy which is consists of Project based learning strategy, Enquiry based learning strategy, Hands on activities strategy, Differentiated learning strategy, Brain storming strategy, Problem solving strategy, co-operative learning strategy, Concept formation and Concept attainment strategy

Objectives Of The Study:

Following are the Objectives of the present study

- To study the difference in the adjusted post-test achievement mean scores in science among slow learners of 9th standard students belong to the control and the experimental group.

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- To study the difference in the pre-test achievement mean score in science between boys and girls slow-learner of 9th standard students in control group.
- To study the difference in the post-test achievement mean score in science between boys and girls slow-learner of 9th standard students in control group.
- To study the difference in the pre-test achievement mean score in science between boys and girls slow-learner of 9th standard students in experimental group.
- To study the difference in the post-test achievement mean score in science between boys and girls slow-learner of 9th standard students in experimental group**.**

Hypotheses of the Study:

Keeping the objectives in mind the following Null hypothesis were formulated for testing

1. **Null Hypothesis (H_0):** No significant difference in the adjusted post-test achievement means scores in science among slow learners of 9th standard students belong to the control and the experimental group.
2. **Null Hypothesis (H_0):** No significant difference in the pre-test achievement mean score in science between boys and girls slow-learner of 9th standard students in control group.
3. **Null Hypothesis (H_0):** No significant difference in the post-test achievement mean score in science between boys and girls slow-learner of 9th standard students in control group.
4. **Null Hypothesis (H_0):** No significant difference in the pre-test achievement mean score in science between boys and girls slow-learner of 9th standard students in experimental group.
5. **Null Hypothesis (H_0):** No significant difference in the post-test achievement mean score in science between boys and girls slow-learner of 9th standard students in experimental group**.**

Methodology Of The Study:

For the current study researcher applied Quasi-experimental, Pre-test–Post-test Control Group design. Population of the study was English medium Schools of Vijayapura District. 100 slow learners are randomly selected using check list tool, from the State board English medium 9th standard secondary school.

For the Study Researcher made two groups.

1. Control group: - Lessons taught through Traditional method
2. Experimental group: - Lessons taught through instructional strategy package.

The researcher selected science lessons of 9th standard NCERT book and taught for the duration of 6 weeks (Single period of 45 min.).

Sample size of the present study:

Groups	Boys	Girls	Total
Control Group	25	25	50
Experimental Group	25	25	50
Total	50	50	100

Variables of the Present Study:

The investigator considered two major types of variables, viz., independent and dependent

Type of Variables	**Variables Considered in the study**
Independent variable	**Instructional strategy** Project based learning strategy; Enquiry based learning strategy, Hands on activities strategy, Differentiated learning strategy, Brain storming strategy, Problem solving strategy, Cooperative learning strategy Concept formation and Concept attainment strategy.
Dependent variable	**Academic Achievement In Science**
Moderate variable	gender (Boys and Girls) Location (Rural and Urban) Level of Learners(Low, moderate High)

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Tools Used for the Present study: Following tools were used for the present study

- Academic Achievement test for science developed by the Researcher
- Instructional Strategy package of 40 lessons from 9th standard science,8chapters are prepared by the researcher itself (1.Matters in our surroundings 2.Atoms and molecules, 3.The fundamental unit of life 4.Tissue 5.Motion 6.Force and laws of motion, 7.Gravitation 8.Work and Energy).
- A check list was prepared by the researcher for finding slow learners of secondary school students.

Statistical techniques Used for the Study:
The researcher used Mean, SD t-test and ANCOVA for statistical analysis of the Present data.

Analysis And Interpretation Of Result:
Hyptoehsis-1: There is no significant difference in the adjusted post-test achievement mean scores in science among slow learners of 9th standard students belong to the control and the experimental group by considering their pre-test achievement scores as covariate.

Table-1: Summary of One-way ANCOVA for post-test achievement mean scores in science among slow learners of 9th standard students belong to the control and the experimental group by considering their pre-test achievement scores as covariate

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	η^2
Pre-test achievement	48281.037	1	48281.037	3769.881	.001	.975
Group	5940.170	1	5940.170	463.821	.001	.827
Error	1242.283	97	12.807			
Total	399052.000	100				
Corrected Total	55421.560	99				
. R Squared = .978 (Adjusted R Squared = .978)						

Effect of ANCOVA Model

From the above table it is observed that $R^2 = .978$, it indicates that the ANCOVA model explains 97.8% of the variance in the post-test achievement scores in science among 9th standard slow-learners' students. This suggests that the model is highly effective.

Effect of Covariate - Pre-test Achievement:

The F value is 3769.881 and p value is .001 for pre-test achievement mean scores in science as covariate for post-test achievement mean scores in science of slow learners of 9th standard students of control and experimental group. Here, obtained *p*-value is less than .05 level of significance. It indicates that, pre-test achievement explains a substantial proportion of variance in the post achievement scores, confirming that, pre-test achievement mean scores in science is a covariate for post-test achievement mean scores in science of slow learners of 9th standard students at .05 level of significance F (1, 97) = 3769.881, $p = .001$.

Main Effect of Intervention/Treatment:

The F value is 463.821 and *p*-value is .001 for adjusted mean scores of achievement in science of slow learners of 9th standard students of control and experimental group. Hence, null hypothesis is rejected and research hypothesis is accepted. It means, there is a significant difference between adjusted mean scores of achievement in science of slow learners of 9th standard students of control group and experimental group by considering their pre-achievement as covariate at .05 level of significance (1, 97) = 463.821, p = .001, $\eta^2 = .827$. The partial eta-squared i.e., $\eta^2 = .827$ indicate large effect size. The detail of pre achievement, post-achievement and adjusted mean scores are reported in the following descriptive statistic table.

Table-2: Descriptive Statistics for pre achievement, post-achievement and adjust mean scores derived from pre-achievement as covariate for experimental group and control group

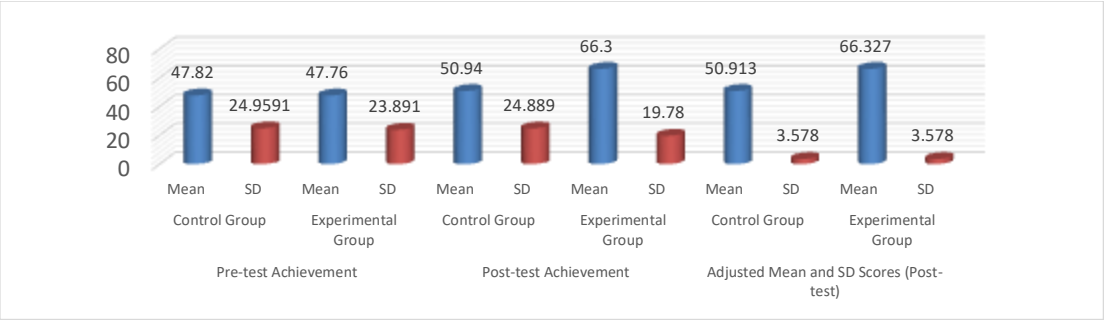
Group	**N**	**Achievement in Science**					
		Pre		Post		Adjusted Mean Scores	
		Mean	**SD**	**Mean**	**SD**	**Mean**	**SD**
Control Group	50	47.820	24.9591	50.940	24.889	50.913	3.578
Experimental Group	50	47.760	23.891	66.300	19.780	66.327	3.578

The above table presents the pre-test and post-test achievement scores in science of the control and experimental groups. The adjusted mean scores represent the post-test mean values after controlling for the covariate, namely pre-test achievement scores for both groups. The mean comparison indicates that, adjusted mean achievement

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scores of the experimental group (M = 66.327) is significantly higher than that of the control group (M = 50.913).Thus, findings of the study revealed that instructional strategy method is more effective in enhancing the science achievement of 9th standard slow-learners students in experimental group than the conventional 5-E model used in the control group. It may therefore, be said that, the students of experimental group taught through instructional strategy method accomplished significantly higher achievement in science subject as compare to the students of control group taught through conventional method by using 5-E'S model. The data also reported in the following figure.

Graph-1: Comparison of pre-test achievement, post-test achievement, and adjusted mean and SD scores of slow learners of 9th standard students of control and experimental group



Hyptoehsis-2: There is no significant difference in the pre-test achievement mean score in science between boys and girls slow-learner of 9th standard students in control group.

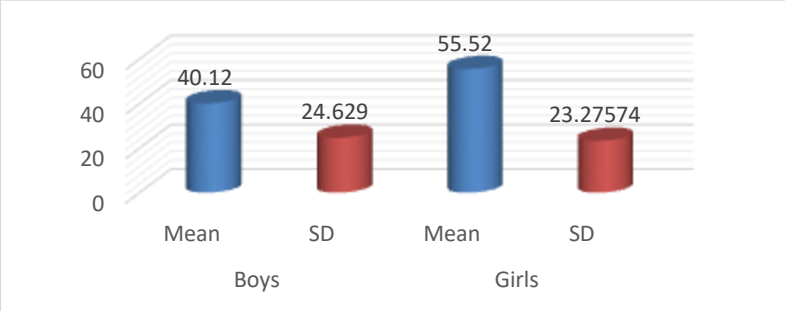
Table-3: Comparison of difference in pre-test achievement mean score in science between boys and girls slow-learner of 9th standard students in control group

Achievement	Gender	N	Mean	SD	t-value	p-value	S/NS
Pre-test achievement	Boys	25	40.120	24.629	2.272	.028	S (p<.05)
	Girls	25	55.520	23.27574			

The above table indicates that, the mean is 40.120 and the SD is 24.629 for pre-test achievement mean score in science of boy's slow learner of 9th standard students in control group and mean is 55.520 and the SD is 23.27574 for pre-test achievement mean score in science of girls slow learner of 9th standard students in control group. The obtained t-value is 2.272with a corresponding p-value of .028. Since the p-value is less than the .05 level of significance, the null hypothesis is rejected and the research hypothesis is accepted. This reveals that there is a significant difference in the pre-test achievement mean score in science between boys and girls slow-learner of 9th standard students in control group at the .05 level of significance, $t = 2.272$, $p < .05$.

Further, from the observed mean difference, it is evident that the mean scores of girls is higher than the boys students, suggesting the girls slow learners performed better than boys slow learners in the pre-test achievement in 9th standard students in control group. Thus, study found a significant effect of gender on pre-test achievement of slow learners of 9th standard students in control group. The results also reported in the following figure.

Graph-2: Comparison of difference in pre-test achievement mean score in science between boys and girls slow-learner of 9th standard students in control group



Hyptoehsis-3: There is no significant difference in the post-test achievement mean score in science between boys and girls slow-learner of 9th standard students in control group.

Table-4: Comparison of difference in post-test achievement mean score in science between boys and girls slow-learner of 9th standard students in control group

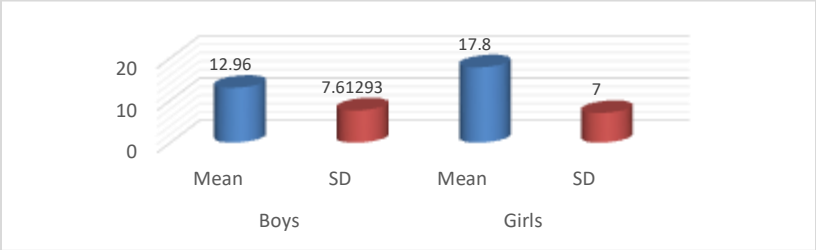
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Achievement	Gender	N	Mean	SD	t-value	p-value	S/NS
Post-test Achievement	Boys	25	12.9600	7.61293	2.340	.023	S (p<.05)
	Girls	25	17.8000	7.00000			

The above table indicates that, the mean is 12.9600and the SD is 7.61293 for post-test achievement mean score in science of boys slow learner of 9th standard students in control group and mean is 17.8000and the SD is 7.00000 for post-test knowledge achievement mean score in science of girl's slow learner of 9th standard students in control group. The obtained t-value is 2.340with a corresponding p-value of .023. Since the p-value is less than the .05 level of significance, the null hypothesis is rejected and the research hypothesis is accepted. This reveals that there is a significant difference in the post-test achievement mean score in science between boys and girls slow-learner of 9th standard students in control group at the .05 level of significance, $t = 2.340$, $p < .05$.

Further, from the observed mean difference, it is evident that the mean scores of girls is higher than the boys students, suggesting the girls slow learners performed better than boys slow learners in the post-test achievement in 9th standard students in control group. Thus, study found a significant effect of gender on post-test achievement of slow learners of 9th standard students in control group. The results also reported in the following figure.

Graph-3: Comparison of difference in post-test achievement mean score in science between boys and girls slow-learner of 9th standard students in control group



Hyptoehsis-4: There is no significant difference in the pre-test achievement mean score in science between boys and girls slow-learner of 9th standard students in experimental group.

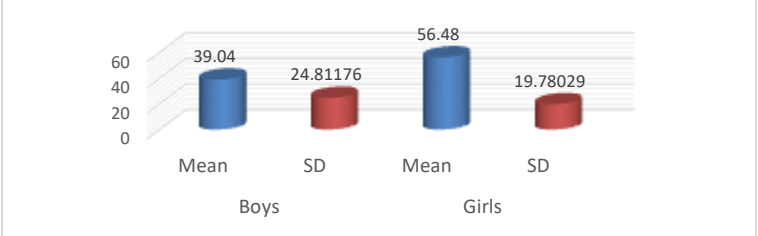
Table-5: Comparison of difference in post-test achievement mean score in science between boys and girls slow-learner of 9th standard students in experimental group

Achievement	Gender	N	Mean	SD	t-value	p-value	S/NS
Pre-test Achievement	Boys	25	39.0400	24.81176	2.748	.008	S (p<.05)
	Girls	25	56.4800	19.78029			

The above table indicates that, the mean is 39.0400and the SD is 24.81176 for pre-test achievement mean score in science of boys slow learner of 9th standard students in experimental group and mean is 56.4800and the SD is 19.78029 for pre-test achievement mean score in science of girl's slow learner of 9th standard students in Experimental group. The obtained t-value is 2.748with a corresponding p-value of .008. Since the p-value is less than the .05 level of significance, the null hypothesis is rejected and the research hypothesis is accepted. This reveals that there is a significant difference in the pre-test achievement mean score in science between boys and girls slow-learner of 9th standard students in Experimental group at the .05 level of significance, $t = 2.748$, $p < .05$.

Further, from the observed mean difference, it is evident that the mean scores of girls is higher than the boys students, suggesting the girls slow learners performed better than boys slow learners in the pre-test achievement in 9th standard students in Experimental group. Thus, study found a significant effect of gender on pre-test achievement of slow learners of 9th standard students in Experimental group. The results also reported in the following figure.

Graph-4: Comparison of difference in post-test achievement mean score in science between boys and girls slow-learner of 9th standard students in experimental group



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Hyptoehsis-5: There is no significant difference in the post-test achievement mean score in science between boys and girls slow-learner of 9th standard students in experimental group.

Table-6: Comparison of difference in post-test achievement mean score in science between boys and girls slow-learner of 9th standard students in experimental group

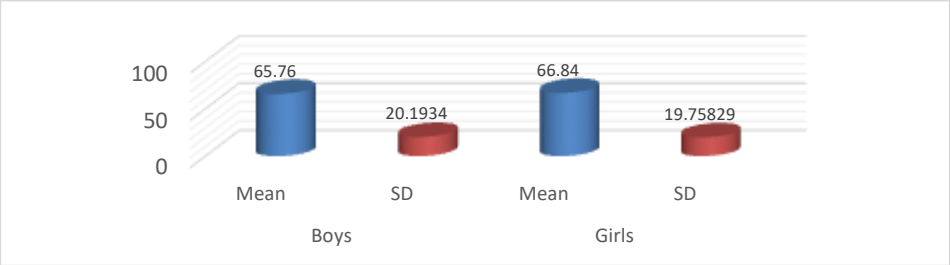
Achievement	Gender	N	Mean	SD	t-value	p-value	S/NS
Post-test Achievement	Boys	25	65.7600	20.19340	.191	.849	NS (p>.05)
	Girls	25	66.8400	19.75829			

Independent Sample t-test analysis for post-test achievement in science by gender of slow learners of 9th standard students (Experimental Group)

The above table indicates that, the mean is 65.7600and the SD is 20.19340 for post-test achievement mean score in science of boys slow learner of 9th standard students in experimental group and mean is 66.8400and the SD is 19.75829 for post-test achievement mean score in science of girls slow learner of 9th standard students in Experimental group. The obtained t-value is .191with a corresponding p-value of .849. Since the p-value is higher than the .05 level of significance, the null hypothesis is accepted and the research hypothesis is rejected. This reveals that there is no significant difference in the post-test achievement mean score in science between boys and girls slow-learner of 9th standard students in Experimental group at the .05 level of significance, $t = .191$, $p < .05$.

Thus, study found that there is no significant effect of gender on post-test achievement of slow learners of 9th standard students in experimental group. It means, after intervention in experiment, both boys and girls slow learners performed equally in their post-test achievement in science. The results also reported in the following figure.

Graph-5: Comparison of difference in post-test achievement mean score in science between boys and girls slow-learner of 9th standard students in experimental group



Major Findings Of The Study:

Following are the Major findings of the present study

- The result showed that, the students of experimental group taught through instructional strategy method accomplished significantly higher achievement in science subject as compare to the students of control group taught through conventional method by using 5-E'S model**.**
- The result revealed that there is a significant difference in the pre-test achievement mean score in science between boys and girls slow-learner of 9th standard students in control group**.**
- The result found a significant effect of gender on post-test achievement of slow learners of 9th standard students in control group**.**
- The result showed that the achievement of girls is higher than the boy's students, suggesting the girls slow learners performed better than boy's slow learners in the pre-test achievement in 9th standard students in Experimental group. Thus, study found a significant effect of gender on pre-test achievement of slow learners of 9th standard students in Experimental group**.**
- The result showed that there is no significant effect of gender on post-test achievement of slow learners of 9th standard students in experimental group. It means, after intervention in experiment, both boys and girls slow learners performed equally in their post-test achievement in science**.**

Discussion And Conclusion:

The study clearly demonstrates that Instructional strategy package is an effective pedagogical tool for improving academic achievement in science among secondary school students. It supports meaningful learning, strengthens students' reasoning processes, and fosters learningabilities. Teachers should be more effective to use instructional not only as teaching tools but also as assessment instruments. It includes the techniques, activities, and procedures selected by the teacher to promote understanding, skill development, and active learning. Instructional strategy can be defined as "a planned set of teaching–learning activities designed to achieve predetermined educational objectives."

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