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**April-2022 Volume-13 Issue-18**

## Chief Editor

**Dr. R. V. Bhole**

'Ravichandram' Survey No-101/1, Plot  
No-23, Mundada Nagar, Jalgaon (M.S.) 425102

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## **Customer Awareness of Green Banking: A Study With Special Reference To The Bank Customers of Ottapalam Town**

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**Abstract :** As the world moves towards a more sustainable way of living, and people gives more importance for environment protection, it becomes a necessity to make every move in a more conscious way. Green banking is one of such move taken by bankers to carry out all the important finance related transactions in a more environment friendly manner. This is done by going green. That is by taking paperless statements, offering green loans and mortgages, online and mobile banking methods. There is an immensive need to identify the perception of customers towards these green banking products. This study aims to find out the awareness level of customers towards green banking products, factors responsible for the adoption of green banking and their satisfaction level. The study revealed that gender has no relation with the awareness level of the respondents and the respondents are satisfied with the usage the green banking products. More awareness program should be conducted among the customers to make them more environmental friendly and how to these green banking products and steps should be taken to solve network related issues and security issues.

**Keywords:-** environment sustainability, environment protection , green banking,

### **Introduction**

In today's world number of factors adversely affects the environmental sustainability. There is a need to protect the environment and preserve our natural resources. Banking activities involve excessive use of paper, wastage of water, using Air conditioners and other electronic equipments which consumes lot of energy. These practices will definitely affect the balance of environment. In order to protect the environment and to reduce the carbon print and also as a part of corporate social responsibility, banks should take steps to go green. Green banking can contribute to a great extend for the same. Green banking means activities which helps in the efficient management of energy and wastage and preservation of renewable sources of energy. It involves promotion of environment friendly practices. It involves the use of green banking products to attain sustainable development. It is just like normal banking along with the practices to conserve and protect environment. Green banking involves the use of ATM, Online banking, Mobile banking, Green channel counters and Credit and Debit cards. Green banking helps to make customers more environmental friendly.

### **Statement of problem**

Banking industry plays a predominant role in environmental protection and economic sustainability. This is possible by going green. Adopting practices and activities that will protect the environment as well as helps in fulfilling the corporate social responsibility. "Green banking means promoting environmental friendly practices and reducing carbon footprint from banking activities." Adoption of green banking services by the banks should be well informed to the customers then, only it will be effective. This paper aims to study the awareness of Green banking services offered by banks among the customers. An attempt is also made to find the factors that influence the use of green banking services and problems faced while using these services.

### **Objectives of study:**

1. To study about the awareness of green banking among the customers
2. To identify the factors influencing the usage of green banking services
3. Problems faced while using the green banking services.
4. There is no significant relationship between gender and awareness level of green banking

### **Hypothesis**

H0: Two attributes namely gender and awareness are independent

### **Research Design**

A descriptive research design is used for the study

Sources of Data: Primary data and Secondary data is used to collect data. Primary data is collected through a structured questionnaire. Secondary data is collected through various websites, articles and journals.

Population: Population of the study involves the bank customers of Ottapalam town

Sampling size: Sample size is limited to 60 respondents

Sampling technique: Purposive sampling technique is used for the study.

Tools for analysis: Percentage analysis, weighted average score ranking method and chi square test is used for analysis

### Results and Discussion

A structured questionnaire was designed to collect the data from the respondents and the result is presented with the help of tables and it is interpreted and communicated in the best possible manner.

**Table No 1, Demographic profile of the respondents**

Demographic features	Number of respondents	Percentage of respondents
<b>Gender</b>		
Male	23	38.33
Female	37	61.67
Total	60	100
<b>Age</b>		
18-25	20	33.33
26-35	19	31.67
36-45	12	20
45 above	9	15
Total	60	100
<b>Educational qualification</b>		
Matriculation	3	5
Plus two	3	5
Degree	17	28.33
Post Graduate	33	55
Diploma/others	4	6.67
Total	60	100
<b>Occupation</b>		
Self employed	1	1.66
Government employees	18	30
Private employees	28	46.67
Students	10	16.67
Others	3	5
Total	60	100
<b>Monthly Income</b>		
Below 20000	21	35
20000-40000	18	30
40000-60000	10	16.67
Above 60000	11	18.33
Total	60	100

The above table shows the demographic profile of the respondents. It can be interpreted that majority of the respondents (61.67%) are females. As far as age of the respondents are concerned 33.33% of them fall in the age group of 18-25. Out of 60 respondents, 33 are post graduates which constitute 55% of the total and majority of the respondents for this study are private employees (46.67%). Income based analysis shows that 35% of the respondent falls under the income of below 20000 and 30% in the income group of 20000-40000.

**Table No 2, Awareness level of green banking products**

Green banking products	Awareness		Awareness	
	Aware	Percentage	Unaware	Percentage
Online Banking	54	90	6	10
Mobile Banking	51	85	9	15
Green channel counters	20	33.33	40	66.67
Green mortgages	10	16.67	50	83.33
Green car loan	20	33.33	40	66.67

Paperless statements	30	50	30	50
Solar ATMs	15	25	45	75
Cash Deposit system	40	66.67	20	33.33
Electronic fund transfers	40	66.67	20	33.33
Reward Debit and credit cards	35	58.33	25	41.67

Green banking products including online banking, mobile banking, solar ATMs , Cash deposit system, paperless statements , Reward Debit and Credit cards contributes to a great extent towards environment sustainability. Here an attempt is made to find the awareness level of respondents towards various green banking products. From the above table, it can be inferred that majority of the respondents are aware of green banking products such as online banking (90%), mobile banking (85%). They are least aware of Green mortgages (16.67%) and Solar ATMs (25%).

**Table No 3, Mostly used green banking product**

Green banking products	Number of respondents	Percentage
Credit and debit cards	10	16.67
Electronic fund transfer	1	1.67
Online banking	12	20
Mobile banking	30	50
Others	7	11.67
Total	60	100

As per the survey, mostly used green banking products by the respondent is mobile banking (50%) and the least used product is Electronic fund transfer which constitute only 1.67% of the total.

**Table No 4 Factors influencing the usage of green banking products**

To analyse the factors that influence the usage of green banking products weighted average score ranking method is used.

**Weighted average score ranking method**

Sl. No	Factors	Factors score					Weighted score	Mean Score	Rank
1	Less time consuming	125	40	45	12	4	226	45.2	1
2	Convenience	75	48	36	28	7	194	38.8	3
3	Environment friendly	35	32	24	30	22	143	28.6	4
4	Ease of use	60	80	45	20	3	208	41.6	2
5	Less transaction cost	5	40	30	30	24	129	25.8	5

Various factors that influence the usage of green banking products are considered and weighted average score ranking method is used to find out the most influencing factor. From the above table it is evident that majority of the respondents use green products because they are less time consuming as it has the greater mean score of 45.2 and rank 1. Ease of use is the second most influencing factor of usage with mean scores 41.6. Only few respondents use green banking products as it incurs only low transaction costs with mean score of 25.8 and rank 5.

**Table No 5, Problems faced while using green banking products**

Problems faced	Number of respondents	Percentage
Lack of knowledge	10	16.67
Network problems	25	41.67
Privacy problems	2	3.33
Security related issues	17	28.33
None	6	10
Total	60	100

Network related problems is one of the major problems faced by the green banking users. Around 41.67 % v of the respondents says that they face network related issues. Out of 60 respondents , 17 faced security related issues while using green banking products. Privacy problems are faced only by 2 respondents.

**Table No 6, Satisfaction of respondents**

Satisfaction	Number of respondents	Percentage
Yes	55	91.67
No	5	8.33

Satisfaction of the users of green banking products have a great concern here. Majority (91.67%) of the respondents are satisfied with the green banking products and their usage.

To test the hypothesis we use Chi-Square test

H0: The attributes, gender and awareness are independent

We have,

Gender	Aware	Unaware
Male	18	5
Female	30	7

By solving this contingency table we get the chi –square value

$$\chi^2 = 0.071$$

Table value of  $\chi^2$  for 1 degree of freedom at 0.05 level of significance is 3.841

Calculated value is less than the table value

Hence we accept the null hypothesis that two attributes Gender and awareness are independent.

### **Conclusion**

Green banking that aims at environment sustainability and encouraging environment friendly investment are gaining wide popularity and acceptance nowadays. Here an attempt has been made to identify the perception of customers towards green banking. Most of the respondents are aware of green banking but they are not aware of all the green banking products that are available. More than 90% of the respondents are satisfied with the usage of green banking products. Furthermore the demographic variable gender is independent of awareness. That means there is no relationship between gender and awareness level. It is necessary that proper awareness campaign regarding the use of IT enabled services, adopting environmental friendly practices should be given to the customers to conserve and protect our environment. The factors that influence their usage of green banking products are less time consumption and easiness in usage. Effective programs should be conducted to give proper communication and information for the customers to become more eco-friendly and how to use these green banking products. More than 90% of the respondents are satisfied with the usage of green banking products. Furthermore the demographic variable gender is independent of awareness. That means there is no relationship between gender and awareness level. In order to maintain a competitive advantage over others, to discharge their corporate social responsibility in efficient manner ,and adhere to strict government rules , banks have to promote green banking products and practices among customers.

### **References**

1. Dipika,,2015 “ Green Banking in India: A Study of Various Strategies Adopt by Banks for Sustainable Development” International Journal of Engineering Research & Technology (IJERT).
2. V Kanchan Naidu and Dr C Paramasivam , “A study of green banking trends in India”, Research explorer, ISSN : 2250-1940 , 2349 - 1647 (Online)
3. Jitha Thomas,Siby Linson,2018 Customers’ awarenesss and adoption of green banking in thrissur district, VISTAS Vol. 7, No. 1, pp. 37-46
4. Yadav, R. and Pathak, G. S. (2014). Environmental Sustainability , Green Banking: A Study on Private and Public Sector Banks in India. International Journal of Sustainable Development, 7(8), pp 47-48.

## **The Performance Evaluation Of Co-Operative Banks In Solapur District**

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**Abstract :** This idea of Co-Operative is old. Social and economic progress is not possible without Co-Operations. The spirit of co-operation is innate in human beings. In a nutshell, co-operation means to think together, to agree, to achieve a common goal. A Co-Operative society is an organization set up by a group of individuals to work together for a purpose. The Co-Operative society has been established for the welfare of the common man. Co-Operative banks provide financing for small units in which financial services are provided to small traders, small entrepreneurs, transport operators etc.

**Key Words:** Performance Evaluation, Co-Operative Banks

### **Introduction:-**

In today's age, the Co-Operative movement in India has become the largest Co-Operative banks are making good progress. This is because they have developed the basic capacity to challenge public sector banks and private sector banks. The main reasons for the rapid growth in the growth of Co-Operative banks are the interaction with the customers, the facilities provided to the customer, the personal contact of the customer with the bank.etc. Provides financing and credit for activities. Co-Operative banks in urban areas mainly provide loans to various businesses mainly for self employment, consumers finance, personal finance, home finance, businessman etc. Bank plays an important role in the development of Indian economy. After liberalization banking business was done on a large scale. Banking due to economic reforms the face of the business changed. On the recommendation of the Narsimhan Committee, the Reserve bank of India gave permission to start a new banking business. The dominance of public sector banks in the banking business in India is increasing day by day. The use of technology and new machinery has created a distinct place in the banking industries.

### **Objectives:-**

1. To review the performance of Co-Operative banks in Solapur District
2. To study the service provided by the Co-Operative bank in Solapur District to know the opinion of the customer about the service rendered by the bank.

### **Research Methods :-**

This study realize on secondary data. The data has been collected with the help of financial statements annual reports, office records, internet services, e-mail, websites etc.

### **Review of Literatures:-**

Dr. Sandip K. Bhatt , Dharmendra P. Patel (2013) :

They observed that Co-Operative banks have a huge contribution to make in sustainable development. Co-Operative banks have helped millions of people in Indian financially. Co- Operative banks are actively involved in local communities and local development with strong commitment and social responsibility. These banks do their best to provide banking facilities to the general public as well as to the people in urban and rural areas.

N. Babitha Thimmaiah, Jnaneshwar Pai Marror and Shainy V.P. (2013):

They found that the Indian banking industry was divided into public sector and private sector. Banks are facing problems in both these areas. Employees are encouraged to tackle these issues. It also works towards the development of the bank imparting training to the employees.

### **Observations:-**

The profit and financial positions of the bank taken into consideration while studying the performance of the bank. The success of a bank depends on its profitability and financial positions. The profit financial positions of the bank are calculated using parameters and norms. Analysis of financial statements spread burden analysis and assets liability management assessment evaluates the banks provide profitability and financial position. The Co-Operative bank is divided into two sections Co-Operative bank is divided into urban and rural areas. With a net worth extensive coverage, Co-Operative bank has become a banking habit among people in poor and remote areas. Its advantage is to increase the scope of debts. Now a day's Co-Operativebanks have improved the disbursement of loans through some financial innovations. Evaluations of work performance play a very important role in the progress of the organizations and in the growth and development of the employees. Many of these tools are used to evaluate the working class. In order to develop and improve the bank and increase its efficiency, it is important t o evaluate the performance to determine what kind of work the bank should do in the future. Co-Operative banks are an important segment of the banking industry in India.

### **Discussion :-**

The Co-Operative bank is a very important component of the Indian financial system. The Co-Operative movement originated in the west side. Co-Operative banks are very important in India. Co-Operative bank in India still play an important role in financing in rural areas. The number of primary Co-Operative bank has increased significantly in recent years. There is also remarkable growth in the business of Co-Operative banks in urban areas. Co-Operative banks in India are registered under the Co-Operative society act. The Co-Operative bank is controlled by the Reserve bank of India. Co-Operative banks are governed by the banking regulation act 1949 and the Banking acts (Co-Operative Societies Act) 1960.

#### **Co-Operative banks provided the following services.**

- 1. ATM Service:** - ATM service is provided 24 hrs. 7 days a week. Bank account holders can withdraw money from ATM machines without additional service tax even if the bank is closed. No livid for withdrawal from the account.
  - 2. Cheque Book:** - Account holders can withdraw money through cheques also transfer money from their account to another account through NEFT/RTGS with the help of Cheques. Payment is made to the person according to person name written on the cheque. The cheque is passed only if the name of the person/organization in letter, digit amount date, signature etc. is written on the cheque. The term of the cheque is valid for 3 months from the date mentioned on the cheque. There are no such things as a cheque.
  - 3. Passbook:** - Account holder name, account number, bank name, branch name, IFSC code, account holder photo, account holder address, bank address, account type, account opening date etc. are recorded on the bank passbook. All the transactions of the account holder are recorded on the passbook issued by bank to account holder. Commission, penalty, name of the person to whom the money has been transferred, account number as well as the name of the person if the money is credited to the account number etc.
  - 4. Internet Banking:** - All types of bills are paid through internet banking. This payment is also made by scanning the QR code. Similarly money is transferred from one bank account to another bank account through internet banking. Money is transferred through internet banking without going to any branch of the bank. Mobile phone bills, TV recharge, light bill, LIC policy installment, government tax etc, many types of payment clear by internet banking.
  - 5. Mobile Banking :-** Mobile banking a new way for a bank to complete its banking operations with this facility the account holder do not have to carry cash around or go round to the bank for a simple task. Since this facility is available in all banks, all types of bank payments are accepted and paid by bank apps. Mobile banking is making all types of transactions cashless.
- 6. Deposit Facility :-**
- 1. Saving Deposit:** – People deposited money in saving to meet their daily needs. Saving account has lower interest rates. Saving account is one of the most popular banking services. This account is used for billing of useful services, payments of loans installments, payments of insurance premiums.
  - 2. Fixed Deposits:** - Bank accepts money on fixed deposit for a fixed year in a fixed deposit account. The account holder is paid interest for the year. Some of these terms are double digit .on an average fixed deposit account the account holder gets a return of 7% to 9% annum. Some Co-Operative banks have insurance cover up to 1 lakh .the account holder can also take a loan on those deposits though a fixed deposits receipt.
  - 3. Current Deposits:** -The current account is opened in the bank by professionals, entrepreneurs, merchants. Large deposits are accepted though current account. There is no interest on the current account. Overdraft facility is provided to the merchant class through large number of transactions on current account. Any number of transactions can be made on this account banks may penalize your for not keeping a minimum balance in this account.sms banking ,check book, ATMinternet banking, SMS banking etc are paid through the bank.
  - 4. Recurring DepositsAccount:** - Recurring deposits is a saving option with investment. A fixed amount is credit to this account every month. The amount is returned to the investor with interest at the end of the term. This deposits account helps people to save. Also the interest rate on this account is high. This account can be closed prematurely by the account holder.
  - 5. PigmyDeposits:** -A certain amount is credited to the account daily by the deposits through the bankpigmydeposits account. The term of a pigmy deposit account is 6 month or 1 year. If the pigmy deposit account is closed within due date. The remaining amount is refunded toe the account holder by deducting a certain amount from the amount period. Also, if the account is kept till maturity interest is

paid on it by the bank. This leads to saving habits in the account holders. Withdrawals can also be made on a Pigmy Deposits Account.

**1. LoanFacility :-**

- 1. Housing Loan:** -A home loan is a loan taken from bank to buy a house or flat or to build a new house. This type of loan is usually a secured form of loan. In which the house for which the loan is taken is kept as collateral by the borrower. The mortgage is redeemed when the monthly installment loan is repaid by the borrower.
- 2. Vehicle Loan:** -Banks provide loan for new and old vehicles. This loan is for a certain period of time. This loan is repaid by the borrower in the form of monthly installments. After repaying the entire loan, the borrower is given a certificate that the loan is nil.
- 3 Loan AgainstProperty:** -Mortgage loan is a loan taken by mortgaging property. The mortgage lending carries the burden of the bank on the mortgaged property. The burden on the property is reduced when the loan is repaid on time or after repayment.
- 4 Education Loan:** -Education is getting more expensive day by day. It costs millions of rupees to get admission in course like medical. Engineering or to get higher education loan is a great help. Many talented students have made their careers by taking educational loans. The main purpose of education of a smart child does not stop due to lack of money.
- 5 Business Loan:** -Business loans are given to professionals to grow the business. Many educated unemployed youth are willing to do business. But they can't start a business because they don't have money to do business. Commercial loans are given for such professionals.
- 6 Gold Loan:** -Gold is pledge to customers through banks. Debts range from 65 % to 70% of the current price of gold. Gold mortgage loans are readily available to customers. The interest rate on gold mortgage loan is also low. In this loan when the customer repays the loan the customer's gold is returned to the customers. Also if the customer does not repay the loan the bank sells the customers gold and recovers the loan. Gold and recovers the loan. There is a term for this loan.
- 7 Term Loan:** -Term loan are given to customers for a fixed term. The term loan is repaid in installments from the customers saving account.
- 8 Salary Loan:**-Salaried person can take out a loan on salary. For this the borrower has to give the details of his last 3 months salary sheet to the bank. According immediate loan is available to the borrower. The loan repaid by the borrower from his salary repayment account.

**Limitations:-**

1. This study is limited to Solapur District
2. This study is limited to the performance evaluation of the Co-Operative bank.

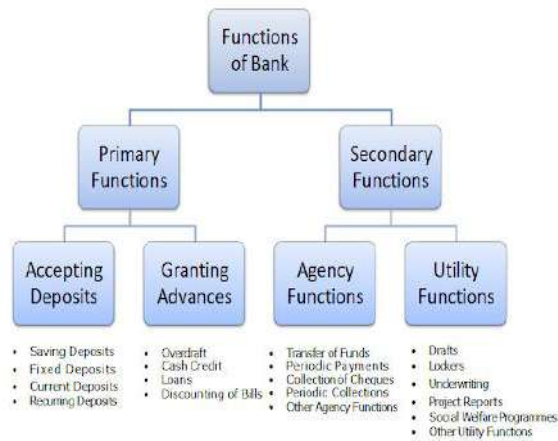
**Acknowledgement :-**

Current the banking sector is undergoing major changes. Good quality services are available through banks. Banks are the backbone of the market. The large turnover in the market is due to the bank. In today's market payments are made through Google pay, phone pay, Amazon pay, pay tm, from the smallest shopkeeper to the largest Dmart shop. This facility has led to an increase in banking business as well as economic growth. I am grateful to my research guide Dr. B. S. Salunkhe for this guidance in this paper. They made it easier for me to study this paper.

**References :-**

1. Abdul Khuddas K. A. and Zakir Husain A. K. (2007) “, Co- -Operative credit and banking”. Limra publication Chennai
2. Mohan V. Tanksale (Ex. CMD Central Bank of India)”. Indian Banking Broadening Horizens”. Dalal Street, 25/08/2013 Val. XXVIII No. 18
3. Dr. Renuka and C. Elamathi (2013) :- “ Development of Co -Operative Banking in India Volume : 3 /Issue : 8 /Aug 2013/ ISSN – 2249 – 555X

**Tables :-**



**Conclusions:-**

Co-Operative bank is an important sector in the banking sector. But Co-Operative banking has been unable to meet the growing demand for consumer credit. Co-Operative banks should get grants and incentive from the government to survive in the competition and grow Co-Operative banks. The policy of the Co-Operative banks should be amended to create employment for a large number of workers. Co-Operative banks are maintaining this average ration level. But Co-Operative banks could not find a place in the mainstream of banking and financial institutions due to various reasons. For the progress of Co-Operative banks in Maharashtra the government should formulate a special policy and implement it. Co-Operativebank using modern banking technology as well as identify the needs of the customers in order to compete with the commercial banks.Co-Operative bank has played a major financial role in the development of retail and small business. The administration of the Co-Operative bank should try to overcome the problem. Co-Operative bank should be seen as a successful business model.

**Illustrations:-**



**Deposits:-**

**Loans:-**



## **Need Of Enhancing And Sustaining Agricultural**

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**Abstract:** Indian economy is agrarian; hence the study of agricultural activity is essential. It is depend on several factors; but soil is an important element for agriculture. The ways of agricultural darken of our future particularly in agricultural sectors due to modern farming practices, particularly unplanned use of chemical fertilizer, pesticides and over irrigation. It outlines the problems which are beginning to become serious and suggest ways in which the situation might be improved. Soil management practices for sustainable agriculture in rain shadow through different ways are discussed and some suggestions are made on the future agriculture. Therefore we look and need of awareness enhancing and sustaining agricultural in rain fed area. Sustainable agricultural practices are internationally regulated and legally enforced by many nations, based in large part on the standards set by the International Federation of Organic Agriculture Movements.

**Key words:** soil degradation; organic farming, sustainable development, rain shadow agriculture.

### **Introduction**

Organic agriculture is a production system that sustains the health of soils, ecosystems and people. It relies on ecological processes, biodiversity and cycles adapted to local conditions, rather than the use of inputs with adverse effects. Organic agriculture combines tradition, innovation and science to benefit the shared environment and promote fair relationships and a good quality of life for all involved. Organic farming was the original type of agriculture, and has been practiced for thousands of years. After the industrial revolution had introduced inorganic methods, some of which were not well developed and had serious side effects, an organic movement in rural India who created biodynamic agriculture, an early version of organic agriculture. Artificial fertilizers, initially with super phosphates and then ammonia-based fertilizers mass-produced using in agricultural practices. Similar advances occurred in chemical pesticides in the 1980, leading to the decade being referred to as the 'pesticide era'.

After 2001. drastic change in agriculture practices due to course of time dry farming converted into irrigated farm. As well as change in technology and development of agricultural practices. Nowadays village farmers rely more on chemical fertilizers and pesticides than the traditional resources. The pattern of modern agriculture in village has aroused public concern. Over environmental problems through modern agriculture practices, loss of natural soil productivity etc. and may have a negative impact on the soil environment. Chemical fertilizer applied to soil can provide crops with specific ingredient elements, but crops cannot take up all the nutrients added as fertilizer. Thus, farming practices which use heavy chemical fertilizers may cause some elements in the soil to be depleted and others to be deposited in excess, resulting in a worsening of the soil nutrients balance and reduced soil productivity. Some of the surplus chemicals may degrade the soil ecosystem and as pollutants.

Due to this reason organic farming is a topic which has received considerable attention in recent years from environmentalist, agriculturalists. In Pimpalgaon (Alwa) village sustainable agriculture has received very little attention, mainly because farming has been focused on maximizing yield. In terms of agricultural technology, the major components of sustainable agriculture are soil and water management, pest and weed control and nutrient cycling. Thus the soil is the key natural resource in agricultural production. This paper discusses awareness about organic farming for sustainable environment and agriculture in Pimpalgaon (Alwa) village of soil associated with agricultural productivity and soil management strategy for sustainable agriculture.

### **Methodology**

The study is conducted in rural drought prone zone in Jamkhed tahsil. Cheap aim of study of this tahsil is to identify experience of farmers in agricultural area. Researcher visited to this village continuous and dialog with old and young farmers and share their experience about soil productivity, use of organic manures, changing nature of use of chemical fertilizers and pesticides, cropping pattern, production from their agricultural land. Researcher collected soil samples from irrigated and dry land area. Such soil tested in laboratory for further work. In this way only primary data collected from the study area for this article.

## **Result and Discussion:**

### **Soil management**

Improving soil quality for better plant growth has been a primary method of soil science. Loss of soil quality can result from mismanagement of soil resource in the absence of information of how to manage it properly. Soil management strategy for sustainable agriculture must be based on maintaining soil quality in the long term. Soil properties have changed due to intensive cropping, monoculture, over irrigation and use of agrochemicals. The present rates to use of fertilizers in this village reduce the soil fertility, so it is not appropriate to apply these to the soils in the future. Therefore awareness of the farmer in this village is essential to improve quality of soil for sustainable agriculture in their future life.

Plants need nitrogen, phosphorus, and potassium, as well as micronutrients and symbiotic relationships with fungi and other organisms to flourish, but getting enough nitrogen, and particularly synchronization so that plants get enough nitrogen at the right time is likely the greatest challenge for organic farmers. Crop rotation and green manure help to provide nitrogen through legumes which fix nitrogen from the atmosphere through symbiosis with rhizoidal bacteria. Intercropping, which is sometimes used for insect and disease control, can also increase soil nutrients, but the competition between the legume and the crop can be problematic and wider spacing between crop rows is required. Crop residues can be ploughed back into the soil, and different plants leave different amounts of nitrogen, potentially aiding synchronization. Organic farmers also use animal manure, certain processed fertilizers such as seed meal and various mineral powders such as rock phosphate and greensand, a naturally occurring form of potash which provides potassium. Together these methods help to control erosion.

Mixed farms with both livestock and crops can operate as lye farms, whereby the land gathers fertility through growing nitrogen-fixing forage grasses and grows cash crops or cereals when fertility is established. Farms without livestock may find it more difficult to maintain fertility, and may rely more on external inputs such as imported manure as well as grain legumes and green manures, although grain legumes may fix limited nitrogen because they are harvested.

### **Weed management**

Organic weed management promotes weed suppression, rather than weed elimination, by enhancing crop competition and phytotoxic effects on weeds. Farmers integrate cultural, biological, mechanical, physical and chemical tactics to manage weeds without synthetic herbicides. Organic standards require rotation of annual crops, meaning that a single crop cannot be grown in the same location without a different, intervening crop. Organic crop rotations frequently include weed-suppressive cover crops and crops with dissimilar life cycles to discourage weeds associated with particular crop. Farmers strive to increase soil organic matter content, which can support microorganisms that destroy common weed seeds. Other cultural practices used to enhance crop competitiveness and reduce weed pressure include selection of competitive crop varieties, high-density planting, tight row spacing, and late planting into warm soil to encourage rapid crop germination.

### **Controlling other organisms**

Organisms aside from weeds that cause problems in agricultural practices include nematodes, fungi and bacteria. Farmers use a wide range of Integrated Pest Management practices to prevent pests and diseases. These include, but are not limited to, crop rotation and nutrient management; sanitation to remove pest habitat; provision of habitat for beneficial organisms; selection of pest-resistant crops and animals; crop protection using physical barriers, such as row covers; and crop diversification through companion planting. Examples of beneficial insects include minute pirate bugs, big-eyed bugs, and to lesser extent ladybugs, all of which eat a wide range of pests. When these practices are insufficient to prevent or control pests in farming may apply a pesticide. With some exceptions, naturally occurring pesticides are allowed for use in agriculture, and synthetic substances are prohibited. Pesticides with different modes of action should be rotated to minimize development of pesticide resistance.

### **Productivity**

Various studies find that new agriculture versus traditional agriculture, organic crops yielded 91%, or 95-100% along with 50% lower expenditure on fertilizer and energy, and 97% less pesticides, or

100% for corn and soybean, consuming less energy and zero pesticides. The results were attributed to lower yields in average and good years but higher yields during drought years. Organic farms withstand severe weather conditions better than conventional farms, sometimes yielding 70-90% more than conventional farms during droughts. Organic farms are more profitable in the drier areas. Organic farms survive much better, retaining 20 to 40% more topsoil and smaller economic losses at highly significant levels than their neighbors. Contrary to widespread belief, organic farming can build up soil organic matter better than conventional no-till farming, which suggests long-term yield benefits from organic farming.

### **Profitability**

The decreased cost of synthetic fertilizer and pesticide inputs, along with the higher prices that consumers pay for organic produce, contribute to increased profits. Organic farms have been consistently found to be as or more profitable than chemical farms. Without the price premium, profitability is mixed. Organic production was more profitable and given price premiums.

### **Sustainability**

Traditional ways like use of organic manure in agriculture can be more conducive to food security in India. That it is more likely to be sustainable in the long-term and that "yields had more than doubled where organic or near-organic practices had been used" and that soil fertility and drought resistance improved. Agriculture imposes negative externalities upon society through land and other resource use, biodiversity loss, erosion, pesticides, nutrient runoff, water usage, subsidy payments and assorted other problems. Positive externalities include self-reliance, entrepreneurship, respect for nature, and air quality. Organic methods reduce some of these costs. It has been proposed that organic agriculture can reduce the level of some negative externalities from agriculture.

### **Soil conservation**

It is alarming problem in developing countries like India. Role of Government organization and NGO to encourage farmer to increase plantation on uncultivated area, such plantation support to built of good soil for sustainable agriculture in this village. It is essential to awareness among farmers about vegetation cover and their role for eco-friendly environment and sustainable agriculture in Pimpalgaon (Alwa) village for future life.

Traditional agriculture emphasizes closed nutrient cycles, biodiversity, and effective soil management providing the capacity to mitigate. Organic agriculture can decrease fossil fuel emissions and, like any well managed agricultural system, sequesters carbon in the soil. The elimination of synthetic nitrogen in organic systems decreases fossil fuel consumption.

### **Biodiversity**

A wide range of organisms benefit from organic farming, but it is unclear whether organic methods confer greater benefits than conventional integrated agri-environmental programmes. Nearly all non-crops, naturally occurring species observed in comparative farm land practice studies show a preference for organic farming both by abundance and diversity. Birds, butterflies, soil microbes, earthworms, spiders, vegetation, and mammals are particularly affected. Lack of herbicides and pesticides improve biodiversity fitness and population density. Many weed species attract beneficial insects that improve soil qualities and forage on weed pests Soil-bound organisms often benefit because of increased bacteria populations due to natural fertilizer such as manure, while experiencing reduced intake of herbicides and pesticides. Increased biodiversity, especially from beneficial soil microbes have been proposed as an explanation for the high yields experienced by some organic plots, especially in light of the differences seen in a 21-year comparison of organic and control fields.

**Capacity building:** Traditional agriculture can contribute to ecologically sustainable, socio-economic development, especially in developing countries. The application of organic principles enables employment of local resources e.g., local seed varieties, manure, etc. and therefore cost-effectiveness. Local and international markets for organic products show tremendous growth prospects and offer creative producers and exporter's excellent opportunities to improve their income and living conditions.

## **Conclusion**

In last two decades, drastic changes of thinking of farmers in Jamkhedtahsil. It has been increasing agricultural production. Nowadays, farmer faced with difficult environmental problems that arise in agricultural ecosystems. Agricultural scientist is urgently required to provide economically acceptable alternative to help these problems. Sustainable development through organic eco-friendly agriculture may be defined as an agriculture system which gives farmers to profitable livelihood while conserving agricultural resources and environmental quality. Good soil management is a core component. Soil testing should be the first step in managing soil for sustainable agriculture, so we can know the problems are now and what kind of problems are arise in the future. Excessive use of chemical fertilizers and over irrigation has become a cause of environmental pollution. Therefore, recycling of nutrient in agriculture is essential and it should be evaluated continuous.

Traditional agricultural methods are internationally regulated and legally enforced by many nations, based in large part on the standards set by the International Federation of Organic Agriculture Movements. Large amount of village fertile surface soil are being lost as a result of soil erosion. In recent years, fallow land has been increasing. Therefore, proper management of agriculture practices and measures to control soil erosion are necessary. At present livestock farming is essential, but it is not easy to small farmers. Nowadays encourage and aware about organic farming. Farmers to treat their farm wastes and such waste convert them into organic matter. So, as to development the best combination of current technology and traditional farm practices is an important to development of sustainable agricultural practices in this village.

## **References:**

1. **Dr. B A Patil**, Environmental Awareness, Sunny publication, Pune.
2. **Kaustick KK**, 1997, Sustainable Agriculture: issues and policy implication, production. 37(4)
3. Jan-March.
4. **Rais Akhtar**, 1990, Environmental pollution and Health problems, Ashish Publication, Dehli.
5. **Singh GR**, 2001, Organic Farming for Sustainable Agriculture- Indian farming, June pp 12-14.
6. **Singh Lalji, S S Bargali, S Puri and L Ghosh** 2006. For sustainable development Cultivating Jatropha: a promising green fuel- and raw material- yielding plant. Indian Horticulture. 51 (5): 13-15.

## Properties of Self-Adjoint Boundary Value Problem on Graphs

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**Abstract:-** The main objective of this paper is to study the properties of second order differential operators on directed graphs. Different types of function spaces are defined on the graph. We define, in terms of known differential systems and function spaces, graph boundary value problems. "Prove that the original boundary value problem on the graph is equivalent to the boundary value problem system with differential equations and boundary conditions". An opposing example is given to explain the fact that, for the differential Sturm Liouville operators on a graph, self-association always implies regularity. A differential operator on weighted graphs was characterized by a system of ordinary differential operators. A local operator class is introduced to realize that which operators should be considered defined on the weighted graph. When the lower bound of the edge length is positive, all local self-contiguous extensions of the minimal symmetry operator can be distinguished by boundary conditions at the vertices.

**Keyword :-** Differential Equation, Sturm-Liouville, self-adjointness, boundary conditions.

### Introduction:-

Let  $G$  be a graph with a finite number of edges, say  $K$ , each of which has a finite length. Denote the edges by  $e_i, i = 1, \dots, K$ , and the corresponding lengths of the edges by  $l_i, i = 1, \dots, K$ .

We consider the formal second order differential operator.

$$Ly := -\frac{d^2y}{dx^2} + q(x)y = \lambda y \quad \dots\dots\dots(I)$$

on  $G$  where, Throughout this article,  $q$  is a real-valued function on  $G$ . Limits are imposed on  $q$  because of the need for additional structure, assuming that  $q$  is essentially limited.

At the vertices or nodes of  $G$ , we impose boundary conditions on those that are formally self-adjacent (see [15] for the definition in the system case and [2] for the graph). Such boundary conditions will be formally called self-contiguous boundary conditions. In particular by equation (I) we mean the system of equations

$$-\frac{d^2y_i}{dx^2} + q_i(x)y_i = \lambda y_i, x \in (0, l_i), \quad i = 1, \dots, K$$

where  $q_i$  and  $y_i$  denote  $q$  and  $y$  restricted to  $e_i$  and  $e_i$  is identified with  $(0, l_i)$ . We consider boundary conditions of the form

$$\sum_{j=1}^k [\alpha_{ij} y_j + \beta_{ij} y_j'](0) + \sum_{j=1}^k [\gamma_{ij} y_j + \delta_{ij} y_j'](l_j) = 0, \quad i = 1, \dots, 2K,$$

where the number of nonlinearly dependent boundary conditions is  $2K$ . essential condition for the number of non-linearly dependent boundary conditions (but not sufficient) for self-adjoint of the upper limit problem  $G$ . Neighborhood boundary conditions for the Sturm Liouville operator on graphs has been characterized by Harmer, Kostykin and Schrader, and Kuchment in [06, 07, 12]. Carlson in [2] gives a description of the dependent and self-adjoint domains for a class of differential operators on weighted graphs. [16, 17] the development of the theory of differential graph operators is recent. Most of the research in this area has been done in the past two decades. However, it should be noted that multipoint boundary problems (less general than graph boundary problems) and differential systems (more general than graph boundary problems) have been studied long before that. Differential graph operators arise naturally in chemistry, physics, and engineering (nanotechnology) and are mathematically interesting. Among these applications of differential operators on graphs is the theory of free electrons of conjugated molecules in chemistry, see [04, 05, 17], quantum series and quantum chaos. ., see [07, 08, 09, 10], photonic crystals and scattering theory, see [03, 11, 13].

### Boundary Value Problems on Graphs

The differential equation (I) on the graph  $G$  can now be considered as the system of equations

$$-\frac{d^2y_i}{dx^2} + q_i(x)y_i = \lambda y_i, x \in (0, l_i), i = 1, \dots, K \quad \dots\dots(II)$$

Where  $q_i$  and  $y_i$  denote  $q|_{e_i}$  and  $y|_{e_i}$ .

The boundary conditions at an end  $v$  are characterized in terms of the values of  $y$  and  $y'$  at  $v$  on each of the collision corners. In particular if the edges which start at  $v$  are  $e_i, i \in \Lambda_s(v)$  and the edges which end at  $v$  are  $e_i, i \in \Lambda_e(v)$  then the boundary conditions at  $v$  can be expressed as

$$\sum_{j \in \Lambda_s(v)} \alpha_{ij} y_j + \beta_{ij} y_j'(0) + \sum_{j \in \Lambda_e(v)} \gamma_{ij} y_j + \delta_{ij} y_j'(l_i) = 0 \quad \dots(\text{III})$$

for  $i = 1, \dots, N(v)$ , where  $N(v)$  is the number of non linearly dependent for the boundary conditions at node  $v$ .

Let  $\alpha_{ij} = 0 = \beta_{ij}$  for  $i = 1, \dots, N(v)$  and  $j \notin \Lambda_s(v)$  and likewise let  $\gamma_{ij} = 0 = \delta_{ij}$  for  $i = 1, \dots, N(v)$  and  $j \notin \Lambda_e(v)$ .

The boundary conditions (III) considered over all ends  $v$ , after possible relabeling, may thus be written as

$$\sum_{j=1}^K [\alpha_{ij} y_j + \beta_{ij} y_j'](0) + \sum_{j=1}^K [\gamma_{ij} y_j + \delta_{ij} y_j'](l_j) = 0, \quad i = 1, \dots, 2K \quad \dots(\text{IV})$$

where  $2K$  is the total number of non linearly dependent for the boundary conditions. Note that the complete shape of the graph  $G$  (minus the number and lengths of edges) is encapsulated in the boundary conditions.

To ensure formal self-adjointness we require the Lagrange form,  $(Lf, g) - (f, Lg)$ , to vanish for all  $f, g \in C^2(G)$  obeying (III). For the self-adjoint boundary conditions  $N(v) = \#(\Lambda_s(v)) + \#(\Lambda_e(v))$  and  $\sum_v N(v) = 2k$ . The construction of the self-adjoint boundary value problems on graphs was studied in detail in [2], and the class of self-adjoint boundary conditions was characterized in the references [06-07]. The boundary value problem (II)-(III) on  $G$  can be formulated as an operator eigenvalue problem in  $(G)$ , [1, 2, 18], for the closed densely defined operator

$$Lf: = -f'' + qf \quad \dots(\text{V})$$

With domain

$$D(L) = \{f \mid f, f' \in AC, Lf \in \mathcal{L}^2(G), f \text{ obeying (III)}\}, \quad \dots(\text{VI})$$

or vice-versa

$$D(L) = \{f \mid f \in \mathcal{H}^2(G), f \text{ obeying (III)}\},$$

since  $\mathcal{H}^m$  spaces can be defined in terms of absolutely continuous functions, see [14].

The formal self-adjointness of (II)-(III) ensures that  $L$  is a closed densely defined self-adjoint

**Corollary:**-If  $L_0$  is a closed symmetric operator, with finite defect indices, bounded below on a complex Hilbert space and  $L$  is a self-adjoint extension of  $L_0$  then  $L$  is lower semibounded.

**Theorem:**- The operator  $L$  is lower semibounded

Proof: From the above corollary as  $L$  is self adjoint, we need only show that  $L$  is lower semi-bounded on  $C_0^\infty(G)$ . If  $f \in C_0^\infty(G)$ . Then

$$(Lf, f) = \int_G (-f'' \bar{f} + q|f|^2) dx = \int_G (|f'|^2 + q|f|^2) dx \geq -\|f\|^2 \text{ess sup } |q|.$$

## 1.2 System Formulation

We now show that the boundary value problem on a graph can be reformulated as a boundary value problem for a system on the interval  $(0, 1)$ .

Consider the edge  $e_i$  of length  $l_i$ , we then have

$$-y_i''(x) + q_i(x)y_i(x) = \lambda y_i(x) \text{ on } (0, l_i)$$

$$\text{Let } t = \frac{x}{l_i} \text{ and } \tilde{y}_i(t) = y_i(l_i t). \text{ Then}$$

$$-\frac{d^2}{dt^2} [\tilde{y}_i(t)] = -l_i^2 y_i''(l_i t) = l_i^2 (\lambda y_i(l_i t) - q_i(l_i t) y_i(l_i t)) = l_i^2 (\lambda - Q_i(t)) \tilde{y}_i(t),$$

Where

$$Q_i(t) = q_i(l_i t)$$

Thus for each  $i = 1, \dots, K$  our transformed equation is

$$-(\tilde{y}_i'') + l_i^2 (Q_i - \lambda) \tilde{y}_i = 0 \text{ on } (0, 1)$$

giving the system

$$\tilde{L}\tilde{Y} := -W\tilde{Y}'' + Q\tilde{Y} = \lambda\tilde{Y}. \quad \dots(\text{VII})$$

$$\text{where } W = \text{diag} \left[ \frac{1}{l_1^2}, \dots, \frac{1}{l_K^2} \right], \tilde{Y} = \begin{bmatrix} \tilde{Y}_1 \\ \vdots \\ \tilde{Y}_K \end{bmatrix} \text{ and } Q = \text{diag} [Q_1, \dots, Q_K].$$

We now consider the boundary conditions. After performing the above transformation on each edge we have that all our edges are now of length 1 and thus we only have the endpoints at 0 and 1. Hence the boundary conditions may be written in matrix form as

$$\tilde{Y}(0) + \tilde{B}\tilde{Y}'(0) + \tilde{C}\tilde{Y}(1) + \tilde{D}\tilde{Y}'(1) = 0 \quad \dots(\text{VIII})$$

$$\text{Where } \tilde{A} = [\alpha_{ij}], \tilde{B} = \begin{bmatrix} \beta_{ij} \\ l_j \end{bmatrix}, \tilde{C} = [\gamma_{ij}] \text{ and } \tilde{D} = \begin{bmatrix} \delta_{ij} \\ l_j \end{bmatrix}.$$

Thus our original boundary value problem on the graph  $G$  is equivalent to the system boundary value problem with differential equation (VII) and boundary conditions (VIII).

Let  $\mathcal{L}_K^2$  denote the weighted vector space  $\mathcal{L}^2$

$$\mathcal{L}_K^2 = \{F: (0,1) \rightarrow \mathbb{C}^k \mid F_i \in \mathcal{L}^2(0,1), i = 1, \dots, K\}$$

with inner product

$$\langle F, G \rangle_w = \sum_{i=1}^k l_i \int_0^1 F_i \bar{G}_i dt = \int_0^1 F^T W^{-\frac{1}{2}} \bar{G} dt. \quad (\text{IX})$$

It should be noted that  $\mathcal{L}_K^2$  is isometrically isomorphic to  $\mathcal{L}^2 G$  under the identification  $\mathcal{L}^2 G \rightarrow \mathcal{L}_K^2$  defined by

$$f(x) \mapsto \begin{bmatrix} f|_{e_1}(l_1 t) \\ \vdots \\ f|_{e_k}(l_k t) \end{bmatrix}$$

where  $x \in G$  and  $t \in (0, 1)$ .

The boundary value problem (VII) and (VIII) can be reformulated as an operator eigenvalue problem, [19], by setting

$$\bar{L}F = -WF'' + QF$$

with domain

$$D(\bar{L}) = \{F \mid F, F' \in AC, \bar{L}F \in \mathcal{L}^2(G), F \text{ Obeying (VIII)}\}$$

**Theorem:-** The system (VII) and (VIII) is formally self-adjoint in  $\mathcal{L}_K^2$  if and only if the boundary value problem (II) and (III) in  $\mathcal{L}^2(G)$  is formally self-adjoint.

**Proof:**

Let  $F, G : (0, 1) \rightarrow \mathbb{C}^k$  be  $C^2$  and denote by  $f$  and  $g$  the functions on  $G$  defined by  $f|_{e_i}(l_i t) = F_i(t)$  and  $g|_{e_i}(l_i t) = G_i(t)$  for  $i = 1, \dots, K$  and  $t \in (0, 1)$ , then under this identification

$$\begin{aligned} \langle \bar{L}F, G \rangle_w - \langle F, \bar{L}G \rangle_w &= - \sum_{i=1}^k l_i^{-1} \int_0^1 [F_i'' \bar{G}_i - F_i \bar{G}_i''] dt \\ &= - \sum_{i=1}^k l_i^{-1} \int_0^1 [F_i' \bar{G}_i - F_i \bar{G}_i']_0^1 \\ &= \sum_{i=1}^k [(f' \bar{g} - f \bar{g}')|_{e_i}]_0^{l_i} \\ &= (LF, g) - (f, Lg) \end{aligned}$$

and (III) holds if and only if (VIII).

In this setting the formal self-adjointness of (VII) and (VIII) ensures that the operator  $\tilde{L}$  on  $\mathcal{L}_K^2$  is a closed densely defined self-adjoint operator and thus the formal self-adjointness of (II) and (III) ensures that  $\tilde{L}$  is a closed densely defined self-adjoint operator in  $\mathcal{L}_K^2$ , see [20].

### 1.3 Irregularity

In this section we show that self-adjointness does not necessarily denote regularity, in fact in most cases it does not.

Without loss of generality we may assume that our boundary conditions are normalised, i.e. of the form

$$\begin{aligned} U_1(Y) = U_{10}(Y) - U_{11}(Y) &= 0 \\ U_2(Y) = U_{20}(Y) - U_{21}(Y) &= 0 \end{aligned}$$

Where

$$\begin{aligned} U_{10}(Y) &= A_1 Y'(0) + A_{10} Y(0) \\ U_{20}(Y) &= A_2 Y'(0) + A_{20} Y(0) \\ U_{11}(Y) &= B_1 Y'(1) + B_{10} Y(1) \\ U_{21}(Y) &= B_2 Y'(1) + B_{20} Y(1) \end{aligned}$$

where for each  $i = 1, 2$ , at least one of the matrices  $A_i, B_i$  is different from zero. If  $A_i = 0$  then by the normalisation process given in [15] we will obtain that  $A_{i0}$  will then become  $A_i$  and similarly for  $B_i = 0$ . Following [15] we define regularity of boundary conditions as follows.

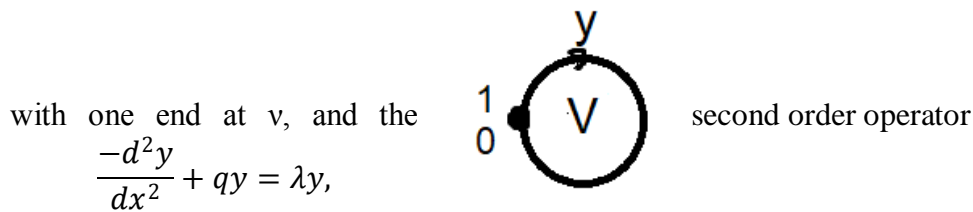
**Definition** :- The normalised boundary conditions, above, are said to be regular if both the numbers  $\chi^-$  and  $\chi^+$  defined by

$$\chi^- = i^{2n} \det \begin{bmatrix} W^{-\frac{1}{2}} B_1 & -A_1 \\ W^{-\frac{1}{2}} B_2 & -A_2 \end{bmatrix}, \chi^+ = i^{2n} \det \begin{bmatrix} A_1 & -W^{-\frac{1}{2}} B_1 \\ A_2 & -W^{-\frac{1}{2}} B_2 \end{bmatrix}$$

do not vanish. Where  $W$  is the constant, positive, diagonal weight matrix of (VII).

We make use of a counter example to show that even a simple self-adjoint boundary value problem on a graph need not be regular.

Consider the following weighted graph



with boundary conditions of the form

$$\begin{aligned} y(0) &= y(1), \\ y'(0) &= y'(1), \end{aligned}$$

at  $v$ .

We then have that

$$\chi^+ = -\det \begin{bmatrix} -1 & -1 \\ -1 & -1 \end{bmatrix} = 0$$

i.e. we don't have regularity.

Most self-adjoint problems on graphs are not regular, it is observed from the above counter example.

### Conclusion:-

In this article, we have proved that a self-adjoint boundary value problem on a graph can be considered as a self-adjoint system. This system was then proved to be equivalent to a two-way system but with distinct boundary conditions. Then, Abstract Prufer's angular method is used to find the asymptote of the eigenvalues. We then return to the original structure of the graph, using the partial differential equation technique. We have developed a differential formula for boundary value problems on graphs. From this, we can derive a kind of Dirichlet-Neumann fallback method for boundary problems on graphs. Thus, asymptotic approximations of the eigenvalues and eigenfunctions are obtained.

### References

1. S. Agmon Lectures on elliptic boundary value problems, Princeton, 1965.
2. R. Carlson, Adjoint and self-adjoint differential operators on graphs, Electronic J. Differential Equations, 1998 (1998), No. 06, 1-10.
3. N. Gerasimenko, B. Pavlov, Scattering problems on non-compact Graphs, Theoretical and Mathematical Physics, 74 (1988), 230-240.
4. J.S. Griffiths, A free electron theory of conjugated molecules: I. Polycyclic hydrocarbons Trans. Faraday Soc., 49 (1953), 345-351.
5. J.S. Griffiths, A free electron theory of conjugated molecules: II. A derived algebraic scheme Proc. Camb. Phil. Soc., 49 (1953), 650-658.
6. M. Harmer, Hermitian symplectic geometry and extension theory, J. Phys. A: Math. Gen., 33 (2000), 9193-9203.
7. V. Kostykin, R. Schrader, Kirchhoff's rule for quantum wires, J. Phys. A: Math. Gen., 32 (1999), 595 - 630.

8. V. Kostrykin, R. Schrader, Kirchhoff's rule for quantum wires: II. The inverse problem with possible applications to quantum computers, *Fortschr. Phys.*, 48 (2000), 703 - 716.
9. V. Kostrykin, R. Schrader, Quantum wires with magnetic fluxes, *Commun. Math. Phys.*, 237 (2003), 161 - 179.
10. T. Kottos, U. Smilansky, Quantum chaos on graphs, *Phys. Rev. Lett*, 79 (1997), 4794 - 4797.
11. T. Kottos, U. Smilansky, Chaotic scattering on graphs, *Phys. Rev.Lett*, 85 (2000), 968 - 971.
12. P. Kuchment, Quantum graphs: I. Some basic structures, *Waves Random Media*, 14 (2004), S107 - S128.
13. P. Kuchment, L. Kunyansky, Differential operators on graphs and photonic crystals, *Adv. Comput. Math.*, 16 (2002), 263 - 290.
14. S. Mizohata, *The theory of partial differential equations*, Cambridge U.p., 1973.
15. M.A. Naimark, *Linear differential operators, part I*, Frederick Ungar Publishing Co., New York, 1967.
16. L. Pauling, The diamagnetic anisotropy of aromatic molecules, *J.Chem. Phys.*, 4 (1936), 673-677.
17. K. Ruedenberg, C.W. Scherr, Free-electron network model for conjugatedSystems: I. Theory, *J. Chem. Phys.*, 21 (1953), 1565-1581.
18. R.E. Showalter, *Hilbert Space Methods for Partial Differential Equations*, *EJDE Monographs*, 2001.
19. J. Weidmann, *Linear Operators in Hilbert Spaces*, Springer-Verlag, 1980.
20. K. Yoshida, *Functional Analysis*, Springer-Verlag, Berlin Heidelberg New York, 1980.

## **RFID Technology Use In Libraries: Boon For Library Management**

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**Abstract:** The article attempts to describe the relevance and importance of adopting emerged usage of RFID technology in library management aspects elaborately. It is one of the required technological tool for library management required in digital age. Especially, in post COVID 19 pandemic scenario RFID played important role in smoothening the functions in libraries. The changed situation chipped out the need of RFID in libraries. It will also portray how the various components of RFID will play a role in library management effectively. Overall, this research paper tries to look in to role of various related aspects of RFID in library activities.

### **Introduction:**

The role played by the RFID (Radio Frequency Identification) technology in managing the library resources and in providing the library services is paramount one among various aspects of library management. It will play important role in proper management of circulation operations and security checking of the library resources at the gate of exit in libraries. It can help in decreasing the workload on library staff. Each library material which is issuable to library users will have unique RFID tags with related information of the library material. An RFID technology adopted libraries were having installed RFID tags readers at the circulation desk with additional readers installed at the exit gates near the entrances. These devices help in detecting any library material taking away without proper check out mechanism. Thus, RFID also helps in detecting the theft away library material easily at the exit gate without human intervention. It requires special set of technological application tools to function properly. As a result, usage of RFID in libraries has changed dramatically with the distinctive tags attached with the library materials. Research suggests that usage of RFID technological applications in libraries were shown significantly decrease in theft of library materials wherever the RFID technological tools adopted. It has been shown to decrease in theft of library materials to greater extent.

### **Statement of the Problem:**

Present research study has basically look into the purposes and reasons for adopting the applications of RFID technology in library management and its efficiency in library operations more effectively. Hence, the research problem selected for the study has to be stated as “RFID Technology Use in Libraries: Boon for Library Management”.

### **Objectives of the Paper:**

The research paper has the following objectives,

1. To know the role of applications of RFID in library management.
2. To find out the reasons for importance of adopting RFID in libraries.
3. To made an effort in analyzing the review of literature published.
4. To draw the findings, suggestions and conclusions based upon the study.

### **Purpose of Research:**

Basic aim of this research paper is to know the role played by the RFID technology in library operations.

### **Research Methodology:**

In adherence to the requirements of the objectives of the research study, research design employed for the study is analytical and descriptive type. This research design is adopted to have greater accuracy and in depth analysis of research study. This present research study has got its own limitations.

### **Required RFID compliant tools:**

In order to adopt the RFID technological applications in libraries, following RFID compliant tools are required to make reality of the technological applications in libraries.

- 1) RFID tags
- 2) Hand held RFID information reader.
- 3) Gate antennas to be installed at the gate of the library.
- 4) Software operating system.

### **Reasons and Advantages of RFID Technology Adoption in Libraries:**

In the context of the research paper, we can note down few of the following benefits of RFID in libraries as follows,

- 1) Easier & faster circulation operations
- 2) Almost total nil loss of library materials due to theft by the users.

- 3) Due to attachment of unique RFID tags to the library materials helps in increasing the security for Library Items.
- 4) Helps in quicker and faster without more manpower in taking inventory management.
- 5) It gives total new technological experience for both the library staff and users in library system.
- 6) Minimisation of human intervention in library operationsto the greater extent.

**Disadvantages:**

1. It is costlier to implement in all the libraries. But, after implementing benefits are more.
2. Lack of standard of the RFID tags.
3. Functions of RFID fully depend upon supply of electricity.
4. Maintenance problem with escalating costs.

**Tools Used for Gathering Information:**

Useful information for the study has been gathered from secondary resources. Available information from secondary sources from the journal article and from the Internet are used. Further, all the information collected from different sources has been collated and presented herewith.

**Review of Literature:**

Few selected works of the researchers in the field have to be reviewed herewith as part of the research study.

Chhetri, M., & Thakur, R. S. (2019): Explained about the experience of implementation of RFID technology in UPES library, Dehradun through case study.

Gupta, P., &Margam, M. (2017): Presented results of the study based upon review of literature related to RFID in Indian libraries.

Hasan, N (2014):Discussed about the issues and challenges in implementing RFID in libraries.

Rahman, M. H., & Islam, M. S. (2019): Described the elaborate study on emerged issues in implementation of RFID in university libraries of Bangladesh.

Yusof, M K &Saman, M Y (2016): Elaborated about the available survey and results of the literature.

**Findings of the Study:**

We can note down few of the important findings of the research study as follows,

- 1) Benefits of RFID in library operations are more.
- 2) Various researchers are published papers on many issues related to RFID in libraries which is based upon outcomes of the review of literature published worldwide.
- 3) RFID technology is providing new technological experience to both library staff and users worldwide.

**Suggestions:**

A few important suggestions have been noted down as a part of the discussion have been made herewith. The few suggestions are as follows,

- 1) Libraries should go for adopting applications of RFID in their operations.
- 2) RFID in libraries will ease stress full of the work among library staff. .
- 3) Conduct of orientation programme to library users in using the benefits of RFID is must needed aspect from the study.
- 4) Properly structured information literacy skills will play a helpful role for users in using RFID benefits to the fuller extent.

**Conclusion**It is evident from the research study that, the benefits of RFID in library operations are more for library staff and users. Emerged situation in libraries necessitates to adopt RFID in library management activities. Hence, it is hoped that study addressed issues related to RFID issues to some extent.

**References:**

- 1) Yusof, M K &Saman, M Y (2016)The Adoption and Implementation of RFID: A Literature Survey., volume 26, issue 1, pages 31-52 (2016). <https://cpb-us-e1.wpmucdn.com/blogs.ntu.edu.sg/dist/8/644/files/2016/11/LIBRESv26i1p31-52.MohdKamirYusof-19zpwlc.pdf>. Accessed on 12/4/22 at 2pm.
- 2) Hasan, N (2014). Roadmap for RFID Implementation in Libraries: Issues and challenges. *International Journal of Information Library and Society*, 3(1), 65.
- 3) Gupta, P., &Margam, M. (2017). RFID technology in libraries: A review of literature of Indian perspective. *DESIDOC Journal of Library & Information Technology*, 37(1), 58. [:/Users/LIB\\_PC%2001/Downloads/10772-30710-1-PB.pdf](https://Users/LIB_PC%2001/Downloads/10772-30710-1-PB.pdf).

- 4) Rahman, M. H., & Islam, M. S. (2019). "Implementation of RFID in university libraries of Bangladesh", *Global Knowledge, Memory and Communication*, Vol. 68 No. 1/2, pp. 112-124. <https://doi.org/10.1108/GKMC-06-2018-0053> Download as .RIS.
- 5) Chhetri, M., & Thakur, R. S. (2019). Implementation of RFID technology in libraries: A case study in UPES library. *Library Philosophy and Practice (e-journal)*, 2344.

## **Significance Of Chemistry In Technological Development And Brief Study Of Chemical Composition Of Electric Bulb And Smartphone**

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**Abstract:** This article briefly discussed the role of basic science, especially chemistry, in the sustainable development of technology, and also discussed the chemical composition of electrical and electronic devices. The threat posed to natural resources, i.e. natural elements, is also discussed in this article in Very Brief.

**Keywords:** Science, Chemistry, Revolution, Technology, Electiconic, Electrical

### **Introduction:**

Chemistry is a science concerned with the study of the chemical composition, properties and orientation of matter. Chemistry plays an important role in science and technology as all materials, including products chemical products, have characteristic chemical properties, and the chemical properties of materials vary according to their chemical composition. In the process of technological development, chemistry plays an extremely important role. During the global industrial revolution, chemical production and iron production playedakeyrole.In the 21st century, light bulbs are an indispensable part of our daily life. If we had no light bulbs, our life would become dark at night. Travel, hospital operations, administrative work, security, defense, etc. can easily be made in light of a light bulb. In this way, they are included in our essential goods. The mobile phone is a very useful and important device. It helps us in many different ways. It entertains and informs us. All we need to do is use this device intelligently and wisely. We must remember that this is primarily a device for communication purposes, but that does not mean that we continue to waste hours chatting or sending messages. We must also remember that spending too much time on mobile phones is very dangerous because cell phones emit harmful radiation which leads to various diseases.



**Source:** <https://lumenauthority.com/light-bulb-evolution/>

### **Chemistry of Bulb:**

<sup>1</sup>The tube consists of a vacuum medium enclosed in glass inside the glass. The current flowing through the tungsten filament has a high melting point of about 3680 0C, and the tungsten filament can withstand high temperatures of 4500 degrees or more. The development of tungsten filament is considered the greatest advancement in light bulb technology because these filaments can be manufactured cheaply and last longer than any previous material. Lead wire or lead wire is usually made of iron-nickel wire. This part of the wire is dipped in the solder solution to help the wire stick to the glass better. <sup>4</sup>The bulb itself is made of glass and contains a mixture of gases, usually argon and nitrogen, which increases the life of the filament. Air is pumped out of the bulb and replaced by gases. A standardized facility that keeps everything in place. The base, known as the "Edison screw base", was originally made of brass and insulated with plaster of Paris and later porcelain. Today, aluminum is used for the exterior and glass is used to insulate the inside from the base, creating a stronger base.

### **Importance of Telephone/Mobile phones:**

The mobile phone is one of the best electronic communication devices and today it is also an integral part of our daily routine as it is the best means of exchanging information in written form. copy, audio and video very quickly and accurately. This development takes a long time to reach the current stage. A number of scientists are contributing to the current technological development.

### **The technological revolution in telephone to mobile phone:**

<sup>4</sup>In 1672, Robert Hooke, a scientist, first created a audio phone consisting of two soup and scientists Hooke observed that sound could move a yarn or wandered a sucking tube One party for other

listner in 1796, telegraph equipment was built, including 44 wires are allowed to transmit 22 characters. The machines select to create the transmitted signals at a distance of 30 miles. Very cruel configuration I.E the signals were received by the servant to Aranjuez, Spain, holding live rope. Poor people jump into each shock activated by a person in Madrid. It is very cruel but it works. It has been rebuilt. The device has been rebuilt to displaysparkslike Thr signals,insteadofpeoplewithelectric shocks.In 1834, Italian scientist and inventor Antonio Meucci built a sound phone as a way to communicate in the middle of the Florence Theater's scene and control room in Florence. What phones on Shios and always work? Scientist Samuel B.Mors invented that you could transfer messages by pressing down or releasing a button in the interval to transmit a sound model. This is called Morse.in 1849 Italian scientist nodded in Aosta Innocenzo Manzetti invented the idea of the Automaton. German scientist, Johann Philipp Reis, developed his phone since 1857. The transmitter is difficult to use. The needle and exposure are necessary for the device's operation. It is called a "phone" because it transmits the sound of electric sound, but not the phones on the market.Cyrus West Field, in 1867, placed the first cross-Atlantic phone cable, connecting England and the United States by Telegraph. This project was filled with failures before it was completed in August 1858.



Source:History of telephone uplodaded by johnathan Davison,oct 2,2017

### **Chemistry of Mobile phones**

<sup>2</sup>Nearly 70 elements of the periodic table are found in smartphones. Small amounts of yttrium, europium, and dysprosium help produce color on the phone's liquid crystal display (LCD). Gadolinium, lanthanum and terbium make screens shiny. The screen of the mobile phone contains some rare earth elements. The distribution of these elements in the smartphone is as follows.

### **Chemical composition of touch screen of smartphone:**

<sup>2</sup>Smartphone touchscreens are made primarily of aluminosilicate glass, a mixture of aluminum oxide and silicon dioxide, and then placed in a hot tub of molten salt. The purpose is to allow smaller sodium ions to leave the glass and larger potassium ions to take their place. <sup>3</sup>These take up more space and are pressed together as the glass cools, creating a layer of compressive stress on the glass and enhancing the glass's strength and resistance to mechanical damage. It is a thin, transparent and conductive layer of indium tin oxide deposited on glass to allow it to act as a touch screen. Some rare earth elements are also present in very small amounts and help to produce the colors displayed on the screen.

### **Chemical Composition of Battries in smartphone:**

<sup>2</sup>Most phones today use lithium-ion batteries. These batteries tend to use lithium-cobalt oxide as the positive electrode in the battery (although other transition metals are sometimes used instead of cobalt), while the negative electrode is formed from carbon as carbon. Lead. <sup>5</sup>It will also have an organic solvent to act as an electrolyte liquid. The lithium in the positive electrode ionizes as the battery is charged and moves through the layers of the graphite electrode. During discharge, the ions return to the positive electrode. The battery itself is usually housed in an aluminum case.

### **Chemical Composition of electronic in smartphone:**

<sup>2</sup>A wide range of elements and compounds are used in the electronics of phones. The chip, the phone's processor, is made of pure silicon, which is then exposed to oxygen and heat to create a layer of silicon dioxide on its surface. Then parts of this silicon dioxide layer are removed where the current needs to flow. Silicon does not conduct electricity if it is not "doped" with other elements. This process involves bombarding silicon with various elements, which may include phosphorus, antimony, arsenic, boron, indium or gallium. <sup>5</sup>Different types of P- and N-type semiconductors are produced depending on the element used, with boron being the most common P-type dopant. The microelectronic components and wiring of the phone are mainly made of copper, gold and silver. Tantalum is also used, which is the main

component of microcapacitors. A variety of other elements, including platinum and palladium, are also used, but the details of their specific applications are a bit harder to find! Solder is used to join electrical components-in the past it was usually made of tin and lead, but in recent years lead-free alternatives have been sought, many of which use a combination of mixture of tin, silver and copper. Both the phone's microphone and speaker contain magnets, usually a neodymium-iron-boron alloy, although dysprosium and praseodymium are also commonly found in this alloy. They are also found in the vibrator of the phone.

### **The Casing**

<sup>2</sup>The elements present in the phone case will depend on whether the case is metal or plastic, or a mixture of the two. The metal case can be made of magnesium alloy, while the plastic case will, of course, be made from carbon. Enclosures will often also contain flame retardant compounds-brominated flame retardants are still commonly used, but efforts are being made to minimize their use, and so other organic compounds are not. <sup>3</sup>Bromine is now used more often. As noted above, the silicon dioxide layer on a semiconductor device prevents current from flowing into unwanted areas of the semiconductor, specifically between transistors (essentially a form of switch) and silicon. Transistors are getting smaller and smaller, and in doing so, the insulation between them and the silicon also becomes thinner. However, this is limited by the size of silicon atoms and, in fact, only about 5 atoms. This also requires the use of a different material for transistors, with titanium nitride and titanium aluminum nitride used. To connect transistors with copper layers connected to semiconductors, tungsten is used as a contact. Tungsten also found using external semiconductor devices, as the weight of the vibration engine in the phone.

### **Threats of smarhtone to the chemistry**

<sup>3</sup>Research by writer Josh Gabbatis published on independent news.co.uk shows that billions of mobile phones are thrown away or replaced every month around the world and, for this reason, their use is overwhelming. Elements in smartphone manufacturing that pose a threat to some important and rare phone elements include copper, gold, silver, lithium, cobalt, rare earth elements, yttrium, terbium, and dysprosium. We use them so quickly that they will dissipate around the world in less than 100 years. "

### **Conclusion:**

It is concluding that from above discussion the basic science and their principles are play vital role in the development of technology. Basic research in the field of science can improve technological development. Sustainability in research is the need of development. Therefore it is necessary that the use of natural resources is to be carefully for sustainable development.

### **References:**

1. Chemistry of light bulb still a bright idea, Brian Rohrig, April -2003, Chem matter, 11-13.
2. Materials chemistry, The chemical elements of a smartphone, Compound interest, Feb 19, 2014, <https://www.compoundchem.com/2014/02/19/the-chemical-elements-of-a-smartphone/>
3. Endangered elements used to make mobile phones are running out quickly, Scientist warn, Josh Gabbatis science correspondant Tuesday 22 January 2019, <https://www.independent.co.uk/news/science/mobile-phones-elements-periodic-table-endangered-chemicals-st-andrews-a8739921.html>
4. The light bulb evolution, history of light bulbs throughout years, Stephen, April 1, 2021, Lumen authority, <https://lumenauthority.com/light-bulb-evolution/>.
5. Smartphones: Smart chemistry, Brian Rohrig, April/may 2015, chem. Matter, ACS, p 10-12.

## **Women Empowerment and Judicial Response**

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**Abstract:** Women's empowerment is a new phrase in the vocabulary of gender literature. The phrase is used in two broad senses i.e. general and specific. In a general sense, it refers to empowering women to be self-dependent by providing them access to all the freedoms and opportunities, which they were denied in the past only because of their being women. In a specific sense, women empowerment refers to enhancing their positions in the power structure of the society. The word women empowerment essentially means that the women have the power or capacity to regulate their day to day lives the social, political and economic terms a power which enables them to move from the periphery to centre stage. Empowerment as concept was first brought at the International Women's Conference in 1985, at Nairobi. The term empowerment has different meanings in the different socio-cultural and political contexts, and does not translate easily into all languages. These terms include self-strength, self-power, self-reliance, etc.. In this research paper an attempt is made to review some of the landmark Judgments of the Hon'ble Supreme court of India and High Courts in India, which had made difference in women's social economical and political status in India. Through plethora of legislations and other Penal Acts are in force, it is a matter of great shame that women are still subjected to heinous because of inadequate enforcement machinery and also because of lack of will on the part of the society to implement such laws. Though special provision are made for women in Part III and other parts of the Constitution for the upliftment and welfare of the sensitivity towards the gender justice by delivering very progressive and landmark decisions, the stereotype patriarchal mindsets, structural inequalities and power imbalances have continued to make women susceptible to exploitation and violence.

**Key Words:** - High Courts, Supreme Court, Violence, Women Empowerment

### **Introduction:-**

Women in India constitute a vulnerable section of Society; this truth is accepted and recognized by the highest law of the land, that is, Constitution of India. Part III of the Constitution makes specific provision for special provisions for women and children along with addition to fundamental Rights, the Chapter on Directive principles of State Policy also makes specific mention about women's social status and health; this is directed to the future governments in India to initiate measures for social, economical and political well being of women in India. Rights of Women are always debated and denied in every society. Constitution of India specifically declares that there shall be no discrimination on the basis of sex that is male or female. Even it has gone a step ahead by inserting Article 15(3) and 16(3) declaring women and children as weaker section of the society and they need to be given special protection in the public employees. There are many provisions in the chapter of Fundamental rights and Directive Principles of State policy which imposes responsibility of the State for upliftment and empowerment of women in this feudal society. During last three decades there has been a sea change in the concept of women empowerment. I am reminded of a dialogue from "In a Doll's Home" written by Henrik Ibsen. Helmer tells to Nora. "First and foremost, you are a wife and mother." Nora replied. That I don't believe any more. I believe that first and foremost, I am an individual, just as much as you are. This dialogue carries a forceful message. A woman 0

1. The Dowry Prohibition Act, 1961 (28 of 1961) (Amended in 1986)
2. The Indecent Representation of Women (Prohibition) Act, 1986
3. The Commission of Sati (Prevention) Act, 1987 (3 of 1988)
4. Protection of Women from Domestic Violence Act, 2005.

In addition to the women specific laws mentioned above other legislations like women Penal Code, Indian Evidence Act etc also provide for special provisions for women and children. In order to keep watch on the proper implementation and to interpret these laws Constitution of India establishes an independent Judiciary in India with Supreme Court being at the top

### **Judicial Response:-**

Supreme Court and High Courts in India are established as guardian a of Indian Constitutional and therefore whenever constitutional mandates are not respected by the society or state Hon'ble Supreme Court come into the picture for protection and empowerment of the women in India. The Indian judiciary, however, shapes discourse of and keeps revising the gender justice theory based on norms accepted

worldwide. The Courts have addressed all human rights violations and directed the government to act against it.

Following are some of the cases when court has acted as the guardian of human dignity and set the course for women empowerment in this country.

**Air India v. NageshMirza:-**

In this gender-bending judgment by the Supreme Court, an inclusive reading of Article 14 was done and it was decided that employment cannot be denied to any person on the grounds of sex. For in-flight services, stress was laid on high youth, appearance and glamour quotient of the employees. A State-owned Aviation Company named 'Air India', by a service regulation, mandated the air hostesses to retire if they reach the age of 35, conceiving a child or on marriage, whichever occurs earlier. Such conditions were derogating the natural course of woman's life. These offending provisions were challenged and later struck down on grounds of arbitrariness and abhorrence in a civilized society. The termination of service of the hostesses, under such circumstances, was not only a callous and sacrosanct and cherished institution. This provision was held not only to be manifestly unreasonable and arbitrary, but also to contain unfairness and naked deposition and as such clearly violative of Article 14 of the constitution.

**Vishakha v. State of Rajasthan :-**

This case is considered as the foundation stone in this regard. The Supreme Court taking due note of the hazards to which a working woman is exposed and the depravity to which sexual harassment can degenerate, opined that there was an urgent need for finding an effective alternate mechanism to fulfill this felt and urgent social need of prevention of sexual harassment at work place. In the absence of legislative measures and in view of the absence of enacted law to provide for effective enforcement of basic human rights of gender equality and to guarantee against sexual harassment and abuse, more particularly against sexual harassment at work places, the Supreme Court laid down guidelines and norms for due observation at all work places and other institutions, until a legislation is enacted for the purpose. These guidelines and norms were directed to be treated as law under Article 141 of the Constitution. The guidelines and norms specified by the Supreme Court include the duty of the employer in work places and other institutions, preventive steps to be taken in this regard, criminal proceedings, disciplinary actions, complaints mechanism and complaints committee, to encourage workers initiative, creating awareness, and against third party harassment etc. These guidelines would not prejudice any rights available under the Protection of Human Rights Act 1993. These guidelines and norms, were directed to be strictly observed in all work places for preservation and enforcement of the right to gender equality of working women.

**In. Apparel Export Co. Vs. A.K. Chopra.**

(AIR 1999 SC 625), the Supreme Court was called upon to decide sexual misconduct of a superior officer against a subordinate female employee. In the words of Dr. Justice A.S. Anand, the Hon.ble Chief Justice. There is no gainsaying that each incident of sexual harassment at the place of work result in violation of the fundamental right to gender equality and the right to life and liberty. Two most precious fundamental rights guaranteed by the Constitution of India. In our opinion the content of the fundamental rights guaranteed in our Constitution are of sufficient amplitude to encompass all facets of gender equality including prevention of sexual harassment and abuse and the courts are under Constitutional obligation to protect and preserve those fundamental rights. That sexual harassment of a female at the place of work is incompatible with the dignity and honour of the female and needs to be eliminated and that there can be no compromise with such violation admits of no debate... In a case involving charge of sexual harassment or attempt to sexually molest, the courts are required to examine the broader probabilities of a case and not gets swayed by insignificant discrepancies or narrow technicalities.....Such cases are required to be dealt with (142) sensitively. Sympathy in such cases in favour of the superior officers is wholly misplaced and mercy has no relevance. We have to strengthen international accountability, make provision for advisory services and adequate funding, improve the efficiency of the review bodies and bring about increased awareness of human rights by information and education and establish national institutions for promotion and protection of rights and make more fluid the interface between international and domestic law.

**Laxmi v. Union of India -**

In light of increasing acid attacks and easy availability of acid, the Supreme Court was called out to issue directives for the prevention of such incidents by imposing restrictions on the sale of acids. The Court instructed the governments, at both levels, to chalk out a plan and prohibit the unauthorised sale of acids across the nation. It also went ahead to declare that all victims shall be provided compensation and rehabilitation by the respective governments. This decision paved way for the legislature to introspect and enforce harsher punishments for offenders committing such horrendous crimes.

### **Indian Young Lawyers Association v. State of Kerala:-**

A Constitutional bench of SC, headed by **CJI Dipak -Misra**, lifted the age-old ban on entry of women between the ages of 10-50, inside the Sabrimala temple where **Lord Ayyappa** is worshipped. The long-awaited judgement was pronounced amid protests in the state of Kerala. Devotion and faith must not be subjected to gender discrimination, as analysed by the honorable judges. Stereotyping menstruating women in the present times would permit the religious patriarchy to flourish. The restriction on entry was a violation of the right to worship of woman, as assured by Articles 14 and 25 of the Constitution. This decision advanced gender justice and equality in the most significant manner.

#### **Conclusion:-**

Lot of judicial activism is done by the Hon'ble Supreme Court of India in order to empower the women of this country. Today it is an open fact that women empowerment is possible only because of the decision given by Hon'ble Supreme Court & High Courts in India. In Indian Constitution it has been made clear that Indian Judiciary is totally independent and independent judiciary is the basic structure of our Indian Constitution. Hence, Indian Judiciary played a vital role for women empowerment. Achieving absolute gender justice in India is complicated because of the rigid traditions and diverse cultures. Poor enforcement of laws, deep-seated patriarchy, lack of financial dependence and awareness among women is to be accounted for the deplorable state of females in our society. Several NGOs, Human Rights advocates, UN and other governmental agencies have raised their voices against gender intolerance. Quite simply, equal treatment for all genders is a prerequisite for any welfare state. In order to protect women empowerment it is proposed that standards and norms in international human rights conventions and treaties that have been ratified should be made a part of domestic law transformed to make them gender sensitive; and women's right to life and protection against violence and discrimination should be made an enforceable fundamental right.

#### **References:-**

1. AIR 1981 SC 1829
2. AIR 1997 SC 3011
3. SCC 4 (2014) 427
4. SCC (2018) 1690
5. Nyaya Deep Volume XIII Issue I January 2012. Page no. 36,37,38
6. Nyaya Deep Volume XVI Issue II January 2015. Page no. 12,21,23
7. Indian Bar Review Volume XXVIII (2&3) 2001 Page no. 97,98
8. Indian Bar Review Volume XXXII (1&2) 2005 Page no. 51,52
9. VidhiBharati Issue II 2013-14 Page no. 171-72

## **Significance of Various Teaching Parameter in Education**

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**Abstract:** In current era education spread everywhere and become so common that everybody is acquiring an education, no one in the world is without education as education is very significant and noble accomplishments and also the knowledge of all the things related to education become very common to all the people that anyone can easily get an education. Because of education only the person get strength physically, mentally, spiritually, socially and personally also and become quite intelligent and smart to face the world. In this article significance of active Active Listening, Non Judgement and Empathy is explained with the role of teacher in teaching learning.

**Keywords:** Education, Active Listening, Non Judgement and Empathy, Teacher

### **Introduction:**

Even though there are some region or areas where due to certain circumstances like non availability of infrastructure, poverty, lack of employment, lack of availability of resources, the students may find some difficulty in getting primary education, secondary education and even higher education and everywhere the government is trying their best to educate each and every individual in the world and this is becoming true also as due to alarming rate of increase in online mode of education but whether it is in online or offline mode the education of child depends on the teacher, the teachers play a very significant role in providing a education to children as teachers are the role model and good mentor for them. Now in current situation the level of education increased to such a height that no one can imagine, this is happening because of all facilities and feasibilities available for online education, online way of admission, fees payment, exam and all submission of assignment, projects and all other required things that is why education become so common and role of teacher become more important and vital[1].

### **Significance of Active Listening and Role of Teacher In Teaching and Learning:**

This is the example shared from my experience of teaching and learning. Some students they are capable, intelligent and have a high ability to retain what is been taught and delivered in the class and they are very intelligent also but they lack in active listening, they do not listen actively, to the part which is been delivered or informed or instructed in the classroom or may any other place of studies or any other activities related to academics. Due to this reason, in spite of having intelligency, they are not able to understand the concept properly and then they face a problem in understanding the concept. Listening can feel at times like a lost art, maybe because we are communicating so much more electronically. That's too bad, because being a good listener can help you in every aspect of your life – with family and friends, and with your colleagues at work. It is a way of listening closely to what a person has to say. It is done by giving the person your full attention. You show interest and appreciation for his thoughts and concerns. You commit to him by letting him speak without interrupting. Active Listening lets you show your respect, support, and concern for the other person. Active Listening promotes trust between you and the other person. You become a companion as you listen to others views[2,3].

### **Significance of Non Judgement and Role of Teacher in Teaching and Learning:**

**It's in our nature, as human beings, to be in constant judgement of others.** We constantly compare and contrast ourselves to those around us, checking out their actions and words and forming an almost instant conclusion about them. Many times when it comes to people we've known for years we may even subconsciously seek for affirmations that unknowingly justify our beliefs, that they are indeed how we perceive them to be[4].

### **Significance of Empathy and Role of Teacher in Teaching and Learning:**

The benefits of empathy in education include building positive classroom culture, strengthening community, and preparing students to be leaders in their own communities. As educators, incorporating empathy into instruction can have positive results for your immediate classroom, as well as for the community outside of the school building[5].

### **Methodology:**

Active listening imparts a skill of understanding the concept in more detail, in a precise way and also increases students participation and involvements in the activities may be lecture, any event, programme and in hands on training. **Non judgment arises from our self awareness. It has been**

**observed in higher education system that , students are not getting proper response to their question, necessity regarding academics and administrative purposes also.**This is an empathy which is very great and significant thing in teaching and learning as teacher play a main and sole role in empathy that is having a empathy with students, teacher when involved in students then they forget about their personal lives , about themselves[6,7].

**Conclusion:**

Active listening reinforces important material, concepts, and skills. Provides more frequent and immediate feedback to students. Provides students with an opportunity to think about, talk about, and process course material.**Students should be treated with great care, politely and we being a teacher should not be harsh and arrogant or irritant on students. Whatever mistakes or wrong they will do we should rectify they in such a way that they have been informed by their mistakes and they learn a lesson that such kind of mistakes they will not do next time**I myself being a chemistry teacher involved very much with students in lecture and we have more close interaction with students during practical sessions and during minor research project , during preparation of research poster, research paper, oral presentation and we are also involved with them whole day when they go for presenting paper outside in university and in other college, while this all activities and many more we teachers are too much involved in students due to which they get the good and healthy atmosphere, they enjoy teaching learning process and acquire mental growth. With the diversity of students entering classrooms each day, paralleled by an increase in globalization, it's more necessary than ever for teachers to actively construct a positive classroom culture.

**Reference:**

- 1) Pushkar P., (2015), Role of Teacher In Higher Education, International Journal of Education and Information Studies. 5 (1), 25-30
- 2) © Research India Publications <http://www.ripublication.com>
- 3) Tyagi.B , Listening : An Important Skill and Its Various Aspects ,The Criterion An International Journal in English
- 4) [www.the-criterion.com](http://www.the-criterion.com)
- 5) Yavuz.F., Celik.O, (2017) ,The importance of listening in Communication, Global Journal of Psychology Research New Trends and Issues , 07(1), 8-11
- 6) DOI:10.18844/gjpr.v7i1.2431
- 7) Artelt C.,(2016),Teacher Judgments and their Role in the Educational Process,Social Institutions Educational Institutions.
- 8) <https://doi.org/10.1002/9781118900772.etrds0402>
- 9) Bouton B., (2016), Empathy Research and Teacher Preparation: Benefits and Obstacles, SRATE Journal Summer, 25(2)
- 10) Baker, J., Parks-Savage, A., & Rehfuss, M., (2009), Teaching Social Skills in a Virtual Environment: An Exploratory Study. The Journal for Specialists in Group Work, 34(3), 209-226.
- 11) Boyer, W., (2010), Empathy development in teacher candidates, Early Childhood Education Journal, ,38, 313-321.

## **National Education Policy 2020 And Legal Education:Use Of Technology And Modern Efficient Teaching Practices**

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**Abstract:** The NEP -2020 is the most ambitious education policy adopted by the Government of India till date, since it takes into account the demands, necessities and aspirations of all the stakeholders. The Fundamental Right to Education in Article 21-A of the Constitution of India is not only about primary education or school education but also paves the path for affordable and competitive higher education, which will ensure jobs and lay the foundation for a competitive environment. With reference to legal education, recently declared National Education Policy- 2020 (NEP) clearly mentions that legal education in India needs to be competitive globally, adopting best practices and embracing new technologies for wider access to and timely delivery of justice. At the same time, it must be informed and illuminated with Constitutional values of Justice – Social, Economic, and Political – and directed towards national reconstruction through instrumentation of democracy, rule of law and human rights. The NEP -2020 further says that the curricula for legal studies must reflect socio-cultural contexts along with, in an evidence-based manner, the history of legal thinking, principles of justice, the practice of jurisprudence, and other related content appropriately and adequately.

### **Introduction**

The National Education Policy 2020 calls for investment in digital infrastructure, development of online teaching platforms and tools, creation of virtual labs and digital repositories, training teachers to become high quality online content creators, designing and implementing of online assessments, establishing standards for content, technology and pedagogy for online teaching-learning. Para 20.4 of NEP specifically deals with Legal Education. It insists that use of technology must be adopted for timely and speedy delivery of justice. Considering the local language use and practice in local Courts, the Policy promotes bilingual teaching in law for State Universities However, there is dire need for law books to be written or translated in local languages to make legal education more inclusive and enable students to take up the study of law within their local limits and not move to bigger cities and dissuade rural and semi-urban to urban migration. Significantly, whether Centers for Legal Education are able to achieve the status of multi-disciplinary learning, would be dependent on the best skill development, professional and vocational training Technology and Legal Education are undistinguishable entities as they cannot be separated if the motive behind the formulation of laws is to administer justice. The new world revolves around the need of technology as an important tool for intensifying every attempt to deliver complete and transparent dispensation of fairness in the Legal field.

### **Impact of Technology**

Today, technology proficiency is recognized as a competency for lawyers, they stand a better chance of students getting hired by a decent law firm. Traditional ways of hiring will now slowly be replaced by those law graduates who are familiar with the technological tools used in law practice for lawyers Effective use of technology means new clients, stronger work product, and more efficient use of time; for law students, it means better job prospects and a smoother transition into practice. Technology is truly transforming the practice of law.

### **Use of Technology in Legal Education**

Technology is very helpful for legal education, all over the world. Students can be trained to use different applications like SCC (Supreme Court Cases) online, Manupatra and WestLaw, etc. We can guide them how to use these applications? These applications include case laws, statute, explanation to every law-related thing, which are very helpful to students and lawyers as well. Cyber forensics is one such aspect that helps in finding the evidence and for this also students are trained globally. Today, law students also can easily get online teachings and online study materials through websites such as Legal Bites, Indian kanoon, etc. We can give online training regarding to use of all above things. Moot Courts can be organized online. Students can also able to seek guidance from lawyers and judges through webinars and interviews through various online conference apps like zoom, Google meet, Go to meet, Microsoft Teams, etc They can publish their articles on such platforms and participating in different competitions without even investing any time into travelling. From scanning documents to using case management tools, basic useful technology taught in law school curriculum can go a long way for law students. Students are adopting technology because it helps to improve their efficiency, it is not possible to hold all the

information in the brain or to read the bulky books all the time, in order to get the solution that's why technologies are there to help them in order to get the relevant facts and norms to the point with no wastage of time by using different online portals. Even the courts also accept all the facts which are there in Manupatra, SCC and other portals. The Supreme Court also gives all their judgments and important information on their official website. But legal technology is not getting much importance in most of the law schools. There is an apathetic approach to advance relevant technology learning and so graduates find it difficult to adapt to the already technology-savvy work environment. It is the duty of the Law Schools to train their students to work on this and give them special training of using these technologies like, how to get the adequate content from different portals? Because it is very difficult to find as it full with many case laws, provisions and judgment. So sometimes it's very difficult to find things accurately that's why the student should get trained as to how to search the exact things and also to give training in cyber forensic, which is again very much important in criminal law. There are many Law Schools in India who don't have the subscription for all these online portals. Through Learning Management Systems (LMS), Law institutions and teachers can use discussion boards, regular updates, periodic reminders, discussions, questions and answers must be fostered so as to keep students engaged in the long run. Regular Quizzes at the end of every class can be a tremendously useful tool in this regard. This would help provide students with instant feedback keep them encouraged and active and keep a check if they are going off-track or lost. Moderated group discussions could be another instrument. These activities ought to be preferred over a singular mid or end term exams which would result in disinterest and cramming. Designing the lecture which demands active participation of the students rather than theory could significantly improve student engagement. This could especially be done for law students where activities such as case studies or short moot problems could be designed on which students could work actively in the class itself. The Central Government has taken various initiatives to make India globally competitive in quality higher education. The e-platforms are being launched with an objective to create a teaching-learning environment. These platforms got good significance during current situations like lockdown. Following platforms are useful for teaching, learning and research activities in higher education. The platforms like Swayam, Swayam Prabha, National Academic Depository (NAD), National Digital Library of India, Virtual Labs, National Repository of Open Educational Resources (NROER) have become popular during the COVID-19 pandemic.

#### **Suggestions for the use of technology in legal education**

The classic ingredients of legal training consist of qualified faculty, dedicated students, research centers, sound infrastructure and update legal literature; that is demanded by the new world paradigm. Legal education in India is regulated by the Bar Council of India, a statutory body established under Section 4 of the Advocates Act, 1961. Any institution imparting legal education in India must be approved by the Bar Council of India. Thus, the Bar should keep ensuring the high standards of the legal education adopted by such institutions and issuing the guidelines from time to time for the changes and modifications required in the legal education system. Following are some suggestions for the use of technology in the development of legal education:

- 1) Hiring more qualified faculty: The basis for improving the quality of the entire education is the level of proficiency of the teaching staff of universities.
- 2) Selection and development of educational material: It is one of the crucial requirements of the Indian legal education system today. In today's competitive environment, whether it is sports; entertainment; technologies or trade everything is developing at a high speed; but the laws in India are still not developing at the equal pace with these other areas. It is required to strengthen the modification and addition of new courses into legal education according to the requirements of the modern era.
- 3) New methods of teaching : It is important to teach the students about the technologies, used by the lawyers in their practical life, during graduation. Such technologies include a variety of tools like case management software, research databases, website design, and policies on client communication to help manage client and case information.
- 4) Better Infrastructure: The libraries, computer labs, campus, auditorium for gatherings and seminars, sound classrooms with latest technologies for presentations etc. are essentials for a good infrastructure of a college and must be upgraded from time to time.
- 5) Opening research centers: Due to privatization and globalization, there is an immediate need to conduct in-depth research into the subjects like Intellectual Property Rights, Cyber Law, Transnational Crimes, International Human Rights, Alternative Dispute Resolution, and International Business Transactions.

- 6) Sponsoring more international academic programs: Need to sponsoring more international academic programs with global connections, and augmenting the number of formal international linkages.
- 7) Improving the standard of the legal profession: This is the harsh reality of Indian legal education system that a fresh graduate has to work even without getting paid in his/her starting years into the profession; due to lack of practical knowledge; which is completely different from academic knowledge. It is the time to cope up with the new technology.

Some technologies that should be taught to law students in the law school is-

**E-Discovery-** Responsive information is not in a file cabinet anymore, it is digital: on phones, websites, Facebook, e-mail, and voicemail messages, among many others. Law students should be aware of e-discovery tools and how to make efficient use of them to save their time.

**Presentation Skills-** PowerPoint presentations hold key importance in legal parlance. Attorneys are expected to deliver a much better presentation to their listeners.

**Marketing/Web Design/Social Media-** In this era of unbundled legal services, in which potential clients increasingly choose online self-help options, more than half of law firms do not have a website. Many others spend thousands on web development, but end up with a site that is not user-friendly.

**Hardware/Software/Mobile-** Lawyers, especially those in solo or small environments, have to make numerous choices about technology. Lawyers and recent graduates have little or no law school training to call upon; they can hire consultants to make recommendations, or IT support firms to fix something if it breaks, but many simply do the best they can.

**Case Management Lawyers-** Lawyers utilize a variety of tools to help manage client and case information. These systems can manage virtually all aspects of a practice, including sharing contacts and calendars; indexing, storing, and retrieving documents (including e-mail); tracking time, and billing clients.

The possibility of incorporating technology skills into the law school curriculum has revealed a lack of technologically savvy law graduates. It is often believed that if you work for a law firm or other business, critical technology choices have already been made for you, including case management software, research databases, website design, and policies on client communication.

But sometimes, even larger organizations are uncertain about the use of technology especially when facing a dearth of tech-savvy lawyers. Technology proficiency is recognized as a competency for lawyers, they stand a better chance of getting hired by a decent law firm. Traditional ways of hiring will slowly be replaced by those law graduates who are familiar with technological tools used in law practice.

Graduates opting for regular legal practice in courts will also be benefitted by tech literacy by being able to provide better services to their clients. Technology will help in reducing costs as well. Veteran lawyers repel the use of technology, they believe that technology will make them lose personal connection with their clients.

Understanding of and facility with technology is one of those skills, including negotiation, communication, and fact investigation, that lawyers must be acquainted with. For lawyers, effective use of technology means new clients, stronger work product, and more efficient use of time; for law students, it means better job prospects and a smoother transition into practice. Technology is truly transforming the practice of law.

### **Conclusion**

Finally, online learning, digital infrastructure and online teaching tools will increase the accessibility of law universities to a wider audience. The law universities should overcome the digital divide and adopt the best technology to cater to the needs of students. Innovations are required in legal education and it is surely not restricted to Science or Engineering. National Education Policy is a farsighted vision statement wherein law universities can imbibe the important aspects; bring about a constructive change in pedagogy, one that is aligned with the needs of the changing times to emerge as Centers of Excellence.

While the Policy is a novel and progressive document, acknowledging the invaluable role of technology in facilitating learning and teaching, it is essential to develop a coherent plan of action for fostering technological proficiencies to aid successful engagement with technology (and its future advancements), while providing effective safeguards for data protection and data privacy.

In the modern era, technology and the legal education system, both are inseparable elements. It is true that our education system should provide us with the knowledge of the latest technologies, but as being a citizen of India we are also required to develop the keenness for learning new skills and to serve our nation by using our full potential.

### **References –**

- 1) National Education Policy, 2020
- 2) The Constitutional Law of India

- 3) The Advocates Act,1961
- 4) Singh Devvani & CAM Corporate Team. NEP 2020: An Interplay of Education and Technology Use of technology in legal education- Need of the hour available at [lawtimesjournal.in/use-of-technology-in-legal-education-need-of-the-hour/](http://lawtimesjournal.in/use-of-technology-in-legal-education-need-of-the-hour/)
- 5) Competitive Legal Professionals' use of Technology in Legal Practice and Legal Research available at [https://www.researchgate.net/publication/26603739\\_Competitive\\_Legal\\_Professionals'\\_use\\_of\\_Technology\\_in\\_Legal\\_Practice\\_and\\_Legal\\_Research](https://www.researchgate.net/publication/26603739_Competitive_Legal_Professionals'_use_of_Technology_in_Legal_Practice_and_Legal_Research)
- 6) Harsh Komal.Technology and Legal Education: Inextricable Entities available at <https://www.legalbites.in/technology-and-legal-education>
- 7) Technology in the Legal Education System available at <https://www.myadvo.in/blog/technology-in-the-legal-education-system/>
- 8) The Impact of Technology on Indian Legal Education: An Analysis available on [https://www.researchgate.net/publication/349505564\\_The\\_Impact\\_of\\_Technology\\_on\\_Indian\\_Legal\\_Education\\_An\\_Analysis](https://www.researchgate.net/publication/349505564_The_Impact_of_Technology_on_Indian_Legal_Education_An_Analysis)

## **A Study of the Subaltern Aspects in Anand Neelakantan's 'Asura: Tale of the Vanquished'**

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**Abstract:** The present paper aims to establish Anand Neelakantan's novel *Asura: Tale of the Vanquished* as a subaltern narrative of the popular understanding of the great epic *The Ramayana*. The popular and mainstream understanding of the character of Ravana is the evil incarnate. In popular culture and religious sermons Ram is portrayed as the hero of the Ramayana. Even though there are various narratives stating otherwise, Ravana is still considered as the symbol of all that is evil. However, Anand Neelakantan's novel *Asura: Tale of the Vanquished* attempts to put forward hitherto undiscussed or suppressed facts about the character and qualities of Ravana. The novel successfully puts forward the character of Ravana. The novel successfully brings into light the character of Ravana as a subaltern bereft of his voice and any say in the narrative after his fall in his battle against Rama.

*Asura: Tale of the Vanquished* is the debut novel of Anand Neelakantan which is based on the epic *The Ramayana*. Setting his novel against the popular understanding of the epic Anand Neelakantan makes Ravana as the hero of his novel. He also makes it clear that in the times when the epics were written the story of Rama and Ravana was not interpreted as a struggle between good and evil rather, it was interpreted as the cycle of rise and fall of the characters. Here, it is noteworthy that the rise and fall of the characters is exactly in synchronisation with the ancient Hindu understanding of time as moving in psychological motion rather than in a teleological motion. Here, it is noteworthy that the rise and fall of the characters is exactly in synchronisation with the ancient Hindu understanding of time as moving in psychological motion rather than in a teleological motion. It was under the influence of Western Classic that a new perspective was added in the story of *Ramayana*. The winner was interpreted as good and the loser was understood as evil.

In the popular narrative from *The Ramayana*, Rama is the Symbol of Chastity, bravery, righteousness, and purity. In Hindu Scriptures, he is called "the incarnation of God Vishnu". Ram is portrayed as a good character hero in various plays, movies, T.V. Serials, etc. He is seen as an ideal son, an ideal husband and an ideal king throughout India. "In his incarnation as Rama, Vishnu embodies all that is considered virtuous in Hinduism: discipline, detachment, obedience, selflessness, faithfulness, fairness, poise, and dignity" (Pattanaik 12). The stories of Rama are told in the sermons and religious. Ram is a very important national Deity. He is a very important figure in Indian politics also. The major political parties assure that they will bring "Ramrajya" (The Kingdom of Ram). Simultaneously, While reading Ravana's character from the people's point of view, Ravana is the antagonist or Villain of the epic. Ravana is the symbol of darkness, evil and wickedness. The Indian festival Dassehara is celebrated in different ways in a different parts of India. In Central, Northern, and Western States of India, Dassehara is celebrated as Rama's victory over Ravana as a triumph of good over evil. Ravana's ten-faced effigy is burned on this occasion every year. However, there many scholars who know the other side of the story. "He was a grand person, a scholar, doctor, and strategist of war. I wanted people to see that side of him. Ravan worked for everything he earned" (Mathai). Now there are some like Mathai who celebrate Ravana's legacy on Dussehara festival.

The *Ramayana*, originally authored by Valmiki, consists of 24001 verses in 6 cantos some say 7 including the Uttarkanda. *Ramayana* tells the story of Rama, the Prince of Ayodhya, whose wife Sita is abducted by the king of Lanka Ravana. In the original Valmiki *Ramayana*, Valmiki wrote that Rama was nothing more than an ideal human being. However brahminical rewriting of *Ramayana* finally introduced Rama as a supreme deity. What is largely available, accepted and followed is this rewritten narrative circulated through religious sermons, TV serials, movies, speeches, books, and moral tales taught in schools and colleges.

In these changed conditions, Ravana becomes a subaltern character or a character in subaltern position in the popular narratives spread across the country. The term 'Subaltern' describes the lower social classes and other social groups displaced to the margins of a society ("Subaltern (postcolonialism)"). Anand Neelakantan's novel not only brings to fore the omitted and neglected good qualities of ravana, but also of a culture, an ethnicity which was defeated along with him. Neelakantan does not only focus on the character of Ravana but he clarifies the difference between the ideology of Rama and the ideology of Ravana. The difference between their outlook towards the world, their ethnicity, their values and the

organisation of society are clearly mentioned in order to bring into light the ideological nature of the conflict between the two major characters.

As it is said that history is written in favour of the victorious similarly, the narratives are spread and accepted in favour of the victorious Rama. In such conditions, "The subaltern is destined to remain in silence, even when they try to articulate it to the authorities"(Gaijan 242). It should be noted that the relationship between the Ramayana and the Indian society is multifaceted. For Indians, Rama and Ravana are both the characters in the religious myths as well as historical personalities. "The tension between Rama the historical personality and Rama the sacred symbol has come to the fore in recent times, as Rama has become part of the nationalist Hindu political rhetoric" (Pattanaik 13). There have been attempts to find out whether the Ramayana is a narrative of some historical occurrence or it is purely a work of fiction. There are multitudes of historians, researchers and religious preachers on both sides advocating their point of view.

The battle between Rama and Ravana is not about good and evil but about culture and nature. In Rama's world the weak are protected by the strong. In Ravana's world there is no room for the weak. Rama does his duty even if it means sacrificing personal happiness. He gives up his kingdom on his father's orders without remorse or resentment and makes way for his brother Bharata. Ravana, on the other hand, does what pleases him. He drives his brother Kubera out of Lanka and lays claim to the crown.(Pattanaik 96).

In AnandNeelkantan's version of the story, Rama and Ravana do not remain individual characters rather, they become the representations of their respective ideologies and worldviews. AnandNeelkantan gives voice to the racial, economic, and sexual oppressions in the socio-political order preexisting. The characters who cannot raise their voice against these oppressions or exploitations, their subaltern position is highlighted. Here Ravana, Bhadra, and Sita these are the subaltern characters. Against the view that Rama was the incarnation of God, Neelkantan's Ravana is a fallible human being rather than a God. Hence, the struggle between the two characters does not remain a struggle between the two powerful forces of Good and Evil, but the struggle between the two neighbouring cultures, ideologies and accepted ways of living.

As such, AnandNeelkantan treats Ravana as the fallen Hero rather than an outright villain. Ravanastates it clearly that, "My aim is neither become God nor achieve moksha. At best I think those are old wives' tales. I do not believe in a heaven where you will be given all that you purposefully denied yourself in this world. I do not believe in rebirth ... if being born a Brahmin is the ultimate reward, then I may even refuse to die for fear of being reborn" (42). Thus, for Ravana, the privileged position of the Brahmin is not a desirable goal.

He does not believe in the ancient scriptures telling the life after death and the existence of heaven and hell. For him, the life before death is all that is worth fighting for. He also refuses to be a model for future generations. He does not want to deny what his emotions tell him to do. He thinks the world at hand is of more worth than the one promised. "I am sad to disappoint you, but I like a man and die as one. I will never try to be a God. I will do exactly as my emotions tell me to. I do not want to be a model for future generations to follow" (42).Ravana is happy in the carnality of life; he is dissatisfied with the promises of life after death. He does not like the neglect and disregard for nature and the material aspects of human life. The ancient Vedic philosophy of *Maya* or the illusory nature of life is a funny, mythical tale for him. He calls such type of stories as "the old wives' tales" (42). He imagines a state based on the principles of equality, respect for all and the one where no one will lead an oppressed life.

He wants the people to oppose every form of oppression. He inspires the masses to rise against the oppressing forces. So far, the Asura tradition is not much known to the people. Ravana tells about the evil deeds done by the priestly caste. In response to the advice given by Mahabali to Ravana that controlling all the nine emotions was important for all human beings, he states that anger is one of the basic emotions of mankind. He asks, if I do not get angry at the plight of the Asura tribe, that once mighty race which built the greatest civilisation the earth has known till now, how can I claim to be one of its sons?" He enumerates the violent attacks done by the Deva kings against the Asura tribes. He feels concerned and disappointed at the meekness of the Asuras in accepting the invasion so cowardly. . About the continual oppressions, he asks, ""Why were our people so meek and humble? That was something I always wondered about. Why were only a few able to control the power and wealth while the raised obliged them, and even laid down their lives to help this small, selfish, gang oppress them and their children? Was it fear? I don't know" (153). In his discussion with Mahabali, he asks, "Can't I be furious when thousands live in inhuman conditions under the yoke of Deva kings and their vassal Asura fiends if I cannot feel frustration about the forgotten Asura arts demolished Asura religion pulverised Asura temples destroyed Asura kingdoms and covering covers would drag themselves on all

fours in front of Deva kings and painting nobles claiming to represent Asura interests tell me sir what emotion should I feel? (37-38)".

Ravana was very well versed in the ancient Vedas. He could quote the scriptures against all the evil traditions in the existing religious order. He was sure that the scriptures did not teach many evil traditions and meaningless rituals. "The real meaning of the sacred texts give me greater determination to attack evil like caste, animal sacrifices and other rituals being propagated by the priestly caste. I was determined to curb meaningless rituals and sacrifices and put an end to the curse of caste" (35). He points out the evils of the social order around him. He sees a need to change this social order defended by Rama. He wants to establish a new society based on equality, education for all, rational outlook, eradication of superstitions and justice to all. He says, "But wherever I looked, I only saw oppressions. Money, caste, rituals, traditions, beliefs and superstitions all conspired together to crush the humble majority. I couldn't there be a more just way of living?" (35). So, Ravana was not an evil incarnate. He had an ideology, an ambition of establishing a just social order. This order was different and many cases quite opposite of Rama's ideology and social order. Finally Rama won the war and his social order became the norm.

To sum up, AnandNeelakantan's novel Asura tale of the vanquished successfully brings into light the ideological aspects of Ravana's rule. The characters of both Rama and Ravana are re-interpreted. The struggle between Rama and Ravana does not remain a struggle between good and evil rather it is shown to be a struggle between the two ideologies, values, social order and the two kingdoms. contrary to the popular understanding of Ravana's character as an evil incarnate or a villainous character what the novel brings out is Ravana as if all able human being and also a fall in hero. The novel successfully portrays the battle between Rama and Ravana as a battle between two equally accepted ideologies. Ravana no longer remains an unknown, unvoiced or muted character. The subaltern is thus given a voice by Anand Neelakantan.

#### **Works Cited**

1. "Subaltern (postcolonialism)." Wikipedia, The Free Encyclopedia. Wikipedia contributors, 6 Dec. 2021. Web. 14 Apr. 2022. Print.
2. Buck, William. Ramayana: King Rama's Way New York : A Mentor Book, 1963. Print.
3. Mathai, Kamini. Celebrating Ravana, the 'subaltern' who could speak. The Times of India: TNN, Oct 18, 2018, WEB. <https://timesofindia.indiatimes.com/city/chennai/Celebrating-Ravana-the-subaltern-who-could-speak/articleshow/66268525.cms>
4. Neelkantan, Anand. Asura: Tale of the Vanquished. Mumbai: Leadstart Publications, 2020. Print.
5. Pattanaik, Devdatta. Indian Mythology: Tales, Symbols, and Rituals from the Heart of the Subcontinent. Rochester:Inner Traditions, 2003. Print.

## **Women in Peace keeping: Yesterday, Today, Tomorrow**

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**Abstract:** United Nations (UN) involvement in global and regional peace and security has grown since the end of the Cold War and many nations, including women, have become involved in these efforts. There has been a great deal of effort in recent years to boost the number of women in military service. The UN and member states have made it a priority to increase the number of women in peacekeeping, particularly in the armed forces and police. Civil society, activists, governments, and academics pushed for Resolution 1325 in 2000 to address “women, peace, and security” as a priority. Through initiatives such as the UN’s Uniformed Gender Parity Strategy and the Canadian government’s Elsie Initiative, more women are being included in peacekeeping and barriers to women participating are being removed. Women peacekeepers are crucial to the safety of women in conflict and across the globe, particularly in gender-segregated societies. In line with this, this paper summarizes women in peacekeeping roles in the UN. This paper intends to emphasize the value of female peacekeepers and challenges they encounter, as well as the importance of integrating gender perspectives into all operational planning and decision-making. Moreover, the paper examines and analyses whether various peacekeeping resolutions encourage women to participate in world peace efforts and affect their participation in peacekeeping.

**Keywords:** Women peacekeepers, United Nations, Security council resolutions, Gender balance, Elsie initiative, Uniformed gender parity strategy.

### **Introduction**

A peacekeeping mission combines military, police and civilian personnel who ensure security, political and early peacebuilding support. Peacekeeping operations usually involve armed forces nowadays. Peacekeeping forces deployed around the world are arguably the UN’s most visible and most important function. In 1957, the UN introduced female peacekeepers. It has been the UN’s role since then to promote women’s inclusion in global peace. Women play an essential role in peacekeeping, whether as pilots, infantry soldiers, doctors or police officers. Several studies show that women’s meaningful participation in peace agreements contributes to lasting peace (Bigio, 2018). In spite of this, the number of women in senior positions and leadership positions remains disappointingly low. In total, there were only five women out of a total of 6,250 peacekeepers from 1957 to 1979, which increased to 15 out of 13,750 soldiers in 1989 (Basu, 2018). These women mainly served as nurses in medical units during the peacekeeping operations. By the 1990s, peacekeeping missions shifted away from combat-oriented tasks like patrolling and focused more on humanitarian issues (Heinecken, 2015). Increasingly, peacekeepers provide direct services to civilians in conflict zones. UN peacekeeping forces gradually recruited women, who were viewed as potentially more compatible with humanitarian roles, particularly their ability to communicate with children and women. Later in 2000s, the number of women soldiers continued to rise, finally exceeding 1 percent in 2007 (Basu, 2018). In general, women have contributed positively to peacekeeping, both by taking part in peacekeeping and by protecting women’s rights. These women have repeatedly proven to be equally capable of performing the same tasks as their male counterparts under identical conditions (Bigio, 2018).

### **Importance of Women peacekeepers**

UN peacekeeping operations include more women than ever before, both at the military, police, and civilian levels. Still, women still represent less than half of peacekeeping personnel. According to the latest statistics, there are fewer than 5% of women in the armed forces, in organized police units, and in peacekeeping missions (UN, 2022). According to Captain Preeti Sharma, Commander of the Indian Female Engagement Team (FET) of the United Nations Organization Stabilization Mission in the Democratic Republic of the Congo (MONUSCO), “very few women serve as UN peacekeepers; although women can contribute greatly to peacekeeping missions, they are underrepresented” (Devex, 2020). As a result of UN projections failing to achieve proportionate representation of women across all UN operations, women are underrepresented in peacekeeping missions (Devex, 2020). However, there are still some improvements regarding deployment of women in peacekeepers. Over the course of the peacekeeping mission in Liberia, from 2003 to 2008, Nigeria was one of the top contributors to the operation, sending a significant number of women into the armed forces and police (Basu, 2018). Adding to that, history was made, when in May 2014, Norway’s Major General Kristin Lund became the first female commander of United Nations peacekeeping forces in Cyprus (Bigio, 2018). It’s a positive sign, that the UN Peacekeeping now has more women military personnel than ever before. Leadership positions, staff officers, and troops are all held by

them. Their duties include patrolling, planning operations, flying helicopters, performing medical outreach, helping clear minefields, engaging with local communities, and much more (Baldwin, 2020). In doing so, they help to protect civilians, deter attacks, and provide the security necessary for all components of peacekeeping operations to fulfill their mandate (Devex, 2020). According to UN studies, women soldiers are not restricted by cultural norms as their male equivalents, and can therefore gain information from women and children (Heineken, 2015). Despite their uniforms, uniformed women are viewed as better communicators by local civil society actors. Women in uniform have improved the mission's reputation and improved its ability to communicate with local women and men (UN, 2021). Therefore, evaluating women's potential to contribute to peacekeeping after conflict, structural constraints and operational constraints should be considered. Women's role in PKOs must be critically analyzed and related to the experiences of women who are already in field operations in order to avoid falling back on essentialized concepts and unrealistic expectations (Karim, 2017). In addition to disproportionately affecting women and girls, conflict violence exacerbates pre-existing inequalities and discrimination and destabilizes fragile states. For any peace operation to succeed and find a noticeable solution, more women need to be in decision-making roles and senior roles. Moreover, the UN missions that deploy all-female contingents in global missions and integrate them into mixed-gender environments would also have a positive impact on women's personalities (UN, 2021).

### **Resolutions and Gender balance**

As time progressed, the UN began incorporating women's concerns and gender mainstreaming into conflict resolution. Resolution 1325 was adopted by the UN Security Council in 2000 to attain this goal and strengthen gender equality (Strickland, 2003). This resolution emphasized the importance of women and girls participating equally and fully in conflict prevention, peacekeeping, conflict resolution, and peacebuilding. As part of this resolution, the UNSC discussed and promoted women's roles in promoting peace and security under Women, Peace and Security (WPS) agenda. In recognition of women's specific needs and their involvement in post-conflict reconstruction activities, UNSC Resolutions 1820, 1888, 1889, and 1960 were implemented following resolution 1325 to address women's participation in post-conflict reconstruction (St-Pierre, 2011). These resolutions advance the UN's goals and mandates for gender equality, nondiscrimination, and respect for women's rights. Till date, total ten resolutions have passed by the UNSC including the latest resolution 2538 of 2020 (UNSCR, 2020). All these resolutions are significant in encouraging women to join peacekeeping. With the adoption of Resolution 1325 (2000), referenced in the majority of peacekeeping authorizations and renewals, UN peacekeeping forces are evaluating gender balance. As a result of UNSC resolution 1325, member states were supposed to double the number of women peacekeepers every year (Willett, 2010). However, this target was never achieved, still there have been some progresses. For example, in January 2007, the First All-Female Police Unit (FFPU) from India arrived in Liberia which encouraged Liberian women to join the United Nations Mission in Liberia (UNMIL) and the national police. India's mission in Liberia inspired women serving in military and security forces around the world (Basu, 2018). The UNSC resolution 2242 of 2015 also outlined strategies and resources for implementing the WPS Agenda to double the number of women serving in peacekeeping forces (UNSC, 2015). Unfortunately, this goal was also missed. The newest resolution of the Security Council is 2538. As part of a series of resolutions aimed at increasing the inclusion of more women in UN peacekeeping missions, the UNSC passed resolution 2538 on women and peacekeeping on August 28, 2020, under Indonesian leadership. In many ways, the resolution is historic for the UN, peacekeeping, and women peacekeepers (UNSCR, 2020).

### **Uniformed gender parity strategy (2018-2028)**

During the UN Secretariat's Action for Peacekeeping initiative, UN Member States agreed to increase the number of women in peacekeeping at all levels and in key positions. 2028 is the year, the UNSC called for doubling the number of women in uniformed peace operations. Several consultations with military, police, and justice and corrections components led to the Uniformed Gender Parity Strategy, which provides a roadmap to attaining such goals (UN, 2018). The absence of gender equality in member states and the Department of Peacekeeping Operations negatively impacts women peacekeepers. Therefore, this Strategy intends to correct these obstacles and aims to increase women's participation in UN peacekeeping operations by sustainable means, taking into account uniformed personnel turnover and requiring member states to increase women's participation in their national police, military, and justice systems (UN, 2018). The military, police, and justice and corrections components each have specific strategies and targets, depending on their size, mandate, and specific circumstances. Over the past two decades, WPS norms have significantly strengthened. There is growing evidence that women play an important role in peacekeeping efforts at the United Nations and elsewhere. Additionally, A warning is

also made in the Strategy that countries contributing troops may not be deployed if their quotas aren't met (Ferrari, 2019). However, there is still much to be done to meet our targets for 2028 and beyond, and sustain the progress already made.

### **Elsie Initiative**

Gender equality is enshrined in the Universal Declaration of Human Rights and women's involvement in peace operations is critical to mission's success and effectiveness. The UN's Uniformed Gender Parity Strategy (2018-2028) will require major changes at the level of national security institutions, troop and police-contributing countries, and the UN itself. A single country cannot provide all the solutions needed to address gender inequality. Therefore, the Canadian government worked with UN partners, member states, think tanks, and civil society organizations to increase the participation of women in peace operations and launched the 'Elsie Initiative' for Women in Peace Operations at the "UN Peacekeeping Defence Ministerial, 2017" in Vancouver (Ghittoni, 2018). Elsie Initiative is an international pilot project that aims to break down gender barriers and ensure women participate meaningfully in UN peace operations, focusing primarily on police and military roles (Lamensch, 2020). There are bilateral partnerships, a global fund, political advocacy, research, monitoring, and evaluation activities as part of this Initiative. The Elsie Initiative offers Canada and its partners a chance to create transformational change and a more inclusive and effective future for peace operations, where missions are better able to fulfill their mandates and to promote peace (GF, 2018). Jean-Pierre Lacroix, UN Under-Secretary-General for Peacekeeping Operations, stated that the mission of the Elsie Initiative reflects the UN Secretary-General's commitment to equality, as well as the right of women to serve as this will contribute to the overall effectiveness of peacekeeping operations (UN w. , 2019).

The initiative's most significant component was the creation of the Elsie Initiative Fund (EIF) for Uniformed Women in Peace Operations (Lamensch, 2020). The EIF was launched by the UN and Canada in 2019 as an innovative multilateral fund aimed at accelerating progress towards the UN's gender targets in line with Security Council resolutions and the UN Uniform Gender Parity Strategy (2018-2028). In order to support the deployment and meaningful participation of uniformed women peacekeepers, Australia, Canada, Denmark, Finland, Germany, the Netherlands, Norway, and the UK provide financial assistance and incentives. The Canadian government contributed US\$15 million at the outset (Lamensch, 2020). For the first time in peacekeeping history, funding was used to create an environment friendly to women peacekeepers. In January, 2022, for the United Nations Interim Force in Lebanon (UNIFIL), the Elsie Initiative Fund for Uniformed Women in Peace Operations granted US\$150,000 for building gender-sensitive lodging for female peacekeepers from Ghana (Kelly, 2022).

### **Challenges and Remedies**

Past missions have shown that the UN's preferred method of encouraging participation in the specific language of a mission's mandate has limited success in overcoming resistance. Instead, monetary payments may be more effective. When countries provide peacekeepers, they may rely in part on financial incentives. Each month, the UN pays a fixed amount per troop, usually around US\$ 1400, and for many countries that is more than it costs to train and equip troops. As a result, developing nations contribute far more peacekeepers to the UN than richer nations. Together, Bangladesh, Ethiopia, Rwanda, Nepal and Senegal provide 30 percent of the UN's total peacekeeping force (Bove, 2011). Incentives for these countries to provide more gender-balanced components for their armed forces could be provided by a supplementary payment for women troops. Funders and troop providers should discuss the exact size of the payment, perhaps at US\$303 per troop per month (the same amount now paid for specialist troops) (Kenny, 2016). Another challenge is regarding the underrepresentation of women peacekeepers. Among troop-contributing countries, women are underrepresented in the military and police due to under-recruitment, training barriers, and cultural factors but they can make unique contributions to PKOs and enhance their abilities if they are properly trained, visible, and engaged (Bove, 2011). It is only possible to make contributions of this sort if the mission is supported by gender-specific training based on each country's dynamics and needs, and if structural changes are made to dismantle institutional barriers to equality. As the overall percentage of women serving in uniform in peacekeeping has risen from 3.9% to 5.4% since 2015, the majority of peacekeeping forces are still composed of men (Simic, 2014). For women to make up the majority of peacekeeping contingents and serve their populations in conflict-affected areas in the next few decades, it will take several decades at the current rate. Therefore, the UN is calling for more female peacekeepers to enhance the effectiveness of current peacekeeping operations. To achieve this, more women must be integrated into UN missions. A skilled and well-trained female peacekeeper can only benefit peacekeeping operations. For women to play a significant role in peacekeeping, they must be included in senior positions with influence over leadership and decision-making, and receive training that

will enable them to substantially change the context and development of missions. As peacekeepers, they face many barriers to reaching their full potential. Women are restricted from moving up the UN peacekeeping ladder due to language barriers and training gaps. As Karim and Beardsley also point out, the fundamental power structures that govern peacekeeping need to be amended alongside structural changes that empower women and their leadership(Karim, 2017). In nations where UN peacekeeping missions serve, the participation of women in peacekeeping is crucial in addressing the security concerns, medical and educational needs of women and girls. Peacekeeping missions, despite the UN's zero-tolerance policy and explicit messages, face a major problem when it comes to sexual exploitation and abuse (SEA)(Gilliard, 2011). It is defined by the UN as "the actual or attempted abuse of a position of vulnerability, differential power, or trust for sexual purposes, including, but not limited to, profiting monetarily, socially, or politically from another's sexual exploitation"(UN Secretary-General's Bulletin on Protection from Sexual Exploitation and Abuse, ST/SGB/2003/13)(UN, 2015). Under the UN definition, SEA refers to peacekeeper involvement in transactional sex and sexual violence. The UN needs to seriously look into this problem and find proper solutions so the women peacekeepers work at full potential.

### **Conclusion**

Women peacekeepers contribute in critical ways to missions where they are deployed. There is a need to make sure women are not disproportionately placed in lower-level positions. The UN peacekeeping force can provide an opportunity to evaluate the extent and nature of women's involvement in the armed forces. Among the conditions necessary for the effective inclusion of women in peace operations will be gender mainstreaming, structural changes, and alterations in the traditional definitions of peacekeeper identity. It would ensure a more significant impact on operations and overall effectiveness of a female peacekeeping contingent. Representing women in peacekeeping should be part of a broader approach that includes increasing women's participation in off-base activities, as well as training on sexual misconduct and boosting women's representation in senior-level positions in peacekeeping operations(Kenny, 2016). However, simply recruiting more women is not enough to make a difference. Including women in peacekeeping is a means to a more desirable end. Promoting gender equality and integrating nuanced gender mainstreaming policies into PKOs is a natural next step. The goal should be to improve the security of the societies where the mission is deployed and ensure equal opportunity peacekeeping. With this, the women peacekeepers will feel entirely represented at global level of peacekeeping.

### **References**

- 1) "Q&A: Why Women Peacekeepers Are Needed Now More than Ever." Devex, 2020, [www.devex.com/news/sponsored/q-a-why-women-peacekeepers-are-needed-now-more-than-ever-97248](http://www.devex.com/news/sponsored/q-a-why-women-peacekeepers-are-needed-now-more-than-ever-97248).
- 2) "Resolution 2242 (2015)." United Nations, United Nations Security Council, 13 Oct. 2015, [www.securitycouncilreport.org/atf/cf/%7B65BFCF9B-6D27-4E9C-8CD3-CF6E4FF96FF9%7D/s\\_res\\_2242.pdf](http://www.securitycouncilreport.org/atf/cf/%7B65BFCF9B-6D27-4E9C-8CD3-CF6E4FF96FF9%7D/s_res_2242.pdf).
- 3) "Security Council Resolution 2538." UNSCR, 2020, [unscr.com/en/resolutions/2538](http://unscr.com/en/resolutions/2538).
- 4) "The Elsie Initiative Fund Launched to Increase Uniformed Women in UN Peacekeeping." UN Women, 2019, [www.unwomen.org/en/news/stories/2019/3/news-the-elsie-initiative-fund-launched-to-increase-uniformed-women-in-un-peacekeeping](http://www.unwomen.org/en/news/stories/2019/3/news-the-elsie-initiative-fund-launched-to-increase-uniformed-women-in-un-peacekeeping).
- 5) "Uniformed Gender Parity Strategy 2018–2028." United Nations Peacekeeping, United Nations, 2018, <https://peacekeeping.un.org/sites/default/files/uniformed-gender-parity-2018-2028.pdf>
- 6) "Women in Peacekeeping." United Nations Peacekeeping, [peacekeeping.un.org/en/women-peacekeeping](http://peacekeeping.un.org/en/women-peacekeeping). Accessed 2 Mar. 2022.
- 7) "Women Peace and Security in Peacekeeping." MONUSCO, United Nations, 2021, [monusco.unmissions.org/en/women-peace-and-security-peacekeeping](http://monusco.unmissions.org/en/women-peace-and-security-peacekeeping).
- 8) Baldwin, Gretchen, and Taylor, Sarah. *Uniformed Women in Peace Operations: Challenging Assumptions and Transforming Approaches*. International Peace Institute, 2020, <http://www.jstor.org/stable/resrep25267>.
- 9) Basu, Soumita. "The Women in Blue Helmets: Gender, Policing, and the UN's First All-Female Peacekeeping Unit; Equal Opportunity Peacekeeping: Women, Peace, and Security in Post-Conflict States." *International Affairs*, vol. 94, no. 3, 2018, pp. 663-65. Crossref, <https://doi.org/10.1093/ia/iyy081>.

- 10) Bigio, Jamille. "Increasing Female Participation in Peacekeeping Operations." Council on Foreign Relations, 13 Aug. 2018, [www.cfr.org/report/increasing-female-participation-peacekeeping-operations](http://www.cfr.org/report/increasing-female-participation-peacekeeping-operations).
- 11) Bove, Vincenzo, and Leandro Elia. "Supplying Peace: Participation in and Troop Contribution to Peacekeeping Missions." *Journal of Peace Research*, vol. 48, no. 6, 2011, pp. 699-714. Crossref, <https://doi.org/10.1177/0022343311418265>.
- 12) Ferrari, Sofia Sacks. "Is the United Nations Uniformed Gender Parity Strategy on Track to Reach Its Goals? | SIPRI." Sipri, Stockholm International Peace Research Institute, 12 Dec. 2019, [www.sipri.org/commentary/topical-backgrounder/2019/united-nations-uniformed-gender-parity-strategy-track-reach-its-goals#:~:text=The%20Uniformed%20Gender%20Parity%20Strategy%202018%E2%80%93200Established%20with,Operations%20%28DPO%29%20plans%20to%20meet%20them%20by%202028](http://www.sipri.org/commentary/topical-backgrounder/2019/united-nations-uniformed-gender-parity-strategy-track-reach-its-goals#:~:text=The%20Uniformed%20Gender%20Parity%20Strategy%202018%E2%80%93200Established%20with,Operations%20%28DPO%29%20plans%20to%20meet%20them%20by%202028).
- 13) Ghittoni, Marta & Lehouck, Léa & Watson, Callum. (2018). *Elsie Initiative for Women in Peace Operations: Baseline Study*.
- 14) Gilliard, Natalie. "Peacekeepers or Perpetrators? An analysis of Sexual Exploitation and Abuse (SEA) by UN personnel in the Democratic Republic of Congo." *Mapping Politics* [Online], 3 (2011): n. pag. Web. 04 Mar. 2022
- 15) Global Affairs Canada. "The Elsie Initiative on Women in Peace Operations." Canada.Ca, 02 Mar. 2018, [www.canada.ca/en/global-affairs/news/2018/03/the-elsie-initiative-on-women-in-peace-operations.html](http://www.canada.ca/en/global-affairs/news/2018/03/the-elsie-initiative-on-women-in-peace-operations.html).
- 16) Heinecken, Lindy. "Are Women 'Really' Making a Unique Contribution to Peacekeeping?" *Journal of International Peacekeeping*, vol. 19, no. 3-4, 2015, pp. 227-48. Crossref, <https://doi.org/10.1163/18754112-01904002>.
- 17) Karim, Sabrina, and Beardsley, Kyle. "A Call for Equal Opportunity Peacekeeping." *Equal Opportunity Peacekeeping*, 2017, pp. 165-194., <https://doi.org/10.1093/acprof:oso/9780190602420.003.0010>.
- 18) Kelly, Maya, and Stamp, Camilla. "We Will Have Everybody on Board': How the Elsie Initiative Fund and Ghana Armed Forces Support Gender Parity in UNIFIL." *Medium*, 12 Feb. 2022, [unpeacekeeping.medium.com/we-will-have-everybody-on-board-how-elsie-initiative-fund-ghana-support-unifil-gender-parity-80dcc25de22a](http://unpeacekeeping.medium.com/we-will-have-everybody-on-board-how-elsie-initiative-fund-ghana-support-unifil-gender-parity-80dcc25de22a).
- 19) Kenny, Charles. "Using Financial Incentives to Increase the Number of Women in UN." *Center For Global Development*, 17 Oct. 2016, [www.cgdev.org/publication/using-financial-incentives-increase-number-women-un-peacekeeping](http://www.cgdev.org/publication/using-financial-incentives-increase-number-women-un-peacekeeping).
- 20) Lamensch, Marie. "The Elsie Initiative for Women in Peace Operations." *The Canadian Encyclopedia*, 2020, [www.thecanadianencyclopedia.ca/en/article/the-elsie-initiative-for-women-in-peace-operations](http://www.thecanadianencyclopedia.ca/en/article/the-elsie-initiative-for-women-in-peace-operations).
- 21) Simic, Olivera. "Increasing Women's Presence in Peacekeeping Operations: The Rationales and Realities of "Gender Balance". *Rethinking Peacekeeping, Gender Equality and Collective Security*, 2014, pp. 185-99, [https://doi.org/10.1057/9781137400215\\_10](https://doi.org/10.1057/9781137400215_10).
- 22) St-Pierre, Kristine. "Implementing the Women, Peace, and Security Agenda in Peacekeeping Operations: Overview of Recent Efforts and Lessons Learned." *The Department of Foreign Affairs and International Trade*, 2011, pp. 1-22, [www.peacebuild.ca/St-Pierre-%20WPS%20in%20Peacekeeping.pdf](http://www.peacebuild.ca/St-Pierre-%20WPS%20in%20Peacekeeping.pdf).
- 23) Strickland, Richard, and Duvvury, Nata. "Gender Equity and Peacebuilding, From Rhetoric to Reality: Finding the Way." *International Center for Research on Women (ICRW)*, 2003, pp. 1-40.
- 24) Willett, Susan. "Introduction: Security Council Resolution 1325: Assessing the Impact on Women, Peace and Security." *International Peacekeeping*, vol. 17, no. 2, 2010, pp. 142-58. Crossref, <https://doi.org/10.1080/13533311003625043>.

## **Impact of Piscivorous Birds on Fishes Present In Jakkapurwadi Water Bodies of Osmanabad District (Ms) India**

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**Abstract:** The present investigation to the study of piscivorous birds and their impact on fishes present in Jakkapurwadi Water bodies located in Osmanabad district (MS) India. The study were carried out for one year June 2018 to May 2019. Jakkapur wadi water tank is man-made Earth dam .The distance from Omerga dist. Osmanabad to preset dam is about 08 km. The water tank has been completed in 1978.The location of Jakkapur wadiplaced Longitude 76<sup>0</sup>-34'-0' and 17<sup>0</sup>-48'-30'. Themaximum height of dam is 14.83 meter. The Catchment area is of 21.00 sq.kms.Full tank level is 11.30 meter and useful Irrigation. The dam occupy area about 1587Hector mainly for domestic activity, drinking & plantation nursery, fish culture. The observation of Pisciovorous birds by using ofbinocular7x and 8x magnification fish predator belong to various group of animals such as birds, aquatic insects, amphibians, reptiles etc. These predator feed on larval stages of Indian major carp. Exotic carp cat fishes were cultivated in this water bodies. The piscivorous birds damages to fish culture by consuming stocked fishes. In present investigation eight Pisciovorous birds were observed during study from Jakkapur wadi water bodies.

**Keywords:** - Piscivorous birds, Jakkapur wadi Water Bodies

### **Introduction:-**

Number of birds are depend on aquatic environment for their survival. Moreover places where a wide variety of birds are found are tend to have wide variety of other forms of life. Birds are good indications of diversity of plant & animals. Birds have evolved a wide variety of adaptation for feeding on fish. Majority of birds are insectivores, and Pisciovorous avifaunal species. Bird's population on earth is an indicator of pollution both for terrestrial and aquatic ecosystem. The fishes like Indian major carp, sliver carp, Grass carp, cyprinous carpio, fresh water species of cat fishes were cultivated in this water bodies for safety of stocked fishes as well as their satisfactory growth and survival, irradiation of fish predatory from water bodies is necessary. Fish predator belong to various group of animals such as Pisces, Aquatic insects, Amphibians, Reptile, Aves etc. These birds, however are less discarming in their diets and will consume a variety of other foods as well as they have more carnivores rather than specialized piscivores. (Singh (1929), Davidar (1985). The Birds are scavengers in the nature act as pollinating agent. Ghazi (1962), Kulkarni (2006) studyof piscivorous birds. The Pisciovorous birds provide damage to fish culture by consuming the fishes survey is made with the help of binocular 7x and 8x magnifications of Pisciovorous birds of Jakkapur water bodies to control/population of predatory birds. The present study is the attempt to understand the piscivorous birds with reference of Jakkapur water bodies.

### **Material and Method :**

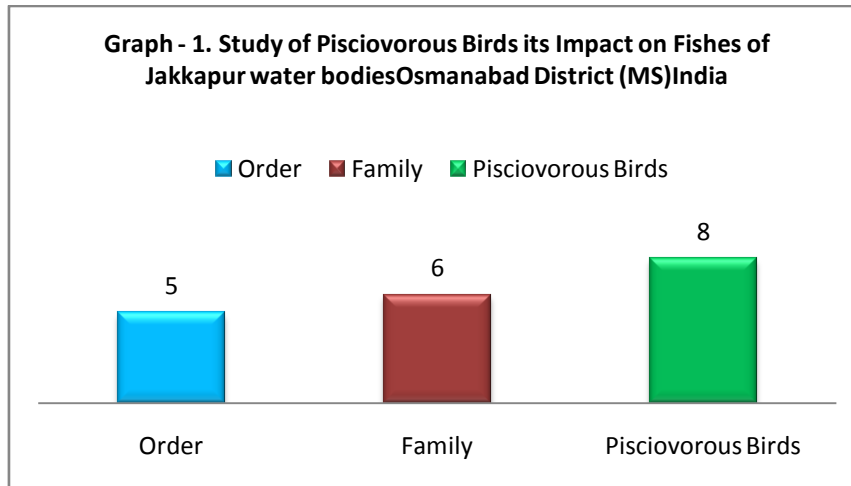
The present study has been carried out on water bodies, Jakkapur wadi Located in Longitude 76<sup>0</sup>-34'-0' and Latitude 17<sup>0</sup>-48'-30' Omerga Tehsil. Osmanabad District (MS) India. Full tank level water 11.30 M for this survey the frequent site visits in morning time for observation & survey is made with the help of binocular 7x & 8x magnifications of Pisciovorous birds. The birds were observed and identification of Birds standard Literature was usedsuch as Alis and Ripley S.D.(1995) Satishpande (2003), Girmmet et. Al (1999) and Ali S.(2002), Kulkarni A.N.(2006)

### **Result and Discussion:-**

Table: - Study of Pisciovorous Birds its Impact on Fishes of Jakkapur water bodies  
Osmanabad District (MS)India

Sr. No.	Order	Family	Species	Scientific Name	Residential Migratory	Total Count
1	Anseriformes	Anetidae	1)Brhaminy Shelduck	-Todura Ferruginae	RM	50
			2)Convas back	-Aythya valismeria	RM	25
2	Guriformes	Rallidae	1) Common coot	- Fulica atra	RM	81
3	Coracilformes	Ancedinidae	1) White breasted king fisher	- Halcky onsymersis	R	10

4	Pele caniformes	Threskimit hidae	1) Back faced spoonbill	- Platalaminor	RM	17
5	Pele caniformes	Ardeidae	1) Indian pond Heron	- Ardeolagravii	R	15
			2) Little Egret	-Egret gr azetta	RM	25
6	Charai formes	Scolopacid ae	1) Terek sandipiper	Xenuxcinereius	RM	50



Study of Piscivorous Birds its Impact on Fishes of Jakkapur water bodies Osmanabad District (MS) India were five order, six family and Eight Piscivorous birds observed the present investigation recorded.

Table -1 The family Anetidae 02 species and family Ardeidae 02 species was dominate to be followed by family Rallidae 01 species, Ancedinidae 01 species, Threskimi thidae 01 species and Scolopacidae 01 species recorded. The Piscivorous birds were identified same are residential & residential migratory its affecting fish culture of water bodies. The Piscivorous birds are control by reducing their population in near the fish culture bodies. Removal the aquatic flora, some surrounding of fish culture water bodies use fight reflection starker the table is the checklist of Piscivorous birds recorded at the study area of Jakkapur water bodies. The nomenclature taxonomic arrangement follows the Ali and Ripley (1983) Ali sale (2002) and Satish Pande (2003)

**Acknowledgement:**

The authors are thank full to the principal Dr. Umakant B. Chansheetti, Jawahar ASC College, Anadur Tq. Tuljapur Dist. Osmanabad for providing necessary Library and Laboratory Facilities.

**Reference:-**

- Attenborough, David (1998) - The problem of Parenthood the life of birds Episode 9.12  
a. BBC one
- A.D.Babare, M.G.Babare, H.K.Jadhav et.al (2016), Study Piscivorous birds its, Impact on fish fauna of Babhalgoan Dam, Radhey Publication Page 65-66.
- Condon H.T. (1975) checklist of Birds of Australasian ornithologists union P.57
- Davidar P. (1985) Ecological interaction between the Mistlelo and their avian pollinater in sawn Indian. Bom. Nat. Hist. SOC 82: 45-60
- Ghazi H.K.(1962) Piscivorous birds of Madras J. Of fisheries (7) : 106-107
- Kulkarni A.N.(2006) Piscivorous birds of Dongerkheda irrigation tank. Dist. Hingoli. Aqua Boil : 21(1) 86-87
- Menon (1964, 1987) The Fauna of India and adjacent countries. Pisces vol 4 Telestomi cobitoidae pt I ZSL 259 pp.
- Ripley (1996): A pictorial guide to the birds of India sub. Continent B.N.H.S. Bombay pp. 1-172.
- Salim Ali (2002): The book of Indian Birds 13 Edition, Bombay Natural Historical Society
- Singh T.C.N. (1929) A note on the pollution of erythring India by birds. Bombay Natural Historical Society 33

## **A Comprehensive New Approach On Pickering Emulsion**

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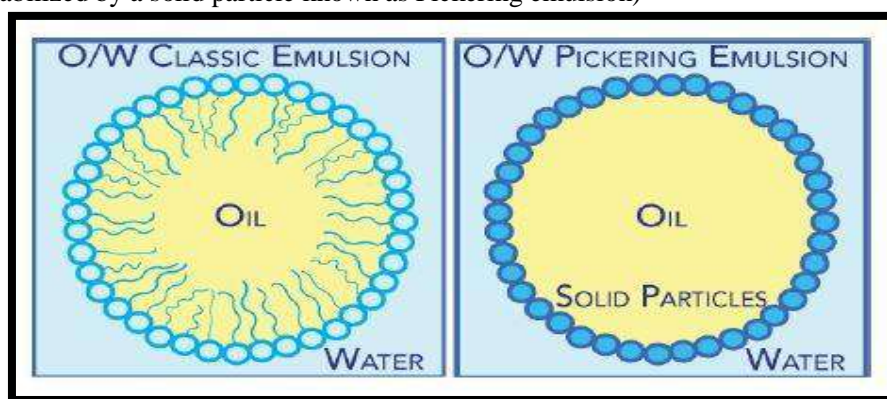
**Abstract-** The increasing demand of Pickering emulsion application in various industries due to its combined advantages in terms of quality, cost, sustainability Pickering emulsion is emulsion stabilized only by solid particles has been discovered a century ago but studied in recent. Substituting surfactant or stabilized by solid particles. Pickering emulsions are more stable against coalescence and are more biocompatible. solid particles or nanoparticles used as a stabilizer in Pickering emulsion. Furthermore, it shows a lower toxicity higher stability. nanoparticles morphology influence the Pickering emulsion stability. the increasing demand for Pickering emulsion application in various industries due to its advantages in terms of quality, cost, sustainability, stability. this review aims to provide a complete overview of Pickering emulsion stabilized by solid particles.

### **Introduction –**

Pickering and Ramsden first identify the Pickering emulsion at the beginning of the 20<sup>th</sup> century. An emulsion system consists of two immiscible liquids where one of the liquids is the continuous phase and the other is the dispersed phase. since the emulsion system is normally thermodynamically unstable due to high surface energy between immiscible phases. Generally, the emulsion is carried out in presence of stabilizers such as surface-active agents, chemical surfactants, and solid particles. An emulsion that is stabilized by solid particles like starch, cyclodextrin, silica, titanium dioxide, instead of a classic emulsifier is known as Pickering emulsion, Stabilization of emulsion by a solid particle is due to particle dual wettability. Pickering emulsion stability plays an important part in the various significant process including emulsion polymerization, oil extraction.

### **Difference between Pickering emulsion and classical emulsion –**

The most notable difference between classical emulsion and Pickering emulsion is that the one bear surfactant on the interface between two liquid phases serving as a stabilizing agent and one bear solid particle-like silica, cyclodextrin, on the interface between two liquid phases serving as a stabilizing agent (Emulsion stabilized by a solid particle known as Pickering emulsion)



### **Solid particle –**

Rather than using traditional solid particles, several types of solid particles are used for the stabilization of the Pickering emulsion. Starch a commonly used or well-known pharmaceutical excipient. Morphology characteristics of Pickering emulsion are highly based upon the properties of solid particles. Therefore, it is significant to choose the right kind of particles to obtain the specific type of applications. Several types of solid particles are listed below –

1. Silica
2. Clay
3. Cyclodextrin
4. Starch
5. Zein
6. Carbon Nanotube
7. Hydroxyapatite

8. Silica
9. Chitosan
10. Soy protein

#### **Silica-**

Silica is the most extensively studied particle as a Pickering emulsifier because silica is easily obtained and modified especially in the study of phase inversion. Unmodified silica stabilizes O/W Pickering emulsion due to its hydrophilic property. Whereas modified silica stabilizes W/O Pickering emulsion due to its hydrophobic property. Pure silica is too hydrophilic to stabilize the Pickering emulsion.

#### **Starch-**

Starch is food grade particle that is a natural stabilizer, non-toxic, and biodegradable employed in the formation of Pickering emulsion. Starch is obtained from the various botanical resource. The modification of starch is necessary for a more successful O/W Pickering emulsion due to its broad size range. The rice starch has the smallest particle size among the four. The best capacity to form stable Pickering emulsion with the least amount of granules.

#### **Cyclodextrin-**

Cyclodextrin is a family of cyclic oligomers obtained by enzymatic digestion of starch respectively named  $\alpha$ -CD,  $\beta$ -CD,  $\gamma$ -CD. Cyclodextrin is non-toxic and biocompatible. CD are lipophilic from inside which can host the guest molecule such as oil, waxes, fats. The ability to form host-guest complexes is vital for stabilizing and solubilizing hydrophobic compounds insolvent. CD is an emulsion stabilizer.

#### **Chitosan-**

Chitosan is the second most abundant polymer in the world which is a linear polysaccharide. chitosan is biodegradable and biocompatible due to the free amino and hydroxyl group. Chitosan is a green polymer having excellent solubility in dilute acid aqueous solution. Nanoparticles of chitosan were used as an emulsifier to establish a Pickering emulsion.

#### **Soy protein-**

Soy protein is a protein isolated from the soya bean. Soy protein is non-toxic and well nutritious, making promising food-grade materials establish Pickering emulsion. The thermal treatment (95<sup>o</sup>C For 15 Min ) of soy protein isolation SPI followed by addition of NaCl at appropriate concentration form gel-like Pickering emulsion.  $\beta$ -conglycinin and glycinin in soy protein can be used as an emulsifier.

#### **Preparation of Pickering emulsion-**

To prepare a stable Pickering emulsion high energy barrier need to be overcome or decreased by applying external force or selecting appropriate condition. The process of formation adsorption of the particle at the interface through the development of microfabrication and microscopic technology. For example, the particles in Pickering emulsion would form bridging between two droplets. Freeze-fracture scanning electron microscopy (FFSEM) directly observe particle bridging between droplet. The formation and destruction of particle bridging are affected by particle wettability and shear force. When weak energy was supplied the binding of the dynamic particle of a very slow and time-consuming process. To prepare Pickering emulsion preparation method having enough external energy to overcome energy barriers such as sonication or homogenization. Couette mixer proposed by Bibette was used for the preparation of the Pickering emulsion. It consists of two cylinders with a syringe pump. This method can be time-consuming and high shear rates have should be adopted. Other technology like microfluidics and membrane emulsification can simplify the preparation step and allow precise control on droplet size. This technology differs from homogenization. The droplets are formed drop-by-drop using a microfluidic device and porous membrane dispersed individually into the continuous phase.

#### **Characterization of Pickering emulsion-**

Characterization of Pickering emulsion includes the-

- 1) Formation
- 2) Properties of Pickering emulsion
- 3) Physical stability of Pickering emulsion

Pickering emulsion is strongly influenced by characteristics of resulting droplets such as charge, concentration, and interaction.

#### **Formation-**

Formation of Pickering emulsion includes characteristics like contact angle, particle dimension, and surface charges.

#### **Properties of Pickering emulsion-**

It includes the size and morphology, emulsion color, droplet charge, and surface coverage like properties.

### **Physical stability of Pickering emulsion-**

The stability of Pickering emulsion involves factors like Emulsion coalescence, gravitational separation.

### **Applications of Pickering emulsion-**

Pickering emulsion has various applications due to its many attractive features like easy formation, uniform droplet size, and stability. The list of different application involving the use of Pickering emulsion are as follow-

- 1) Pickering emulsion for catalysis-  
Pickering emulsion can improve the catalysis efficiency of classical systems due to their large interfacial area. They can be easily recycled and prepared.
- 2) Pickering emulsion for photocatalysis-  
Pickering emulsion can be used as a photocatalytic for the degradation of organic contaminants. The nanoparticles were used for stabilizing O/W and W/O type emulsion.
- 3) Pickering emulsion for protein recognition-  
Pickering emulsion has also been used for protein recognition.
- 4) Pickering emulsion for antibacterial activity-  
Pickering emulsions are a good template for fabricating different types of material such as porous scaffolds with antibacterial activity.
- 5) Pickering emulsion for tissue engineering and drug delivery
- 6) Pickering emulsion for filtration membrane

### **Future trends in Pickering emulsion –**

In the last 20 years research has been focused on Pickering emulsion. The global trend has inspired a scientist to use particle-stabilized emulsion to engineer functional interfaces and new materials. The Particles placed at the interface form a well-defined structure. Pickering emulsion is also used as the template for fabricating novel material and reaction sites for specific targeting sites. The major challenge for the scientist is now further improving emulsion stability using nanoparticles that can be directly used for the chosen application. Pickering emulsion is also used for electrochemical applications. Pickering emulsion could be used for bio-separations and biorecognition by molecular imprinting.

### **Conclusion-**

Pickering emulsion has become the most important tool for the preparation of new materials. This review briefly discussed solid particles, applications, and preparation. With the increasingly large demand for Pickering emulsion in the cosmetic, food, pharmaceutical industry field has become a research hotspot because of preparing simplicity, high stability, and biocompatibility. Pickering emulsions are stable against coagulation due to the mechanical barrier that solid particles form at the O/W interface. In this review, different aspects of Pickering emulsion are discussed.

### **References-**

1. Danae Gonzalez Ortiz<sup>a</sup> Current Trends in Pickering Emulsions: Particle Morphology and Applications Volume 6, Issue 4, April 2020, Pages 468-482 <https://doi.org/10.1016/j.eng.2019.08.017>
2. David J. French<sup>1</sup>, The secret life of Pickering emulsions: particle exchange revealed using two colors of particle *Scientific Reports* | 6:31401 | DOI: 10.1038/srep31401
3. Shintaro Kawano<sup>1</sup>, Beilstein J. Org. Chem. 2015, 11, 2355–2364. Beilstein J. Org. Chem. 2015, 11, 2355–2364. doi:10.3762/bjoc.11.257
4. Liang Ee Low<sup>a,b,c,d,1</sup>, Recent advances of characterization techniques for the formation, physical properties and stability of Pickering emulsion S0001-8686(19)30433-6 DOI: <https://doi.org/10.1016/j.cis.2020.102117>
5. Yunqi Yang<sup>1,2,3</sup> An Overview of Pickering Emulsions: Solid-Particle Materials, Classification, Morphology, and Applications 23 May 2017 | <https://doi.org/10.3389/fphar.2017.00287>
6. [https://en.wikipedia.org/wiki/Soy\\_protein](https://en.wikipedia.org/wiki/Soy_protein)
7. <https://www.azom.com/article.aspx?ArticleID=17686>
8. Denkov, Pickering, S. U. J. Chem. Soc., Trans. **1907**, 91, 2001–2021. doi:10.1039/ct9079102001

## **A Look Back To The Mughal Empire With Special Emphasis On The Reign Of Akbar, The Great**

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**Abstract:**In the Indian subcontinent the most populated and well known empire is the Mughal Empire. It is considered as the jewel of the Islamic civilization for its achievements. Mughal Empire founded by Babur in 1526 proved to be the rivals of the contemporary powers of the Asian continent during that time. The Mughal era can be classified in two sub eras- first one was the era of glory and consolidation on the other hand the second era was known to be the era of decline and demise. He stated that the Mughals glorious era can be observed during the first half of the empire's history when the Indian region was ruled by Babur, Humayun, Akbar, Jahangir, Shah Jahan and Aurangzeb. The objective of this study is to analyze the Indian unification efforts under the Mughal Empire, to throw light on the equality policy in the administration under Akbar, and discuss his religious policies. This study is a historical study employing a qualitative approach methodology as a means of gathering and analyzing of data. The gathering of data was done through search of documents while the historical review, content analysis and source interpretation were used to analyze the data.

**Keywords:** Great, Rule, Efforts, Politics, Mughal Empire.

### **Introduction:**

The Mughal Empire which is known to be established by Babur in 1526 can be divided into two, namely the era of consolidation and glory (1526-1707) and the era of decline and downfall (1707-1857). According to him the reigns of Babur, Humayun, Akbar, Jahangir, Shah Jahan and Aurangzeb are the golden periods but the second half reign after Aurangzeb was declined for it became weak due to the severe attacks from the Hindus. Apart from this the main causes of the demise was the power struggle between the royals and the incompetence of the then rulers and interference of the foreign powers. (Bakar 2000; Ishak 1992). In 1555 the Mughal Empire again came under the rule of Humayun. It is said that if his son Akbar were not born it might not be restored. Most importantly at that there was the most important twist in the Indian politics during his reign. But later the situation came under control gradually and many human welfare policies were taken which moved the common people. Akbar was a boy of thirteen when his father Humayun died. Bairam Khan who was the confidant of his father Humayun served as Akbar's tutor and guided him from 1556-1560. The period of Bairam Khan's regency could be divided into four phases: The first was from the accession of Akbar to before the second battle of Panipat; i.e., January-October 1556. This was a period when the nobles accepted Bairam Khan's leadership to protect their interests. The second phase was marked by the second battle of Panipat and the arrival of the royal ladies (Hamida Banu Begum and Maham Anaga) in India. During this period, Bairam Khan was in absolute control of the state affairs. He attempted to create a personal following. In the third phase, which lasted till mid-1559, Bairam Khan's influence and power declined. The last phase witnessed the attempts of Bairam Khan to regain control. There was also growth of factional strife which ultimately led to the dismissal of Bairam Khan.

**Objectives:** The main objectives of this study are as follows –

1. To analyze the Indian unification efforts under the Mughal Empire
2. To throw light on the equality policy in the administration under Akbar
3. To discuss his religious policies.

**Method:** This study is a historical study employing a qualitative approach methodology as a means of gathering and analyzing of data. The gathering of data was done through search of documents while the historical review, content analysis and source interpretation were used to analyze the data

### **Discussion:**

**A brief biography:** Muhammad bearing the title Akbar was known as Abu al-Fath, Jalal al-Din. The title 'Akbar' means the greatest was born on 15<sup>th</sup> October 1542 on the laps of Hamida Banu Begum and Nasir al-Din Humayun. The birth of the greatest was a matter of great joy to his father Humayun for it made him feel that there is a son who would be the heir to the throne. It was a great remedy as well as consolation to the disappointment of Humayun who was always worried about his successor and the threats from Shershah. It gave him a ray of hope to reconquer or restore Delhi from the clutch of Shershah. (Qureshi 1987).

**Akbar's unification of India:** A great vision or mission to make India one or to unify India grew strongly in his mind from the very beginning of his rule. To make his mission successful he tried to modify his policies time to time and also initiated some important measures. For this purpose sometimes he caused military movements, brought about cultural and religious reformation. Even he did not hesitate to bring about changes in the administrative policies.

**Equality Policy in the Administration:** Akbar brought about equality in his administration giving equal rights and opportunities to all his subjects and administrators ignoring the discrimination based on the caste creed and religion. He set an example of his equality policy by appointing Hindu prince named Bhagwan Das as the chief commander of his army. The commander was also titled as *Amir al-Umara* for his valour and courage in the battle field which made him win several battles. His equality policy was not only limited to the army section but it was also seen in other sectors like Finance, Tax etc. In those important sectors he appointed several Hindus in the officer ranks. (Richards 1981).

**Reformation of the education system:** The great person understood that Education can be the only way for the development of his empire. It made him establish the equal opportunities to spread education among all. For this he allowed the Hindu children to get education from the schools founded by Muslims. Apart from this he established many schools, madrasas all over the province. He did not stop only establishing the educational institutions but also introduced different aids like scholarship for the promotion of education. He gave priority to the women education also which caused the establishment of several schools and other educational institutions.

**Bridging Cultural Divides:** Cultural divisions were also bridged up by Akbar. He was a great follower of art and culture. He had a library consisting of about 24000 volumes. Always he invited different scholars, artists and philosophers to his court and they were greatly honoured. He inspired the scholars to translate books from the European language to Persian language which was the official language. In this regard Hindi language was not ignored for keeping in mind about the Hindus who spoke Hindi language many books were also translated in Hindi language. Therefore Akbar's court was a hub of diverse cultures.

**Taxation as a Tool for Unity:** The kind hearted person understood that he could rule vast empire which is ethnically diverse rather he could not tolerate the divided one. Keeping in mind about the poor he abolished the several taxes which made the poor overburdened. It brought him a great appreciation from all people of different classes. Even he thought about the prisoners of war who were enslaved during that time. He prohibited this enslavement and took steps for their protection. Such moves were not only principled, they were pragmatic, widening his base of support among those who had traditionally been overlooked or ignored.

**Religious Policies:** Akbar's tolerance and acceptance attitude towards religion is known to all. According to him every one should be given freedom to perform the religious activities or rituals of his/her own choice. Even he believed that if anyone wants to change his religion he pleases he should be immediately allowed to do so. Such a belief was remarkable for a leader at that time and was in keeping with his principle of *sulh-ikull*, absolute peace for all.

**Abolition of pilgrim tax (1563):** At that time the Hindus had to pay taxes for pilgrimage i.e. to visit the holy places like Prayag, Banaras. But Akbar abolished this tax which made the Hindus greatly moved and attracted towards him. He created a feel home atmosphere in the province by abolishing the principle of conversion of the prisoners of war to Islam.

**Establishment of "IbadatKhana" (1575):** Akbar understood the fact that there is a need of prayer hall for religious and spiritual discussions. For this he established a prayer hall named "IbadatKhana" at his new capital "FatehpurSikri". But the twist is that at first only people who followed Islam were allowed in the prayer hall, later it was opened to all. He welcomed scholars of all religions for spiritual discussions. Some of the representatives of different religions who participated in its discussion were- Purrushottam (Hindu), Vijayshuri (Jain), Maharjirana (Zoroastrian), Aquaviva (Christian), Shaikh Abdunnabi (Islam) etc. Akbar took keen interest in these discussions and was convinced that the basic principles of the various religions were the same and they differed only in form.

**Emergence of Din-i-Ilahi:** During his reign there arose a crisis caused by the variety of religions. As a resolution of this crisis Akbar introduced a new religion called Din-i-Ilahi which united Hinduism, Islam, Christianity, Zoroastrianism and Judaism. He thought that people of diverse culture and religion would live life of harmony and peace by following a unity of religion. This brought about a rich understanding and obedience among the people

### **Conclusion:**

Akbar's success in unifying India under a single rule namely the Mughal Empire placed him among the greatest leaders in Mughal history. In fact, his achievement is regarded as a great feat, comparable to Emperor Asoka's achievement during the latter's rule in classical Indian civilization era. The world in which Akbar led was so vastly different it can be tempting to conclude he has little to teach leaders today. Akbar had no legislative body through which he had to shepherd new laws or elections for which he had to campaign. But he did face choices that remain familiar to many in power today, like whether to inflame differences or to seek to heal them. Akbar's life and legacy reinforce a number of surprisingly relevant lessons, such as the power of aligning personal actions with public pronouncements, and the benefits of staffing an accountable administration with capable cadres.

### **References:**

1. Ahmad, M.Y., Isa, N.Y. & Omar, A.F. (2014) Analysis of heir pre-investigation mechanism: According to shari'ah perspective. *Mediterranean Journal of Social Sciences* 5(29): 107-112.
2. Ahmad, M.Y., Jamsari, E.A., Nasir, B.M., Hehsan, A. & Hassan, W.Z.W. (2017) Flexibility of takharuj principle in solving the inheritance issues. *International Journal of Civil Engineering and Technology* 8(11): 867-878.
3. Ashari, M.Z.A.H., Nor, M.R.M. & Jamsari, E.A. (2013) Perbahasan sejarah Islam di India dalam al-Kamilfi al-Tarikh karya Ibn al-Athir [Debate on Islamic history in India in al-Kamilfi al-Tarikh by Ibn al-Athir]. *Islamiyyat: The International Journal of Islamic Studies* 35(2): 35-46.
4. Bakar, I., Jamsari, E.A. & Ashari, M.Z.A.H. (2011) Maharaja Akbar (1556-1605M): Tokoh pemerintah Kerajaan Mughal abad ke-16M [Emperor Akbar (1556-1605): The ruling figure of the Mughal empire in the 16th century]. *Proceedings of the Symposium on Issues in Islamic History and Civilization*, pp. 845-855.
5. Hassan, W.Z.W., Alias, J., Jamsari, E.A., Abdullah, L. & Abdullah, S. (2015) The approach of knowledge transfer in deriving Shafi'ite hukum. *Mediterranean Journal of Social Sciences* 6(1S1): 260-271.
6. Ibrahim, I.A., Safiai, M.H. & Jamsari, E.A. (2015) Functions of astrofiqh observatories in Malaysia in solving astrofiqh issues. *Mediterranean Journal of Social Sciences* 6(1S1): 112-119.
7. Jamsari, E.A. & Ashari, M.Z.A.H. (2014) The Marinid naval force according to historical perspective. *Mediterranean Journal of Social Sciences* 5(29): 26-32.
8. Mujani, W.K. (2013) The economic effects of the Julban riots during the Mamluk period (1468-1517). *Acta Histriae* 21(1-2): 1-14.
9. Safiai, M.H., Ibrahim, I.A., Jamsari, E.A. & Ahmad, M.Y. (2016) The continuity of astrolabe as a multipurpose astrofiqh instrument. *International Journal of Applied Engineering Research* 11(9): 6081-6086.

## **Development Of Methanol Vapours Sensor By Using Nanocrystalline Zinc Oxide**

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**Abstract:** Nanocrystalline materials Zinc oxide is precured form Sigma Aldrich. The precured materials are characterised by X-ray diffraction (XRD), Fourier Transform Infrared Spectroscopy (FTIR), Thermal Gravimetric Differential Thermal Analysis (TG-DTA), Scanning Electron Microscopy (SEM) and Energy Dispersive X-ray Analysis (EDAX) for conforms the size of crystal structure, functional group identification, thermal stability, surface morphology and chemical composition respectively. As obtained nanocrystalline powder materials are further used to fabricate the thin films by using spray pyrolysis techniques for methanol vapour sensor characterisation. The fabricated methanol vapours sensor is exquisitely sensitive and selective to methanol vapours rather than other test gases. The proposed Nanocrystalline Zinc oxide sensors showed lower optimal operating temperature, enhanced sensing response, quick response/recovery time and good long-term stability. The maximum response to 5 ppm methanol is found to be very quick at operating temperature 130°C. the response and recovery time of Methanol vapours is quick. The maximum intake capacity of methanol vapour Zinc oxide thin film sensor is 160 ppm.

**Keywords:** Zinc oxide, X-Ray diffraction, FTIR, SEM and TG-DTA

### **Introduction**

Over the last few decades, with the rapid development of industrialization and urbanization, the severe air pollution primarily attributed to automobile exhaust and factory emission has become a great threat to human survival and development. Meanwhile, a leakage of toxic and explosive gases may result in loss of life and property damage. So, real-time and effective detection of those harmful gases via using gas sensors is in pressing need at present. Zinc oxide (ZnO) is a water insoluble white inorganic compound which possesses unique semiconducting, piezoelectric and optical properties [1]. Due to these unique properties, ZnO has been used in wide various of applications such as gas sensor, bio-sensor, chemical sensor, cosmetics, storage, electrical and optical device, solar cells and drug-delivery. [1]. ZnO is a wide band gap (3.37 eV) n-type semiconductor. As a wide band gap material, ZnO nanostructure is used in solid state blue to ultraviolet (UV) optoelectronics Due to its capability which is highly useful for the fabrication of devices, such as electromagnetic coupled sensors and actuators. As one important application, zinc oxide semiconductor material is a promising material for sensing different gases [2-6]. Since semiconductor material gas sensors are based on surface-chemical interaction between the crystalline gas molecules [5, 7]. With large ratios of surface-to-volume and pore structures, mesostructured metal oxides are particularly desired for improving gas sensing performance [8-10]. It synthesizes pores and mesostructured metal oxides with outstanding gas-sensing properties [11-14]. Methanol is an industrial organic solvent commonly used in organic synthesis. It is being considered as a potential hydrogen source in fuel cell technology due to its high hydrogen and carbon ratio, low propensity for soot generation, relatively low reforming temperature and its liquid state at room temperature. methanol is a kind of widely used organic solvent with a broad application in power sources and the manufacturing of dyes, drugs, perfumes, and so forth. However, it is highly toxic and is often fatal to humans it also fixing the tissues during preparation of thin giemsa stained blood smears [15]. Thus, it is imperative to develop highly selective and efficient methanol sensor.

### **Material and Methods**

ZnO films were prepared from solutions of zinc oxide (Sigma Aldrich) in a mixture of deionized water and isopropyl alcohol (2:3, volume ratio). A few drops of acetic acid were added to the solution to avoid precipitation of zinc hydroxide. Using zinc oxide as a precursor makes it possible to obtain layers without chlorine contamination. The additional advantage of zinc oxide is its high vapour pressure. The stock solution was sprayed onto heated glass substrates (25 X 25 X 1 mm<sup>3</sup>) using compressed air as a carrier gas. These prepared thin films dry in oven at 400°C for 2 hrs, after dried film substrate is used in a specially designed gas sensing setup is utilized to study the gas sensing. To study the gas sensing parameters Sensor substrate is mounted on a heater with a constant supply of 90V placed into a chamber of volume (24 liters). The substrate temperature is detected by keeping a thermocouple directly in contact with the substrate. The electrode of the sensor is connected to the substrate material to enable electrical measurements. Initially, to avoid the relative humidity effect, the substrate is heated in the presence of atmospheric air at 200°C for the duration till we get a constant voltage value. Then the temperature is

varied from 200<sup>0</sup>C to room temperature, and the corresponding voltage is measured. Once the resistance in the presence of atmospheric air is measured the whole experiment is repeated in the presence of detecting methanol vapors by injecting a set concentration of these vapors into the chamber. The entire static sensing study is carried out for the determination of functional sensing temperature. The sensor resistance is calculated using the following equation (1).

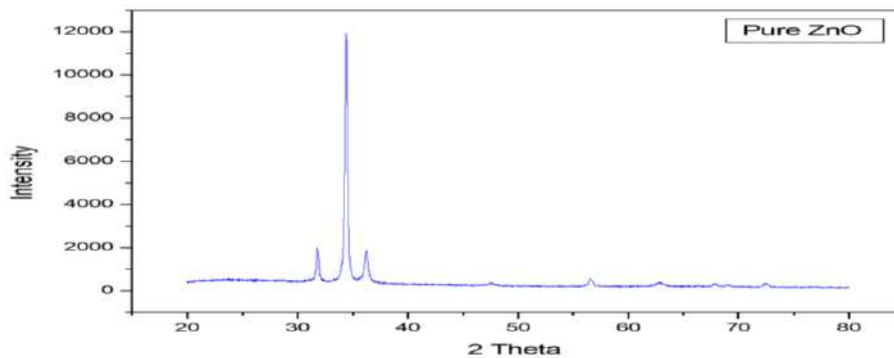
$$R_{sensor} = \left( \frac{V_{input} - V_{output}}{V_{output}} \right) \times R_{reference} \quad \text{-----(1)}$$

Thus the sensitivity (gas response) of the material is the ratio of ( $R_{gas}-R_{air}/R_{air}$ ) and can be determined by using equation as reported earlier [16-17]

$$\text{Gas response } S(\%) = \frac{R_{gas} - R_{air}}{R_{air}} \times 100$$

## Result and Discussion

### X-Ray

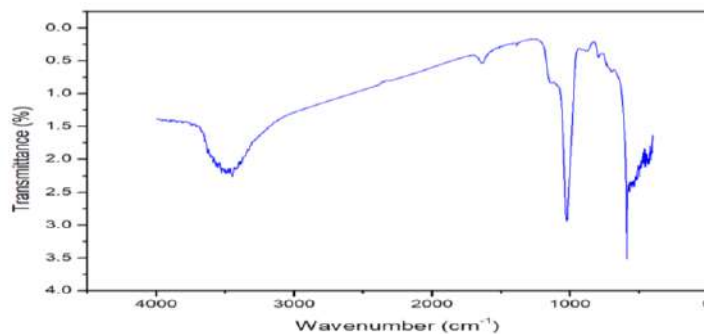


### Diffraction Analysis

**Figure 1. X-ray Diffraction profile of Zinc oxide**

Figure 1. shows that X-ray diffraction profile of zinc oxide. The range of the diffraction patten of Zinc oxide recorded angle ( $2\theta$ ) is set from 20<sup>0</sup> to 80<sup>0</sup>. The ZnO peaks of 2 theta values are presented at 20<sup>0</sup>, 23<sup>0</sup>, 25<sup>0</sup>, 41<sup>0</sup> and 46<sup>0</sup> and these peaks corresponding to 100, 002, 101, 102 and 110 planes. The phase analysis carried out as per JCPDS card (36-1451) confirms the hexagonal structure of ZnO. The sharp peaks are apparent in x-ray diffraction profile in ZnO shows good crystalline material [18].

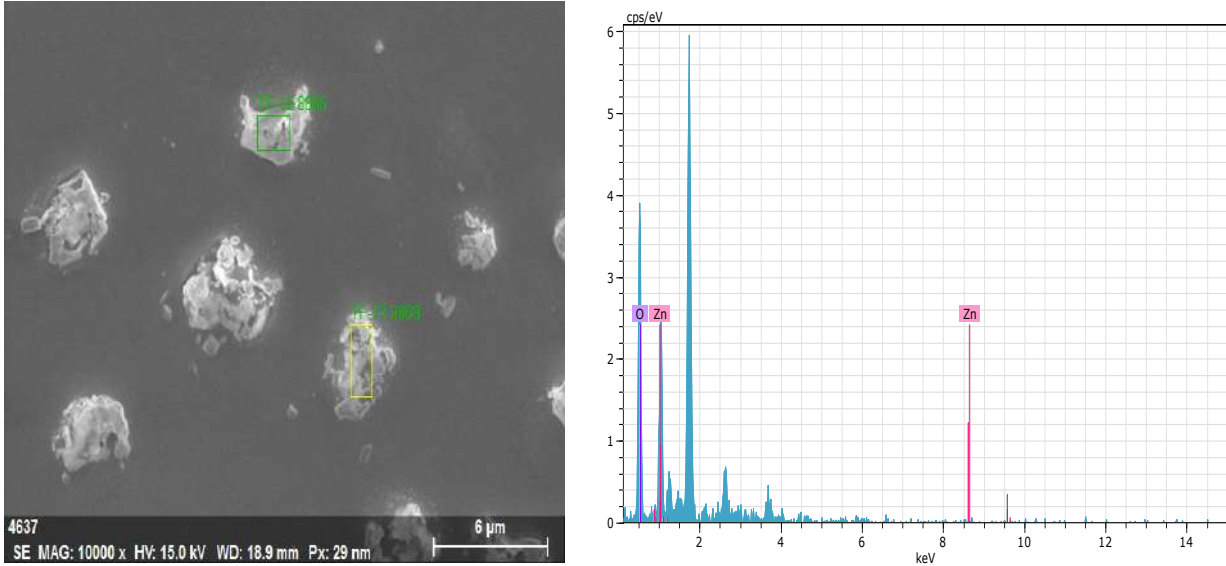
### Fourier Transform Infrared Spectroscopy



**Figure 2. Fourier Transform Infrared Spectra of Zinc oxide**

Figure 2. displays the profile of Fourier transform Infrared spectroscopy of zinc oxide (ZnO), the peaks indicates the characteristics functional group present in ZnO. The absorption peaks at  $3437\text{ cm}^{-1}$  and  $2925\text{ cm}^{-1}$  are ascribed to the stretching vibration of hydroxyl compounds. The peaks at  $1118\text{ cm}^{-1}$ ,  $1355\text{ cm}^{-1}$  and  $1383\text{ cm}^{-1}$  are ascribed to primary and secondary alcohol in plane bend or vibration. The peak at  $1005\text{ cm}^{-1}$  is assigned to the stretching vibration of C-N bond of the primary amine to the stretching vibration of the C-O bond of the primary alcohol. The absorption peak is present at  $575\text{ cm}^{-1}$ . It is corresponding to metal oxygen (ZnO stretching vibrations) vibration mode [19].

#### SEM/EDX Analysis

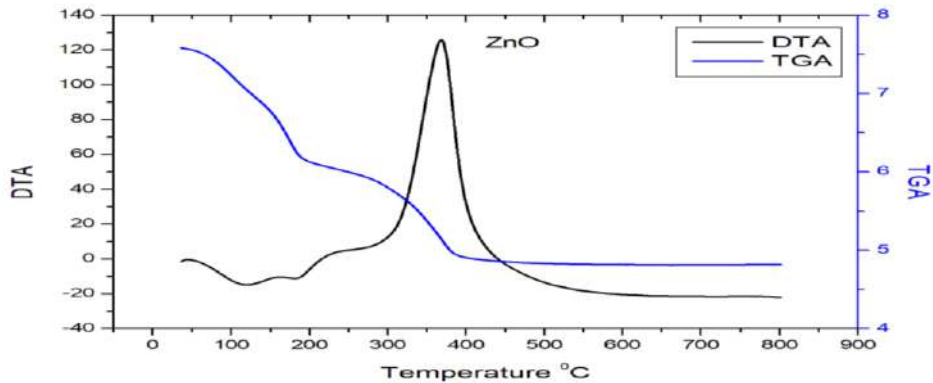


**Figure 3. Scanning electron microscopy and elemental dissipative x-ray analysis of zinc oxide**

figure 3. displays the scanning electron microscopy image of zinc oxide and elemental dissipative x-ray analysis spectrum of the zinc oxide sample material, ZnO particles nearly 170 nm in size were uniformly dispersed in the SEM images. The EDX results also confirm that weight and atomic ratio of O and Zn elements of Figure 4b by energy dispersive X-ray spectroscopy, no other elements were detected from ZnO composites [20].

#### Thermal Gravimetric -Differential Thermal Analysis

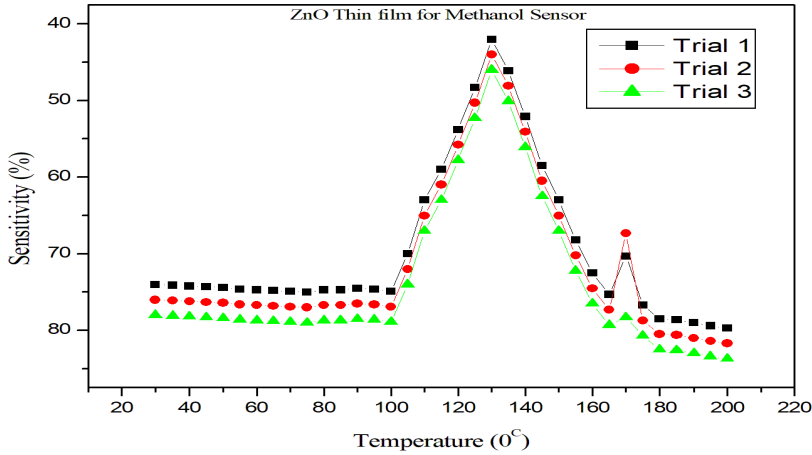
ZnO observed that dehydration can be explain in to three stages. In the first stage between  $50^{\circ}\text{C}$  to  $200^{\circ}\text{C}$  initial weight loss occurs due to released water component. In the second stage between  $200^{\circ}\text{C}$  to  $400^{\circ}\text{C}$  water molecules detached due to coordinates of cations and bounded oxygen atom. The third stage in between  $400^{\circ}\text{C}$  to  $800^{\circ}\text{C}$ , sample material is thermally stable.



**Figure 4. Thermogravimetric and Differential thermal analysis of zinc oxide**

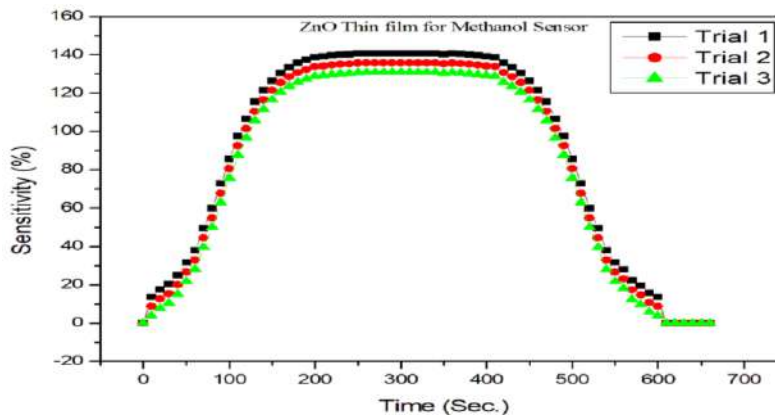
In the ZnO sample material for DTA shown in figure 2, in this curve observed two endothermic peaks occurs near 100<sup>0</sup>C and 200<sup>0</sup>C which can be shows absorbed and desorption of water molecule in the sample. One sharp exothermic peak observed near at 400<sup>0</sup>C, it reveals that water molecule detached from the structure and energy formation in anhydrous phase, after 400<sup>0</sup>C sample thermally stable [21].

### Methanol Sensing Characteristics



**Figure 5. Operating Temperature Characteristics of Methanol Sensing for zinc oxide thin film**

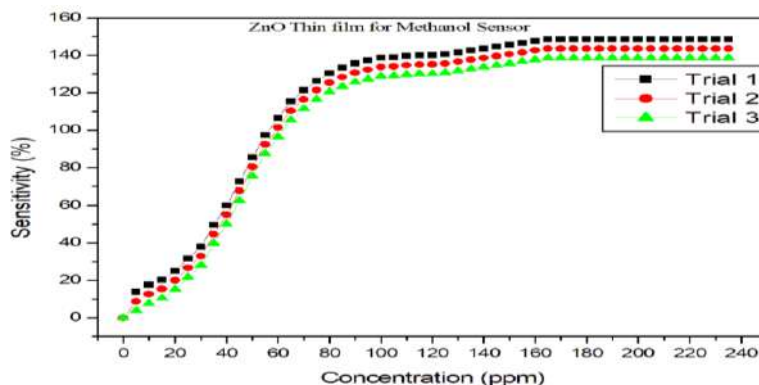
The response of zinc oxide thin film sensor to methanol vapors with respect to temperature is displayed in figure 5. The plot showing response of methanol vapors at selected interval of temperature with different trials, each trial shows same operating temperature but sensitivity slightly decrease. Form the plot it can be concluded that in the lower temperature range (100 to 130<sup>0</sup>C) and higher temperature range (130 to 200<sup>0</sup>C) sensitivity is found to be very small. The sensitivity goes on increasing and becomes maximum at 130<sup>0</sup>C and with further increase in temperature it decreases. This graph indicates that the zinc oxide thin film can detect methanol vapors at 130<sup>0</sup>C.



**Figure**

### 6. Response and Recovery Characteristics of Methanol Sensing for zinc oxide thin film

The response and recovery time profile ZnO thin film in presence of 05 ppm methanol vapors at 130<sup>0</sup>C is depicted in figure 6. The response of ZnO thin film sensor is recorded in the presence of 05 ppm Methanol vapors and atmospheric air alternately. After injection of 05 ppm methanol, the response of the sensor increases gradually and attains a constant value which gives the response time of the sensor. The time taken by the sensor to get back to original value after removal of methanol vapors gives the regenerative capacity of the sensor substrate. Response and recovery time process in three trials, each trial plots shows similar manner but its sensitivity slightly change in decreasing. The ZnO thin film shows a response time of 200 second to methanol while the recovery time is found to be 150 second.



**Figure 7. Operating Temperature Characteristics of Methanol Sensing for zinc oxide thin film**

The maximum uptake capacity (concentration) of the ZnO thin film is examined through changing the concentrations of the methanol vapors at 130°C. From the plot, shown in figure 7, it is observed that the response increases linearly with concentration 170 ppm and later gets saturated for still higher concentrations due to the coverage of sensor surface by methanol vapors. This result shows that ZnO thin film sensor can sense methanol vapors with lowest possible concentration of 5 ppm up to maximum of 170 ppm. This is the lowest detection capacity of sensor.

### Conclusions

The structural and functional groups investigations are carried out by means of XRD and FTIR. It's conforming zinc oxide (ZnO) crystalline material. The morphological and elemental analysis of zinc oxide thin films conforms, material surface is nanocrystalline and its size is 170nm and elemental ratio of the material conforms with EDAX. The thermal and differential analysis of the material show the sample material is thermally stable and phase changes study with increasing temperature respectively. The experimental study involves detection of methanol vapours at low concentration level (05 ppm). The operating temperature of ZnO thin film for methanol vapors response at 130°C. The response and recovery are very fast. Maximum uptake capacity of methanol vapors for ZnO thin film with lowest possible concentration of 5 ppm up to maximum of 170 ppm. The study concluded that sensing behaviour of sensor for methanol vapors are rarely reported at lower operating temperature.

### References

- [1] A. B. Djurišić, X. Chen, Y. H. Leunga and A. M. C. Ng, ZnO nanostructures: growth, properties and applications. *J. Mater. Chem.* 22 (2012) 6526–6535.
- [2] Q. Wan, Q. H. Li, Y. J. Chen et al., "Fabrication and ethanol sensing characteristics of ZnO nanowire gas sensors," *Applied Physics Letters*, vol. 84, no. 18, pp. 3654–3656, 2004.
- [3] X. Wang, J. Zhang, Z. Zhu, and J. Zhu, "Humidity sensing properties of Pd<sup>2+</sup>-doped ZnO nanotetrapods," *Applied Surface Science*, vol. 253, no. 6, pp. 3168–3173, 2007.
- [4] N. Al-Hardan, M. J. Abdullah, and A. A. Aziz, "The gas response enhancement from ZnO film for H<sub>2</sub> gas detection," *Applied Surface Science*, vol. 255, no. 17, pp. 7794–7797, 2009.
- [5] H. Xu, X. Liu, D. Cui, M. Li, and M. Jiang, "A novel method for improving the performance of ZnO gas sensors," *Sensors and Actuators B*, vol. 114, no. 1, pp. 301–307, 2006.
- [6] J. Xu, Q. Pan, Y. Shun, and Z. Tian, "Grain size control and gas sensing properties of ZnO gas sensor," *Sensors and Actuators B*, vol. 66, no. 1, pp. 277–279, 2000.
- [7] C. M. Ghimbeu, J. Schoonman, M. Lumberras, and M. Siadat, "Electrostatic spray deposited zinc oxide films for gas sensor applications," *Applied Surface Science*, vol. 253, no. 18, pp. 7483–7489, 2007.
- [8] Y. Zeng, T. Zhang, H. Yang et al., "Preparation of Cu-Zn/ZnO core-shell nanocomposite by wire electrical explosion and precipitation process in aqueous solution and CO sensing properties," *Applied Surface Science*, vol. 255, no. 7, pp. 4045–4049, 2009.
- [9] M. Tiemann, "Porous metal oxides as gas sensors," *Chemistry*, vol. 13, no. 30, pp. 8376–8388, 2007.
- [10] T. Waitz, T. Wagner, T. Sauerwald, C. D. Kohl, and M. Tiemann, "Ordered mesoporous In<sub>2</sub>O<sub>3</sub>: synthesis by structure replication and application as a methane gas sensor," *Advanced Functional Materials*, vol. 19, no. 4, pp. 653–661, 2009.
- [11] N. S. Ramgir, Y. K. Hwang, S. H. Jung et al., "CO sensor derived from mesostructured Au-doped SnO<sub>2</sub> thin film," *Applied Surface Science*, vol. 252, no. 12, pp. 4298–4305, 2006.
- [12] A. H. Lu and F. Schüth, "Nanocasting: a versatile strategy for creating nanostructured porous materials," *Advanced Materials*, vol. 18, no. 14, pp. 1793–1805, 2006.
- [13] M. Tiemann, "Repeated templating," *Chemistry of Materials*, vol. 20, no. 3, pp. 961–971, 2008.

- [14] H. Yang and D. Zhao, "Synthesis of replica mesostructures by the nanocasting strategy," *Journal of Materials Chemistry*, vol. 15, no. 12, pp. 1217–1231, 2005.
- [15] P. Siciliano, "Preparation, characterisation and applications of thin films for gas sensors prepared by cheap chemical method," *Sensors and Actuators B*, vol. 70, no. 1–3, pp. 153–164, 2000.
- [16] R. U. Mene, M. P. Mahabole, R. S. Khairnar, "Surface Modification of Cobalt doped Hydroxyapatite Thick Films via Swift Heavy Ion Irradiations for CO and CO<sub>2</sub> Gas Sensing Application" *IMCS 2012 – The 14th International Meeting on Chemical Sensors* DOI 10.5162/IMCS2012/P1.9.9.
- [17] Rajendra S. Khairnar, Malakarjun D. Wakde, Megha P. Mahabole, Rahul Krishna and Elby Titus, Development of Ethanol Sensor using Sodium A Nano Zeolite, *International Journal of Engineering and Innovative Technology (IJEIT)* Volume 3, Issue 11, May 2014
- [18] Daryakenari A. A., Vaezi M. R., Ebadzadeh T. and Daryakenari M. A., Evaluation of ethanol gas sensing properties of ZnO nanopowder doped with Cu and Fe, *Int. J. Phys. Sci.*, 7(13), 2110 – 2117, (2012).
- [19] Wali Muhammad, Naimat Ullah, Muhammad Haroon and Bilal Haider Abbasi, Optical, morphological and biological analysis of zinc oxide nanoparticles (ZnO NPs) using *Papaver somniferum* L., *RSC Adv.*, 2019, **9**, 29541-29548, DOI: 10.1039/C9RA04424H
- [20] S. Naseem Shaha, S. Imran Alib, S. Rizwan Alia, M. Naeema, Yasmeen Bibic, S. Rehan Alia, S. Masood Razaa, Yousuf Khand and Sikander Khan Sherwanie, Synthesis and Characterization of Zinc Oxide Nanoparticles for Antibacterial Applications *Journal of Basic & Applied Sciences*, 2016, 12, 205-210
- [21] C. Justin Raj, R. K. Joshi<sup>2</sup>, and K. B. R. Varma, Synthesis from zinc oxalate, growth mechanism and optical properties of ZnO nano/micro structures, *Cryst. Res. Technol.* 46, No. 11, 1181 – 1188 (2011) / DOI 10.1002/crat.201100201

## **Fish Diversity Of Godavari River At Paithan, District. Aurangabad (M.S.) India**

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**Abstract:** Fish diversity studies were undertaken during July-2018 to June-2019 to examination on the basis of endemic, rare and economically important fishes in the Godavari River. The present investigation deals with the variety and abundance of fresh water fishes in Godavari River at Paithan, Aurangabad district (M.S) India. The results of present investigation expose the occurrence of 27 fish species belonging to 6 orders, 12 families and 22 genera. The order cypriniforms found leading with 13 species, followed by *Perciformes* 6 species followed by *Siluriformes* 4 species followed by *Synbranchiiformes* 2 species, *Belontiiformes* and *Anguilliformes* each 1 species.

**Key Words:** Fish diversity, Godavari River at Paithan.

### **Introduction**

Freshwater fish diversity was poorly studied hence some fish biologist such as Hamilton Buchanan (1822) and Day (1878) was done on freshwater fishes from India and some Indian fish biologist such as Hora (1920) Jayaram (1999) was done on freshwater fishes in India. Fish constitutes half of the total number of vertebrates in the world. They live in almost all aquatic habitats; 21,723 living species of fish have been recorded out of 39,900 species of vertebrates out of these 8,411 are freshwater species and 11,650 are marine. India is one of the mega biodiversity countries in the world and occupies the ninth position in terms of freshwater mega biodiversity (Mittermeier et al. 1997). India there are 2,500 species of fishes out of which 930 live in freshwater and 1,570 are marine (Kar et al. 2003). India is one of the 12-mega biodiversity countries having two biodiversity hotspots, namely the Western Ghats and the Eastern Himalayas that are included amongst the top eight most important hotspots in the world. It also has rich freshwater (rivers, irrigation canals, tanks, lakes, reservoirs) fish diversity. Fish diversity refers to variety of fish species; depending on context and scale, it could refer to alleles or genotypes within fish population to species of life forms within a fish community, and to species or life forms across aqua regimes (Burton et al. 1992). Biodiversity is essential for stabilization of ecosystem protection of overall environmental quality for understanding intrinsic worth of all species on the earth (Ehrlich et al. 1991). Positive correlations between biomass production and species abundance have been recorded by various earlier workers (Nikolosky, 1978). The species diversity of an ecosystem is often related to the amount of living, non living and organic matter present. In the field of ichthyology there is valuable contribution by many workers; (Jayaram 1981 and Ashashree et al. 2008). A total of 56 species representing 31 genera and 15 families was recorded; of which, the cyprinids was found to be the most dominant group. The results are in accordance with those of Wakid and Biswas (2005). Most of these are widely distributed in the Karnataka and other parts of the Western Ghats. (Shahnawaz et al. 2009 and Wakid et al. 2005). Similar result was found in Wainganga River at Pauni dist. Bhandara, total fish species 41 was recorded belonging to 5 orders, 15 families and 28 genera. The order cypriniforms most dominant with 17 species in the Wainganga River at Pauni Dist. Bhandara (Rathod et al. 2012).

Present investigation was undertaken to study the fish diversity sampling station at Paithan is located on Godavari River. Paithan sampling Station is located near around 56 km south of Aurangabad in Maharashtra at 19°48' N 75° 38' E with elevation of 459 m. The Paithan town is famous for its Shrine of "Sant Eknath". Where people flock every year during the time of "Paithan Yatra" also known as Nath Shashti. Jayakwadi dam: A major dam named the Jayakwadi dam located near Paithan and is known for attracting a wide variety of resident and migratory birds in the vicinity of the sampling station majority of sugarcane and banana crop are cultivated. The Jayakwadi dam is the main source of drinking water for the Aurangabad city. The sampling site is situated at the dam site only. The water depth is above 10 m and breadth of river is in between 1000 to 2500 m. most of the region are dominated by submerged weeds in the center of dam and on margin many floating weeds from thick cover. Bottom features include clay soil.

### **Material And Methods**

Fishes were collected from sampling station at Godavari River Paithan town District Aurangabad (MS) India with the help of local fishermen using different type of nets namely mosquito net, gill nets, cast nets and dragnets. Immediately photographs were taken with help of digital camera. Fishes brought to laboratory were preserved in 10% formalin solution in separate specimen jars according to the size of species. Small fishes were directly placed in the 10% formalin solution. While large fishes were preserved given an incision in their abdomen and preserved these fishes. The Meristic and morphometric characters were measured and fishes were identified up to the species level, with the help of standard keys and books

(Day,1976; Jayaram, 1999and Talwar et al. 1991). Calculated Species evenness with the help of diversity index (Shannon 1948)

### **Results And Discussion**

In the present Fish diversity study, 27 species of 22 different genera, 11 families and 6 orders were recorded from the Paithan sampling station in number of catches carried out during July 2018-June 2020. The members of Order Cypriniformes were dominated by 13 species followed by Perciformes 6 species followed by Siluriformes with 3 species followed by Synbranchiformes 2 species and Beloniformes one species. 27 fish species representing by 6 orders, Cypriniformes was dominant with 13 species was dominant group in the assemblage composition in which *Salmostoma navacula*, *Puntius ticto*, were found most abundant. *Rasbora Daniconias*, *puntius sophore*, *Cirrhinus mirgala*, *Catla catla*, *Lebeo Rohita*, *Notopterus chitala* were found in abundant form. *Chela laubuca*, *Cyprinus carpio carpio*, *puntius sarana sarana*, *Cirrhinus reba* and *Nemacheilus monilis* were found less abundant. Followed by Perciformes in which *Chanda nama* were found most abundant and *Channa Punctatus* were found abundant form *Channa marulius*, *Channa striatus*, *Glossogobius giuris giuris* and *Oreochromis mossambicus* were found less abundant form and Siluriformes in which *Mystus cavasius* and *Ompak bimaculatus* were found abundant from *Aorichthys aor* and *Wallago attu* were less abundant and Followed by Synbranchiformes in which *Macrognathus pancalus*, *Mastacembelus armatus* were found abundant form and Beloniformes and Anguilliformes was single species *Xenentodon cancila* form abundantly and *Anguilla bengalensis bengalensis* less abundant form shown in the table. Fishing operations throughout year with catches high in post monsoon than summer seasons. It is suggested that the fishery authorities should examine and to practice the proper exploitation and management of this inland fishery resources according to ecological principals. They should recommend and determine the stocking standards and reasonable introduction according to potential of fish productivity and character of this water body. Scientific fishing standard and fishing quotas are to be worked out; this will play an important role in protection of the reservoir and its biodiversity. Thus, it is necessity of every individual to play an active role to achieve the goals of sustainable fishery development and handover the resources in healthy conditions to the future generations. The work will provide future strategies for development and fish fauna conservation Godavari River at Paithan. To maintain Fish diversity has immense importance as it is not always possible to identify individual species critical to sustain aquatic ecosystem. In this river many local fishermen collected fish in monsoon session it's very destructive for fish diversity. Many freshwater fishes were endangering from aquatic ecosystem. The use of illegal methods to catch fish should be banned in this area to prevent further depletion of freshwater fish resources. The fishermen should make aware fishing, scientific training and facilities made available to the fish farmers fishing of the spawn, larval fish and immature fish should be avoided. Which may help to maintain biodiversity as well as prevent freshwater fishes from threaten. For a better tomorrow we must keep a strong monitoring on the changing environment, and also, Sustainable fishery is not about fishing for economic purposes only it has also a great concern to save the fish habitat or aquatic environment.

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### **References**

1. **Mittermeier, R.A.** and C.G. Mitemeir (1997) Megadiversity Earth's biologically wealthiest Nation. In mc Allister, D.E. A Lttamilton and B. Harvery (Eds). Global fresh water Biodiversity sea wind cemex ,mexico city,":1-140.
2. **Kar, D.** Kumar, A. Bohra, c. and sigh, L.K. (Eds) (2003) fishes of Barak drainage, mizoram and Tripura; In: Environment, pollution and management, APH publishing corporation, new Delhi, 604. pp.203-211.
3. **Burton, P.J;** Balisky, A.E; caward,L.P; cumming,S.G. and kneshwaw,D.D. (1992). The value of managing biodiversity. The forestry chronicle 68(2); 225-237.
4. **Ehrlich, P.R.** and Wilson, E.O. (1991) Biodiversity studies science and policy. Science 253:758-762.
5. **Nikolosky, G.V.** (1978). The ecology of fishes. T.F.H publications USA, 352 pp.
6. **Jayaram, K.C.** (1981). The fresh water fishes of India. ZSI, 1-438
7. **Singh, P.P.** (2005) fisheries development in chattisgarh state fish chim, 23 (10 & 11), 140-143.
8. **Joshi, P.K.** and Sakhare V.B. (2002) Ecology and Ichthyo fauna of Bori Reservoir in Maharastra fishing Chimes. 22(4) 40.41
9. **Mahapatra, D.K.** (2003) Present status of fisheries of Hirakud reservoirs, Orissa. Fishing chimes. 22 (10&11),76-79.

10. **Bossuyt, f** (2004). Local endemism with in the western Ghats Sri Lanka biodiversity hotspot. Science 306:467-481.
11. **Rajalaksh, M.S.** and sreelathak (2005). Diversity of Ichthyofauna in Gautami – Godavari estuary, Yaman, Union Territory of pondicherry. India J.Aqua Biol.21(1): 45-48.
12. **Devashish Kar;** (2006). Fish Diversity and conservation Aspects in and a quatic Ecosystem in North Eastern India 2005 print Journal 21 (7):2308-2315.
13. **Rathod S.R.,Shinde S.E.**(2012).fish diversity status of Wainganga River at Pauni Dist. Bhandara (M.S.) India, Bionano frontier 5(2), 256-258.
14. **VijayKumar,K,;** VijayLaxmi and zeba parveen Ichthyofaunal (2008) Diversity of Kagina river in gulbarga District of Karnataka. The Ecoscan 2(2): 161-163.
15. **Rathod, S.D.** Malu, R.A, Dabhade, D.S., Patil, P.S., Charian , A.P. & H.U. wanjari (2008). Diversity of fish fauna of Umra (Shamsudin) Reservoir washim District Maharashtra J.Aqua. Bio Vol 23 (2): 1720.
16. **Ashashree, H.M.** Venkateshwarlu and H.M. Reneuka swamy (2008).Diversity of fish fauna in Nagathibelagula pond shimoga, Karnataka Advances in aquatic ecology, Vol (2),95-97.
17. **Day, f.** (1967) the fishes of India vol. 1 and 2 Jagamander agency New Delhi.
18. **Jayaram, K.C.** (1999)The fresh water fishes of the Indian Region, Narendra Publising house. Delhi-551.

**Table.The Fishdiversity ofPaithan sampling station,Godavari River during July 2018– June2019.**

Order	Family	Scientific name	Common name	Status
<i>Cypriniformes</i>	Notopteridae	<i>Notopterus chitala</i>	Chitala	+
	Cyprinidae	<i>Salmostoma navacula</i>	Palai	+++
		<i>Chela laubuca</i>	Bhataka	+
		<i>Rasbora Daniconias</i>	Rasbora	++
		<i>Cyprinus carpio carpio</i>	Kombada	+
		<i>Puntius sophore</i>	Tepli	++
		<i>Puntius ticto</i>	Choti tepli	+++
		<i>puntius sarana sarana</i>	Puntis	+
		<i>Cirrhinus mirgala</i>	Mirgal	++
		<i>Cirrhinus reba</i>	Borali	+
		<i>Catla catla</i>	Catla	++
		<i>Lebeo Rohita</i>	Rohu	++
	Balitoridae	<i>Nemacheilus monilis</i>	Muri	+
<i>Siluriformes</i>	Bagiridae	<i>Aorichthys aor</i>	Shingada	+
		<i>Mystus cavasius</i>	Katarna	++
	Siluridae	<i>Ompak bimaculatus</i>	Pabda	++
		<i>Wallago attu</i>	Balu	+
<i>Beloniformes</i>	Beonidae	<i>Xenentodon cancila</i>	Choch masa	++
<i>Synbranchiformes</i>	Mastacembelidae	<i>Macragnathus pancalus</i>	Bam	++
		<i>Mastacembelus armatus</i>	Vambat	++
<i>Perciformes</i>	<i>Chanidae</i>	<i>Chanda nama</i>	Zajrin	+++
	Channidae	<i>Channa marulius</i>	Maral	+
		<i>Channa striatus</i>	Dhok	+
		<i>Channa Punctatus</i>	Dhok	++
	Gobiidae	<i>Glossogobius giuris giuris</i>	Gurius	+
	Cichlidae	<i>Oreochromis mossambicus</i>	Tilapia	+
<i>Anguilliformes</i>	Anguillidae	<i>Anguilla bengalensis bengalensis</i>	Aher	+

+++→ most abundant, ++ → abundant, + → less abundant

## **Pricing Practices Of private Coaching Classes In Marathwada Region**

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**Abstract:** The present paper studies different fee's structure and the quality of services provided by Private coaching classes as per the demand for filling the necessary demands which satisfies customers (students and parents). The private coaching classes in Marathwada region are providing their quality of services with assigning the different criteria of fees structure. Heterogeneity of services and different pricing considerations used by various institutions make price a less important determinant of consumer choice in educational services. Differential pricing based on the consumer's willingness to pay may also be utilized for the education services. The practice of charging different fees for the sponsored candidates and the non-sponsored ones is common in professional courses. So is the practice of charging differential fees from full-time and part-time evening participants of the study program.

**Keywords:** Pricing Mix, Niche Product- Pricing, Private Coaching classes, Students and parents as Customers.

### **Introduction:**

Pricing decisions for the service offered have significant importance and should ideally be reacted to the achievement of marketing and organizational goals. However, the Pricing of the educational offer, typically represented as Private coaching fees, is subjected to certain constraints and characteristics. Most Private coaching classes, in fact, all public education institutions like the Universities, Institutes of technology, medical and engineering college, come under the category of service where prices are subject to general regulation. In all such cases, the price element is not controllable by the marketer. Instead, it becomes a subject matter of public policy, where political, environmental, and social considerations prioritize purely economic review. Prices may be based on the ability to pay or some socially desirable goals. On the other hand, Private coaching classes, typically in specialized fields like coaching for pre-medical entrance, IIT-JEE engineering, coaching for new computer software, tend to price their services on what the market can bear. As most of these institutions operate in subject fields where demand far exceeds supply,

**Alternative Hypothesis H<sub>a</sub>:** The Price related strategies of private coaching classes in Nanded and Latur districts are significantly different. prices charged depend upon the economic condition, consumer feelings about prices, buyer need urgency, competition in the marketplace, level of demand, etc.

### **Objectives of the study:**

1. To study the pricing strategies adopted by private Coaching classes in Marathwada region.
2. To study the pricing mix strategies in pricing strategies adopted by private Coaching classes in Marathwada region.

### **Hypothesis of the study:**

**Null Hypothesis H<sub>0</sub>:** The Price related strategies of private coaching classes in Nanded and Latur districts are not significantly different.

### **Review of literature:**

Webb, Ireland, Hitt, Kistruck, & Tihanyi (2011)<sup>1</sup>, studied the amount a customer is willing to pay for the Product or service offered Prospective students consider Price an essential factor when pursuing an educational service.

Pugsley, L., (2004)<sup>2</sup>, studylme lighted in higher education, the cost is often associated with tuition fees, which are a fundamental revenue source for many people at Universities. In the general context of the financial crisis, people who buy electricity significantly decline.

The Price of Education is one of the critical criteria for university selection, which both students and parents are concerned about the financial implications of coming to University. However, require special consideration in pricing strategies. The impact on the target profile and the University's image as a whole, as some consumers consider more expensive services.

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consideration in pricing strategies. The impact on the target profile and the University's image as a whole, as some consumers consider more expensive services.

Enache I.C. (2011)<sup>3</sup>, study gives focused on the pricing strategy is the only strategy that can directly affect the income of an educational institution. The cost of an educational program and the tuition fees are influenced by applicants' cost, demand, and Price. Since Romanian universities receive additional funding directly from the state budget, the cost is the most crucial factor when choosing the Price of the program. Therefore, a strong correlation is expected between the pricing strategy and the financial strategy of the system. When an educational program is in high demand in the market, tuition fees increase. Even if the program is unique in the market (it is a collaboration of two strong universities, offers additional opportunities, etc.) or if the competition in this segment is weak, the Price will be higher. The pricing strategy is also an important brand statement. Higher costs for an education program may indicate a better university or college or suggest that the program is new or rarely seen in the market.

Jobber (2001)<sup>4</sup>, the study gives efficient path on pricing that it is a critical element of the marketing mix because it represents on a unit basis what the company receives for the Product or service which is being marketed. In other words, Price means revenue while the other elements cost.

### **Research Methodology:**

Table no.1 Research design

<b>Sr.No.</b>	<b>Parameter</b>	<b>Description</b>
1.	<b>Type of Research</b>	Ex Post Facto Descriptive Research
2.	<b>Nature of Research</b>	Quantitative & Qualitative Research
3.	<b>Research Instrument</b>	Structured questionnaire
4.	<b>Dependent Variable</b>	Marketing strategies and marketing tools
5.	<b>Independent Variables</b>	Demographic factors, educational services, National and local coaching classes brands, distribution channel, promotional strategies, advertising media
6.	<b>Control over Variables</b>	No Control- Ex Post Factor
7.	<b>Type of Products</b>	Educational services, i.e. coaching classes
8.	<b>Methods of Data Collection</b>	Sample Survey Method through Interrogation
10.	<b>Population</b>	Private coaching classes in Nanded and Latur District (15308 students from Nanded +14973 students from Latur District) = 30281 <sup>5</sup> students
11.	<b>Sampling Frame</b>	Students, Parents and coaching owners, tutors in Marathwada region.
12.	<b>Sample Elements</b>	Students, parents, and Tutors, owners of coaching classes
13.	<b>Calculated Sample Size</b>	400 students from Nanded and Latur respectively.)
14.	<b>Net Responses</b>	(325 students +50 parents+100Tutors = 475)
15.	<b>Response Rate</b>	81.25%
16.	<b>Rejection Rate</b>	18.75%
17.	<b>Sampling Method</b>	Convenient sampling Method
18.	<b>Sources of Data Collection</b>	1. Primary Sources and 2. Secondary sources
19.	<b>Primary Sources</b>	Structured questionnaire and field survey
20.	<b>Secondary sources</b>	Nationals and International journals, Research papers, Magazine, e-resources.
21.	<b>Measurement Scales used</b>	Nominal, ordinal and interval scale
22.	<b>Questions Types</b>	Dichotomous, open-ended, multiple responses, ranking

		and differential scales
23.	<b>Rating Scales Used</b>	Likert Scale
24.	<b>Data Interpretation</b>	Graphs, descriptive statistics and inferential statistics
25.	<b>Statistical Tools</b>	Z test, chi-square; descriptive statistical tools and parametric and non-parametric statistical tests
26.	<b>Statistical Software</b>	Ms Excel 2010 and SPSS 20

(Source: Researcher’s compilation)

Data Analysis and Interpretation:

**Table no.-1 Pricing strategies adopted by Private coaching classes in Marathwada region**

**Price based perceptions of the respondents**

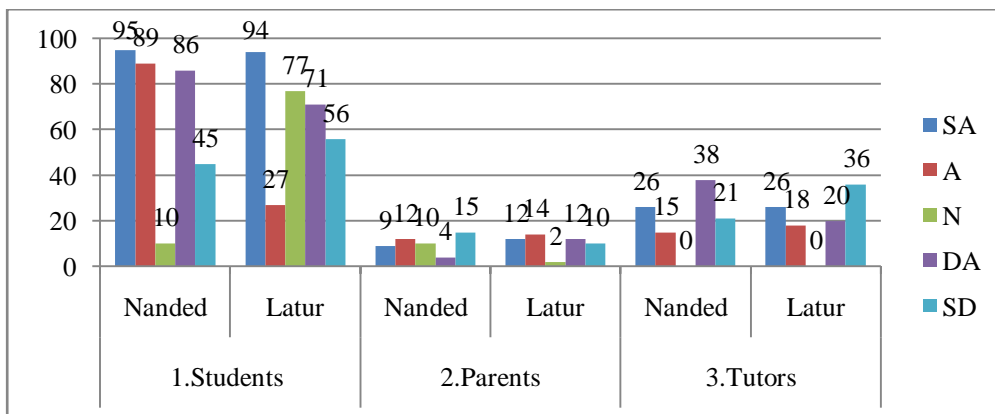
**Null Hypothesis H<sub>0</sub>:** The Price related strategies of private coaching classes in Nanded and Latur districts are not significantly different.

**Alternative Hypothesis H<sub>a</sub>:** The Price related strategies of private coaching classes in Nanded and Latur districts are significantly different.

**Table No- 2 Pricing strategies opted by respondents**

Respondents	Research Area		SA	A	N	DA	SD	Total	
Students	Nanded	count	95	89	10	86	45	325	
		% within	29.20%	27.40%	3.10%	26.50%	13.80%	100.00%	
	Latur	count	94	27	77	71	56	325	
		% within	28.92%	8.31%	23.69%	21.85%	17.23%	100.00%	
Parents	Nanded	count	9	12	10	4	15	50	
		% within	18.00%	24.00%	20.00%	8.00%	30.00%	100.00%	
	Latur	count	12	14	2	12	10	50	
		% within	24.00%	28.00%	4.00%	24.00%	20.00%	100.00%	
Tutors( owner) /Directors/ Managers	Nanded	count	26	15	0	38	21	100	
		% within	26.00%	15.00%	0.00%	38.00%	21.00%	100.00%	
	Latur	count	26	18	0	20	36	100	
		% within	26%	18%	0%	20%	36%	100%	
	Total			262	175	99	231	183	950
	% within			27.58%	18.42%	10.42%	24.32%	19.26%	100.00%

(Source: Field Survey and EXCEL output)



(Figure 1 Price based perception of the respondents in Nanded and Latur District.)

From the above table no.2 and figure no- 1 data reflects 95(29.2%) and 89(27.4%) students strongly agree and agree however 86(26.5%) and 45(13.8%) students disagree and strongly disagree in the Nanded

district. 94(28.92%) and 27(8.31%) students strongly agree and agree, whereas 71(21.8%) and 56(17.23%) students disagree and strongly disagree in the Latur district.

It is interpreted that 9(18%) and 12(24%) parents strongly agree and agree whereas 4(8%) and 15(30%) parents disagree and strongly disagree in the Nanded district.

12(24%) and 14(28%) Parents strongly agree and agree where 12(24%) and 10(20%) parents disagree and strongly disagree in the Latur district. It is observed 26% and 15% of Tutors (owners)/Directors/Managers strongly agree and agree while 38% and 21% of Tutors (owners)/Directors/Managers disagree and strongly disagree in the Nanded district.

It is observed that 26 % and 18% of Tutors (owners) /Directors/Managers strongly agree and agree while 20 % and 36% of Tutors(owners)/Directors/Managers disagree and strongly disagree in the Latur district.

As there are two variables I. Response on Likert scale (interval) and type of respondents (nominal) variable and the interval variable is dependent on the nominal variable and researcher wants to test the statistical significance of differences between the groups (assuming the interval scaled variable is normally distributed in the population), the scedasticity of variances is tested to check the use of either t test or ANOVA using Welch statistic<sup>6</sup>; Brown-Forsythe statistic<sup>7</sup> (for testing equality of means) and using Levene test<sup>8</sup> (for testing scedasticity of variances), the test applicable may t test<sup>9</sup> or ANOVA<sup>10</sup> as follows,

**Table No.2.1a Robust Tests of Equality of Means**

Students' response H1				
	Statistic <sup>a</sup>	df1	df2	Sig.
Welch	3.597	1	647.981	.058
Brown-Forsythe	3.597	1	647.981	.058
a. Asymptotically F distributed.				
Parents' response1				
	Statistic <sup>a</sup>	df1	df2	Sig.
Welch	3.645	4	42.76	.012
Brown-Forsythe	3.090	4	91.894	.020
a. Asymptotically F distributed.				
Tutors' response				
	Statistic <sup>a</sup>	df1	df2	Sig.
Welch	3.455	3	98.430	.019
Brown-Forsythe	3.337	3	174.032	.021
a. Asymptotically F distributed.				

(Source: Field Survey and EXCEL output)

From the above table, it is found that the calculated significance value for the students' responses (0.058) using Welch and Brown-Forsythe statistic for testing equality of means are greater than the standard significance value (0.05) and hence the null hypothesis (representing means are equal) are accepted and it is inferred that means are equal in the case of students' response whereas in the case of parents' and tutors' response, calculated significance value for the parents'and tutors' responses (0.012; 0.020; 0.019 and 0.021) using Welch and Brown-Forsythe statistic for testing equality of means are less than the standard significance value (0.05) and hence the null hypothesis (representing means are equal) are rejected and it is inferred that means are unequal in the case of parents and tutors.

**Table No. 1.1b Test of Homogeneity of Variances**

Students' response H1			
Levene Statistic	df1	df2	Sig.
4.257	1	648	.039
Parents' response1			
Levene Statistic	df1	df2	Sig.
7.061	4	95	.000
Tutors' response			
Levene Statistic	df1	df2	Sig.

2.418	3	196	.068
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(Source: Field Survey and EXCEL output)

From the above table, it is found that the calculated significance value for the students' and parents' responses (0.039 and 0.000) using Levene statistic for testing homogeneity of variances is less than the standard significance value (0.05) and hence the null hypothesis (representing variances are equal) are rejected and it is inferred that variances are unequal in the case of students' and parents' response and in this case, heteroscedasticity is seen and t test is applicable whereas in the case of tutors' response, calculated significance value (0.068) is greater than the standard significance value using Levene statistic for testing homogeneity of variances and hence the null hypothesis (representing variances are equal) are accepted and it is inferred that variances are equal in the case of tutors' response and therefore in these cases, homoscedasticity is seen and ANOVA test is applicable.

**Table No.2.1c Independent sample t test<sup>9</sup>**

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Students' response H1	Equal variances assumed	4.26	0.04	-1.9	648	0.058	-0.218	0.115	-0.45	0.008
	Equal variances not assumed			-1.9	647.98	0.058	-0.218	0.115	-0.45	0.008
Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	T	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Parents' response H1	Equal variances assumed	0.52	0.47	0.66	98	0.511	0.2	0.303	-0.4	0.801
	Equal variances not assumed			0.66	97.995	0.511	0.2	0.303	-0.4	0.801

(Source: Hypothesis t-testing and EXCEL output)

From the above table, it is found using independent sample t test that the calculated significance value (0.058 and 0.511) are greater than the standard significance value and hence the null hypothesis, "The Price related strategies of private coaching classes in the Nanded and Latur districts are not significantly different" is accepted and the alternative hypothesis, "The Price related strategies of private coaching classes in the Nanded and Latur districts are significantly different" is rejected as per the opinion of students and parents. Hence, it is interpreted that price related strategies of private coaching classes in the Nanded and Latur districts are not significantly different as per the opinion of students and parents in Nanded and Latur district.

**Table No. 1.1d ANOVA test**

ANOVA					
Tutors' response2					
	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	2.452	3	.817	3.369	.020
Within Groups	47.548	196	.243		
Total	50.000	199			

(Source: Field Survey and EXCEL output)

From the above table, it is found using ANOVA test that in case of tutors' response, the calculated significance value (0.020) is less than the standard significance value and hence the null hypothesis, "The Price related strategies of private coaching classes in the Nanded and Latur districts are not significantly different as per the opinions of tutors" is rejected and the alternative hypothesis, "The Price related strategies of private coaching classes in the Nanded and Latur districts are significantly different as per the opinions of tutors" is accepted. Hence, it is interpreted that price related strategies of private coaching classes in the Nanded and Latur districts are significantly different as per the opinions of tutors in Nanded and Latur district.

**Table No. 1.1e Hypothesis Decisions**

Sr. No.	Name of respondent	Null Hypothesis	Test applicable	Hypothesis Decision	Interpretation
1	Student	Price related strategies of private coaching classes in the Nanded and Latur districts are not significantly different as per the opinion of students in Nanded and Latur district.	Independent sample t test	Accepted	Price related strategies of private coaching classes in the Nanded and Latur districts are not significantly different as per the opinion of students in Nanded and Latur district.
2	Parents	Price related strategies of private coaching classes in the Nanded and Latur districts are not significantly different as per the opinion of parents in Nanded and Latur district.	Independent sample t test	Accepted	Price related strategies of private coaching classes in the Nanded and Latur districts not are significantly different as per the opinion of Parents in Nanded and Latur district.
3	Tutors	Product related strategies of private coaching classes in the Nanded and Latur districts are not significantly different as per the opinion of tutors in Nanded and Latur district.	ANOVA	Rejected	Price related strategies of private coaching classes in the Nanded and Latur districts are not significantly different as per the opinion of tutors in Nanded and Latur district.

(Source: Hypothesis testing outcomes)

### Findings, Conclusions and Suggestions:

#### Findings:

It is observed that 85(26.15%) and 88(27.08%) students strongly agree and agree whereas 87(26.77%) and 65(20.00%) students disagree and strongly disagree that coaching classes have satisfied pricing strategies in the Nanded district. 118(36.31%) and 95(29.23%) students strongly agree and agree, whereas 43(13.23%) and 67(20.62%) students disagree and strongly disagree that coaching classes have satisfied pricing strategies in the Latur district. It is found that 12(24%) and 17(34%) parents strongly agree and agree whereas 0(0%) and 17(34%) parents disagree and strongly disagree that coaching classes have satisfied pricing strategies in the Nanded district. 13(26%) and 7(14%) Parents strongly agree and agree whereas 12(24%) and 7(14%) parents disagree and strongly disagree that coaching classes have satisfied pricing strategies in the Latur district. It is observed 35% and 20% of Tutors(owners)/Directors/Managers strongly agree and agree whereas 19% and 17% of

Tutors(owners)/Directors/Managers disagree and strongly disagree that coaching classes have satisfied pricing strategies in the Nanded district. It is observed that 16% and 36% of Tutors (owners) /Directors/Managers strongly agree and agree whereas 20% and 23% of Tutors(owners)/Directors/Managers disagree and strongly disagree that coaching classes have satisfied pricing strategies in the Latur district.

**Conclusions:**

The research study reflects following outcomes as follows

1. Tuition fees are different in different coaching classes from private coaching classes in the Latur district according to the quality of services provided by them.
2. Scholarships and discounts are allowed to meritorious students from private coaching classes in the Nanded district
3. Free coaching/discount is provided for the economical weaker section under the corporate social responsibility (CSR) Scheme from private coaching classes in the Latur district.
4. Discount in fees is allowed for Rural area students private coaching classes in the Latur district to get equal opportunity.
5. Specialised class and services are provided on high priority demand with Niche pricing strategies.

**Suggestions:**

1. Before joining an institute, parents should confirm that the teaching service and student demand meet the challenge in competitive exam.
2. Don't be a victim of high fees and massive benefits. Make your learned decision before signing up.
3. It is observed that many students of rural origin are unable to enrol in private coaching classes due to excessive fees.
4. Tutors are advised to offer rural students a different fee structure, but also to support them through various scholarships, programs such as —Learn and Earn scheme", so that students from economically backward social classes should be given equal access to education.

**References:**

1. Webb, J. W., Ireland, R. D., Hitt, M. A., Kistruck, G. M., &Tihany, L., "Where is the opportunity without the customer? An integration of marketing activities", the entrepreneurship process, and institutional theory. *Journal of the Academic Marketing Science*, Vol.39 (4), 2011, pp. 537-554.
2. Pugsley, L., "The University Challenge: Higher Education Markets and Social Stratification", Aldershot: Ashgate, (Chapter 8), 2004. Enache, I. C., "Marketing higher education using 7 Ps frameworks", *Bulletin of the Transilvania University of Brasov*, Vol.4 (53), 2011, pp. 23-30.
3. Enache, I. C., "Marketing higher education using 7 Ps frameworks", *Bulletin of the Transilvania University of Brasov*, Vol.4 (53), 2011, pp. 23-30.
4. David Jobber, *Marketing& Practice of Marketing*, Chapter 1, 2001, pp. 15.
5. <https://www.mahahssboard.in/stat/HSTATM20/H8-STRM.HTM>
6. Welch statistic: Brown, M. B., and Forsythe, A. B. The small sample behavior of some statistics which test the equality of several means. *Technometrics* 16 (1974a): 129-132.
7. Brown-Forsythe: Brown, M. B., and Forsythe, A. B. The small sample behavior of some statistics which test the equality of several means. *Technometrics* 16 (1974a): 129-132.
8. Levene Statistic: *Analysis of Variance: Hays, W. L. Statistics for the Social Sciences. Second edition. New York: Holt, Rinehart, and Winston, 1973. p. 457*
9. t-test: *Hays, W. L. Statistics for the Social Sciences. Second edition. New York: Holt, Rinehart, and Winston, 1973. p. 404, 410.*

## **Promotion Practices Of Private Coaching Classes In Marathwada Region**

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**Abstract:** The present research paper incorporates with different promotional practices in Marathwada region and their effective impact in improve the product sale to generate competitive advantage in the Private Coaching Classes industry. This lack of marketing orientation keeps those managing educational institutions from realizing and exploiting the role that promotion could play in attaining their organizational objectives. Professional and ethical considerations may prevent the use of certain forms of promotion. Established educational institutions may regard the use of mass media advertising and sales promotion as being in bad taste.

**Keywords:** Traditional sources of advertising, Print media, electronic media, Digital media, Social Media advertising etc.

### **Introduction:**

The objective of the advertising or promotional activities of the private coaching classes owners is to attract students, the objectives are cited. Currently, advertising and promotional competition between vendors imposes higher tuition class fees. The above observations prompted an attempt to understand the impact of corporate marketing on education. Coaching classes can be one of the prerequisites for students to pass the entrance exams to develop qualified and competent human resources in the Indian education system. The objective of promotion in education services is akin to its role in other marketing endeavours. Accordingly, the fundamental purpose that advertising is expected to pay for the marketing of education includes.

1. Building awareness of the education offer package and the organization providing it.
2. It is creating and sustaining differentiation for the organization and its offer from its competitors.
3. We are communicating and portraying the benefits to be provided.
4. Build and maintain the overall image and reputation of the service organization. e. It is persuading customers to use or buy the service.
5. Generating detailed information about the core, facilitating, supporting, and augmented service offer.
6. Advising existing and potential customers of any special offers or modifications or new service offers packages.
7. We are eliminating perceived misconceptions. However, private coaching classes have not used promotion tools effectively because of specific perceived notional barriers. Some of these barriers are i. e Most educational institutions are product-oriented rather than market or student oriented. They perceive themselves as producers of specific academic programs rather than as satisfiers of particular learning needs.

### **Objectives of the study:**

1. To Investigate promotion strategies for private coaching classes in Marathwada region.
2. To find the best effective promotional practices in Marathwada region.

### **Hypothesis of the study:**

**Null Hypothesis H<sub>0</sub>:** There is no significant difference between promotion strategies of private coaching classes in Nanded and Latur districts.

**Alternative Hypothesis H<sub>a</sub>:** There is a significant difference between promotion strategies of private coaching classes in the Nanded and Latur districts.

### **Review of literature:**

1. **Philip Kotler (2012)**, To know the Four Ps of Marketing The study gives the approach to marketer that they must choose the right mix necessary to control or influence an organization to provide the best value.
2. **Smith, P. R. & Taylor, J. (2004)**, To know the method of promotion The promotion includes all communications and sales activities to ensure prospects for enrolment in the program
3. **Rosenbloom & Dimitrova (2011)**, To know the advertising, communication, and channels of distribution The organization must then focus on effectively communicating how the Product addresses

the need and identifying effective promotional messages and distribution channels that will make products accessible to customers

4. **Enache I.C(2011)**, To know the importance of promotional activity in higher education The research study shows that a university has many important channels that need to be fed with information. The advertising strategy focuses on finding effective ways to reach your intended audiences. One of the essential categories of recipients is students. The first challenge is to present and explain the educational product to potential students adequately. The website is an important communication channel in this phase. A website that informs the candidate and guides them to the next step is a valuable tool for a good registration process.
5. **Paul Fifield (1998)**,To study promotional strategy “Promotion” is defined as the whole array of methods and procedures by which the organization communicates with its target market. Promotion is the element of the marketing mix used to inform, persuade and remind the target audience of the \ company's capability to satisfy their needs. They use it willing to influence the audience’s feelings, beliefs, and behaviour.

### 1.5 Research Methodology:

Table no.1 Research design

Sr.No.	Parameter	Description
1.	Type of Research	Ex Post Facto Descriptive Research
2.	Nature of Research	Quantitative & Qualitative Research
3.	Research Instrument	Structured questionnaire
4.	Dependent Variable	Marketing strategies and marketing tools
5.	Independent Variables	Demographic factors, educational services, National and local coaching classes brands, distribution channel, promotional strategies, advertising media
6.	Control over Variables	No Control- Ex Post Factor
7.	Type of Products	Educational services,i.e., coaching classes
8.	Methods of Data Collection	Sample Survey Method through Interrogation
10.	Population	Private coaching classes in Nanded and Latur District (15308 students from Nanded +14973 students from Latur District) = 30281 <sup>5</sup> students
11.	Sampling Frame	Students, Parents and coaching owners, tutors in Marathwada region
12.	Sample Elements	Students, parents, and Tutors, owners of coaching classes
13.	Calculated Sample Size	400 students from Nanded and Latur respectively.)
14.	Net Responses	(325 students +50 parents+100Tutors = 475)
15.	Response Rate	81.25%
16.	Rejection Rate	18.75%
17.	Sampling Method	Convenient sampling Method
18.	Sources of Data Collection	1. Primary Sources and 2. Secondary sources
19.	Primary Sources	Structured questionnaire and field survey
20.	Secondary sources	Nationals and International journals, Research papers, Magazine, e-resources.
21.	Measurement Scales used	Nominal, ordinal and interval scale
22.	Questions Types	Dichotomous, open-ended, multiple responses, ranking and differential

		scales
23.	<b>Rating Scales Used</b>	Likert Scale
24.	<b>Data Interpretation</b>	Graphs, descriptive statistics and inferential statistics
25.	<b>Statistical Tools</b>	Z test, chi-square; descriptive statistical tools and parametric and non-parametric statistical tests
26.	<b>Statistical Software</b>	Ms Excel 2010 and SPSS 20

(Source: Researcher's compilation)

**Data Analysis and Interpretation:**

**Table no.1.5 Promotional practices opted by Private Coaching Classes in Marathwada region**

Respondents	Research Area		SA	A	N	DA	SD	Total	
Students	Nanded	count	95	84	16	78	52	325	
		%	29.23	25.85	4.92%	24.00	16.00	100.00	
	Latur	count	89	53	60	38	85	325	
		%	27.38	16.31	18.46	11.69	26.15	100.00	
Parents	Nanded	count	13	14	3	12	8	50	
		%	26%	28%	6%	24%	16%	100%	
	Latur	count	14	3	2	15	16	50	
		%	28%	6%	4%	30%	32%	100%	
Tutors(owner) /Directors/Managers	Nanded	count	23	19	18	15	25	100	
		%	23%	19%	18%	15%	25%	100%	
	Latur	count	30	27	0	22	21	100	
		%	30%	27%	0%	22%	21%	100%	
	Total			264	200	99	180	207	950
	% Within			27.79	21.05	10.42	18.95	21.79	100.00

(Source: Field Survey and EXCEL output)

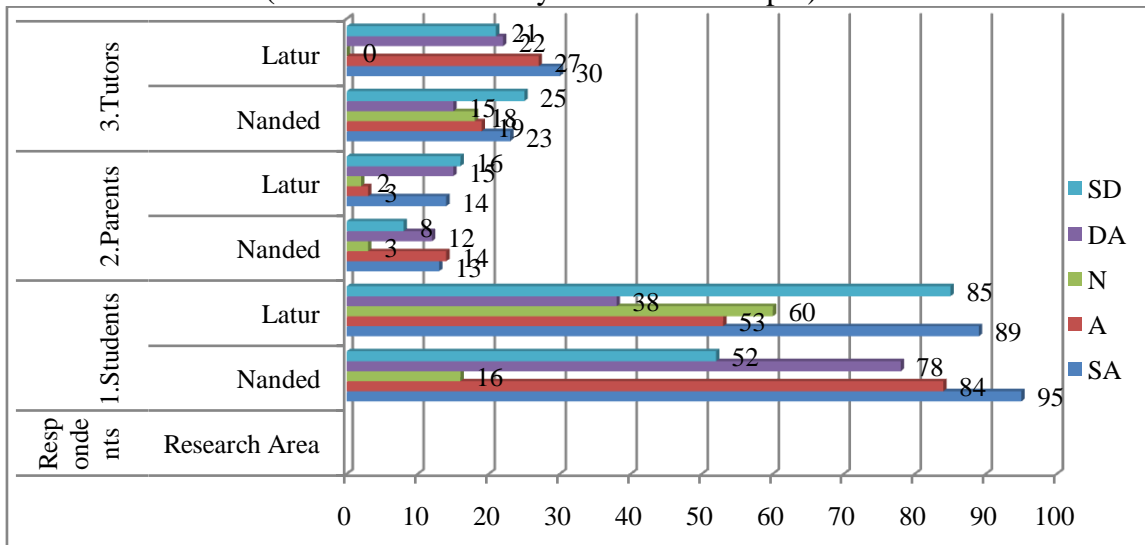


Figure 1.6.1 Promotion based perception of the respondents in Nanded and Latur District.

From the above table no. 1.6.1 and figure no- 1.6.1 data reflects 95(29.2%) and 84(25.85%) students strongly agree and agree however 78(24.00%) and 52(16.00%) students disagree and strongly disagree in the Nanded district.

89(27.38%) and 53(16.31%) students strongly agree and agree, while 38(11.69%) and 85(26.15%) students disagree and strongly disagree in the Latur district. It is interpreted that 13(26%) and 14(28%) parents strongly agree and agree whereas 12(24%) and 8(16%) parents disagree and strongly disagree in the Nanded district. 14(28%) and 3(6%) Parents strongly agree and agree where 15(30%) and 16(32%) parents disagree and strongly disagree in the Latur district.

It is observed 23% and 19% of Tutors (owners)/Directors/Managers strongly agree and agree while 15% and 25% of Tutors (owners)/Directors/Managers disagree and strongly disagree in the Nanded district. It is observed that 30 % and 27% of Tutors (owners) /Directors/Managers strongly agree and agree while 22 % and 21% of Tutors(owners)/Directors/Managers disagree and strongly disagree in the Latur district.

**Hypothesis testing:**

As there are two variables i.e Response on likert scale (interval) and type of respondents (nominal) variable and the interval variable is dependent on the nominal variable and researcher wants to test the statistical significance of differences between the groups (assuming the interval scaled variable is normally distributed in the population), the scedasticity of variances is tested to check the use of either t test or ANOVA using Welch statistic<sup>6</sup>; Brown-Forsythe statistic<sup>7</sup> (for testing equality of means) and using Levene test<sup>8</sup> (for testing scedasticity of variances), the test applicable may t test<sup>9</sup> or ANOVA<sup>10</sup> as follows,

**Table No.1.6 a Robust Tests of Equality of Means**

Students' response H1				
	Statistic <sup>a</sup>	df1	df2	Sig.
Welch	2.787	1	647.008	.096
Brown-Forsythe	2.787	1	647.008	.096
a. Asymptotically F distributed.				
Parents' response1				
	Statistic <sup>a</sup>	df1	df2	Sig.
Welch	3.201	1	96.881	.077
Brown-Forsythe	3.201	1	96.881	.077
a. Asymptotically F distributed.				
Tutors' response				
	Statistic <sup>a</sup>	df1	df2	Sig.
Welch	1.106	1	197.582	.294
Brown-Forsythe	1.106	1	197.582	.294
a. Asymptotically F distributed.				

(Source :Robust Tests of Equality of Means)

From the above table, it is found that the calculated significance value for the students'; parents' and tutors' responses (0.096; 0.077 and 0.294) using Welch and Brown-Forsythe statistic for testing equality of means are greater than the standard significance value (0.05) and hence the null hypothesis (representing means are equal) are accepted and it is inferred that means are equal in the case of students' parents' and tutors' response.

**Table No. 1.6b Test of Homogeneity of Variances**

Students' response H1				
	Levene Statistic	df1	df2	Sig.
	.110	1	648	.740
Parents' response1				
	Levene Statistic	df1	df2	Sig.
	1.238	1	98	.269
Tutors' response				
	Levene Statistic	df1	df2	Sig.
	3.626	1	198	.058

(Source:Test of Homogeneity of Variances)

From the above table, it is found that the calculated significance value for the students' ; parents' and tutors' responses (0.740; 0.269 and 0.058) using Levene statistic for testing homogeneity of variances are greater than the standard significance value (0.05) and hence the null hypothesis (representing variances are equal) are accepted and it is inferred that variances are equal in the case of students' ; parents' and tutors' responses and in this case, homoscedasticity is seen and ANOVA test is applicable in all cases.

**Table No. 1.6c ANOVA test**

ANOVA					
Students' response					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	6.500	1	6.500	2.787	.096
Within Groups	1511.545	648	2.333		
Total	1518.045	649			

<b>ANOVA</b>					
Parents' response					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	7.840	1	7.840	3.201	.077
Within Groups	240.000	98	2.449		
Total	247.840	99			
<b>ANOVA</b>					
Tutors' response					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2.645	1	2.645	1.106	.294
Within Groups	473.710	198	2.392		
Total	476.355	199			

(Source: ANOVA test)

From the above table, it is found using ANOVA test that in case of students' parents' and tutors' response, the calculated significance value (0.096; 0.077 and 0.294) are greater than the standard significance value and hence the null hypothesis, "Promotion related strategies of private coaching classes in the Nanded and Latur districts are not significantly different as per the opinions of students parents and tutors" is accepted and the alternative hypothesis, "Promotion related strategies of private coaching classes in the Nanded and Latur districts are significantly different as per the opinions of students parents and tutors" is rejected.

Hence, it is interpreted that promotion related strategies of private coaching classes in the Nanded and Latur districts are not significantly different as per the opinions of students, parents and tutors.

**Table No. 1.6d Hypothesis Decision**

Sr. No.	Name of respondent	Null Hypothesis	Test applicable	Hypothesis Decision	Interpretation
1	Student	Promotion related strategies of private coaching classes in the Nanded and Latur districts are not significantly different as per the opinion of students in Nanded and Latur district.	ANOVA	Accepted	Promotion related strategies of private coaching classes in the Nanded and Latur districts are not significantly different as per the opinion of students in Nanded and Latur district.
2	Parents	Promotion related strategies of private coaching classes in the Nanded and Latur districts are not significantly different as per the opinion of parents in Nanded and Latur district.	ANOVA	Accepted	Promotion related strategies of private coaching classes in the Nanded and Latur districts are not significantly different as per the opinion of parents in Nanded and Latur district.
3	Tutors	Promotion related strategies of private coaching classes in the Nanded and Latur districts are not significantly different as per the opinion of tutors in Nanded and Latur district.	ANOVA	Accepted	Promotion related strategies of private coaching classes in the Nanded and Latur districts are not significantly different as per the opinion of tutors in Nanded and Latur district.

(Source: Hypothesis testing results)

**Findings, Conclusions and Suggestions:**

**1 Findings:**

**1. Use of traditional Advertising Media**

**a. Advertising through TV/ Newspaper**

From the responses collected from these respondents It is observed that, 62 (19.1 %) and 87 (26.8 %) students of private coaching classes in the Nanded districts agree, strongly agree and 51(15.7%) and 58 (17.8 %) students agree and strongly agree that they are influenced by seeing advertisements through daily Newspaper in private coaching classes in the Latur districts. 62 (19.1 %) and 67 (20.6 %) students strongly disagree and disagree in the Nanded districts and 62 (19.1 %) and 57 (15.7 %) students of private coaching classes in the Latur districts strongly disagree, disagree that they are influenced by seeing advertisement through daily Newspaper. The 17(34%) and 13(26%) parents of private coaching classes in the Nanded districts agree, strongly agree and 8(16%) and 10(20 %) parents of private coaching classes in the Latur districts are agree, strongly agree that they are influenced by advertising through the TV and daily Newspaper. The 8 (16%) and 4 (8 %) parents of private coaching classes in the Nanded districts strongly disagree, disagree that they are influenced by advertising through the TV and daily Newspaper and 8(16%) and 9(18%) parents of private coaching classes in the Latur districts strongly disagree, disagree that they are influenced by advertising through the TV and daily Newspaper. It is found that 25 % and 15% of Tutors of private coaching classes in the Nanded districts agree and strongly agrees, the 10% and 8% of Tutors agree and strongly agree in Latur district that advertising through TV/ Newspaper is an effective tool in creating brand awareness among students and their parents in private coaching classes in Marathwada Region. The 20% and 19% of Tutors of private coaching classes in the Nanded districts are strongly disagreed and disagree and 9% and 28% of Tutors of private coaching classes in the Latur districts strongly disagree and disagree that advertising through TV/ Newspaper is an effective tool in creating brand awareness among students and their parents in private coaching classes in Marathwada Region.

**Table 1.7.2 advertisement through digital hoarding:**

Respondents	Research Area		SA	A	N	DA	SD	Total
Students	Nanded	Count	51	53	63	75	83	325
		% Within	15.70 %	16.30 %	19.40 %	23%	25.50 %	100.00%
	Latur	count	51	63	53	75	83	325
		% Within	15.69 %	19.38 %	16.31 %	23.08 %	25.54 %	100.00%
Parents	Nanded	Count	10	8	14	10	8	50
		% Within	20%	16%	28%	20%	16%	100%
	Latur	count	11	9	8	13	9	50
		% Within	22%	18%	16%	26%	18%	100%
Tutors(owners) /Directors/Managers	Nanded	Count	10	24	11	26	29	100
		% Within	10%	24%	11%	26%	29%	100%
	Latur	count	21	8	35	14	22	100
		% Within	21%	8%	35%	14%	22%	100%
			Total	154	165	184	213	234
		% Within	16.21 %	17.37 %	19.37 %	22.42 %	24.63 %	100.00%

(Source: Field survey and excel output)

From the above table no.1.7.2 It is observed that 51(15.7%) and 53(16.3%) students strongly agree and agree whereas 75(23%) and 83(25.5%) students disagree and strongly disagree that they are influenced by digital hoardings at the hotspot of the city in the Nanded district. 51(15.69%) and 63(19.38%) students strongly agree and agree, whereas 75(23.08%) and 83(25.54%) students disagree and strongly disagree that they are influenced by digital hoardings at the hotspot of the city in the Latur district. It is found that 10(20%) and 8(16%) parents strongly agree and agree whereas 10(20%) and 8(16%) parents disagree and strongly disagree that they are influenced by digital hoardings at the hotspot of the city in the Nanded district. 11(22%) and 9(18%) Parents strongly

agree and agree whereas 13(26%) and 9(18%) parents disagree and strongly disagree they are influenced by digital hoardings at the hotspot of the city in the Latur district.

It is observed 10% and 24% of Tutors(owners)/Directors/Managers strongly agree and agree whereas 26% and 29% of Tutors(owners)/Directors/Managers disagree and strongly disagree agree that advertisement through digital hoarding influence is necessary to expose their brand in the domestic market in the Nanded district. It is observed that 21 % and 8 % of Tutors (owners)/Directors/Managers strongly agree and agree whereas 14 % and 22 % of Tutors (owners)/Directors/Managers strongly disagree and disagree that advertisement through digital hoarding influence is necessary to expose their brand in the domestic market in the Latur District.

#### **Distribution of handbills:**

It is observed that 88(27.08%) and 73(22.46%) students strongly agree and agree whereas 89(27.38%) and 57(17.54%) students disagree and strongly disagree that they are get notified by handbills distributed by private coaching classes in the Nanded district. 113(34.77%) and 117(36.00%) students strongly agree and agree, whereas 25(7.69%) and 70(21.54%) students disagree and strongly disagree that they are get notified by handbills distributed by private coaching classes in the Latur district. It is found that 22(44%) and 21(42%) parents strongly agree and agree whereas 0(0%) and 7(14%) parents disagree and strongly disagree that they are get notified by handbills distributed by private coaching classes in the Nanded district. 27(54%) and 18(36%) Parents strongly agree and agree whereas 3(6%) and 2(4%) parents disagree and strongly disagree they are get notified by handbills distributed by private coaching classes in the Latur district. It is observed 28% and 25% of Tutors(owners)/Directors/Managers strongly agree and agree whereas 20% and 27% of Tutors(owners)/Directors/Managers disagree and strongly disagree that distribution of handbills creates awareness in the domestic market of Nanded district. It is observed that 17% and 29% of Tutors(owners) /Directors/Managers strongly agree and agree whereas 20% and 18% of Tutors(owners)/Directors/Managers disagree and strongly disagree that distribution of handbills creates awareness in the domestic market of private coaching classes in the Latur district.

#### **Pamphlets and stickers**

It is observed that 110(33.85%) and 71(21.85%) students strongly agree and agree whereas 78(24.00%) and 63(19.38%) students disagree and strongly disagree that they are influenced by stickers and pamphlets circulated by private coaching classes in the Nanded district. 92(28.31%) and 75(23.08%) students strongly agree and agree, whereas 83(25.54%) and 75(23.08%) students disagree and strongly disagree that they are influenced by stickers and pamphlets circulated by private coaching classes in the Latur district. It is found that 19(38%) and 18(36%) parents strongly agree and agree whereas 4(8%) and 8(16%) parents disagree and strongly disagree that they are influenced by stickers and pamphlets circulated by private coaching classes in the Nanded district. 22(44%) and 27(54%) Parents strongly agree and agree whereas 1(2%) and 0(0%) parents disagree and strongly disagree that they are influenced by stickers and pamphlets circulated by private coaching classes in the Latur district. It is observed 17% and 20% of Tutors(owners)/Directors/Managers strongly agree and agree whereas 35% and 17% of Tutors(owners)/Directors/Managers disagree and strongly disagree that strikers and pamphlets helped to spread marketing message among students and parents of private coaching classes in the Nanded district. It is observed that 33% and 21% Tutors(owners) /Directors/Managers strongly agree and agree whereas 28% and 18% of Tutors(owners)/Directors/Managers disagree and strongly disagree that strikers and pamphlets helped to spread marketing messages among students and parents of private coaching classes in the Latur district.

#### **Brand logo printing on school bags/cap/ T-Shirt**

It is observed that 35(10.77%) and 89(27.38%) students strongly agree and agree whereas 89(27.38%) and 112(34.46%) students disagree and strongly disagree that brand logo printing on school bags/cap/ T-Shirt impacted more classes in the Nanded district. 109(33.54%) and 125(38.46%) students strongly agree and agree, whereas 17(5.23%) and 58(17.85%) students disagree and strongly disagree with brand logo printing on school bags/cap/ T-Shirt impacted more classes in the Latur district. It is found that 24(48%) and 22(44%) parents strongly agree and agree whereas 0(0%) and 4(8%) parents disagree and strongly disagree that brand logo printing on school bags/cap/ T-Shirt impacted more classes in the Nanded district. 28(56%) and 18(36%) Parents strongly agree and agree whereas 2(4%) and 2(4%) parents disagree and strongly disagree brand logo printing on school bags/cap/T-shirt impacted more classes in the Latur district. It is observed 25% and 18% of Tutors(owners)/Directors/Managers strongly agree and agree whereas 23% and

34% of Tutors(owners)/Directors/Managers disagree and strongly disagree. They believed that advertising through brand logo printing on school bags/caps/ T-Shirt creates an impact in the Nanded district. It is observed that 34% and 15% of Tutors(owners) /Directors/Managersstrongly agree and agree whereas 35% and 16% of Tutors(owners)/Directors/Managers disagree and strongly disagree.They believed that advertising through brand logo printing on school bags/caps/ T-Shirt creates an impact in the Latur district.

**Wall painting:**It is observed that 58(17.85%) and 96(29.54%) students strongly agree and agree whereas 97(29.85%) and 64(19.69%) students disagree and strongly disagree that they are notified by seeing an advertisement on wall painting in the Nanded district. 92(28.31%) and 68(20.92%) students strongly agree and agree, whereas 74(22.77%) and 89(27.38%) students disagree and strongly disagree that they are notified by seeing an advertisement on wall painting in the Latur district. It is found that 22(44%) and 26(52%) parents strongly agree and agree whereas 0(0%) and 2(4%) parents disagree and strongly disagree that they are notified by seeing an advertisement on wall painting in the Nanded district. 28(56%) and 17(34%) Parents strongly agree and agree whereas0(0%) and 5(10%) parents disagree and strongly disagree that they are notified by seeing an advertisement on wall painting in the Latur district. It is observed 20% and 20% of Tutors(owners)/Directors/Managers strongly agree and agree whereas 15% and 37% of Tutors(owners)/Directors/Managers disagree and strongly disagree that advertisement on wall painting is the traditional way of advertising creates brand awareness in villages and Taluka places of Nanded district.It is observed that 19% and19% of Tutors(owners) /Directors/Managersstrongly agree and agree whereas 22% and 37% of Tutors(owners)/Directors/Managers disagree and strongly disagree that advertisement on wall painting is the traditional way of advertising creates brand awareness in villages and Taluka places of in the Latur district.

#### **Use of Electronic Media sources**

**SMS services:** It is observed that 58(17.85%) and 96(29.54%) students strongly agree and agree whereas 97(29.85%) and 64(19.69%) students disagree and strongly disagree that they are acknowledged by advertisement through private coaching classes in the Nanded district. 92(28.31%) and 68(20.92%) students strongly agree and agree, whereas 74(22.77%) and 89(27.38%) students disagree and strongly disagree that they are attracted by SMS services provided by private coaching classes in the Latur district. It is found that 22(44%) and 26(52%) parents strongly agree and agree whereas 0(0%) and 2(4%) parents disagree and strongly disagree that they are attracted by SMS services provided by private coaching classes in the Nanded district. 28(56%) and 17(34%) Parents strongly agree and agree whereas 0(0%) and 5(10%) parents disagree and strongly disagree that they are attracted by SMS services provided by private coaching classes in the Latur district. is observed 20% and 20% of Tutors(owners)/Directors/Managers strongly agree and agree whereas 15% and 37% of Tutors(owners)/Directors/Managers disagree and strongly disagree that electronic media played a vital role in creating awareness among the people they believed that it is medium of personal awareness and communication in the Nanded district. It is observed that 19% and 19% of Tutors(owners) /Directors/Managers strongly agree and agree whereas 22% and 37% of Tutors(owners)/Directors/Managers disagree and strongly disagree that electronic media played a vital role in creating awareness among the people they believed that it is medium of personal awareness and communication in the Latur district.

**E- sources advertising:** It is observed that75 (23.08%) and 55 (16.92%) students strongly agree and agree whereas 80 (24.62%) and 91 (28.00%) students disagree and strongly disagree that they are influenced by Internet advertising of private coaching classes in the Nanded district. 117 (36%) and 74(23%) students strongly agree and agree, whereas 80 (25%) and 54 (17%) students disagree and strongly disagree that they are influenced by internet advertising of private coaching classes in the Latur district. It is found that 21 (42%) and 19 (38%) parents strongly agree and agree whereas 3(6%) and 7 (14%) parents disagree and strongly disagree that they are influenced by Internet advertising of private coaching classes in the Nanded district. 26(52%) and 18(36%) Parents strongly agree and agree whereas 4 (8%) and 2(4%) parents disagree and strongly disagree that they are influenced by Internet advertising of private coaching classes in the Latur district. It is observed 16% and 20% of Tutors(owners)/Directors/Managers strongly agree and agree whereas 24% and 37% of Tutors(owners)/Directors/Managers disagree and strongly disagree that internet advertising has an extraordinary impact on the students and parents in the Nanded district. It is observed that 36% and16% of Tutors(owners) /Directors/Managers strongly agree and agree whereas 15% and

19% of Tutors(owners)/Directors/Managers disagree and strongly disagree that internet advertising has an extraordinary impact on the students and parents in the Latur district.

**advertising through Video mode Audio:**It is observed that 104(32%) and 98(30.15%) students strongly agree and agree whereas 96(29.54%) and 25(7.69%) students disagree and strongly disagree that are influenced by private coaching classes advertising through cinema in the Nanded district. 117(36%) and 94(28.92%) students strongly agree and agree, whereas 44(13.54%) and 56(17.23%) students disagree and strongly disagree that are influenced by private coaching classes advertising through cinema in the Latur district. It is found that 22(44%) and 25(50%) parents strongly agree and agree whereas 3(6%) and 0(0%) parents disagree and strongly disagree that are influenced by private coaching classes advertising through cinema in the Nanded district. 17(34%) and 28(56%) Parents strongly agree and agree on whereas 4(8%) and 1(2%) parent disagree and strongly disagree that are influenced by private coaching classes advertising through cinema in the Latur district. It is observed 37% and 10% of Tutors(owners)/Directors/Managers strongly agree and agree whereas 22% and 31 % of Tutors(owners)/Directors/Managers disagree and strongly disagree that influence created by private coaching classes advertising through cinema audiences are more likely to be emotionally engaged in the Nanded district.It is observed that 32% and 23% of Tutors(owners) /Directors/Managers strongly agree and agree whereas 20% and 25% of Tutors(owners)/Directors/Managers disagree and strongly disagree that influence created by private coaching classes advertising through cinema audiences are more likely to be emotionally engaged in the Latur district.

**Radio:** It is observed that 94(28.92%) and 89(27.38%) students strongly agree and agree whereas 66(20.31%) and 75(23.08%) students disagree and strongly disagree that they are notified by advertisement through radio in the Nanded district. 65(20.00%) and 185(56.92%) students strongly agree and agree, whereas 53(16.31%) and 22(6.77%) students disagree and strongly disagree that they are notified by advertisement through radio in the Latur district. It is found that 28(56%) and 13(26%) parents strongly agree and agree whereas 7(14%) and 2(4%) parents disagree and strongly disagree that they are notified by advertisement through radio in the Nanded district. 24(48%) and 18(36%) Parents strongly agree and agree whereas 1(2%) and 7(14%) parents disagree and strongly disagree that they are notified by advertisement through radio in the Latur district. It is observed 27% and 21% of Tutors(owners)/Directors/Managers strongly agree and agree whereas 25% and 27% of Tutors(owners)/Directors/Managers disagree and strongly disagree that radio advertising media is effective in the Nanded district. It is observed that 21% and 10% of Tutors(owners) /Directors/Managers strongly agree and agree whereas 21% and 32% of Tutors(owners)/Directors/Managers disagree and strongly disagree that radio advertising media is effective in the Latur district. From the above table no. It is observed that 138(42.46%) and 98(30.15%) students strongly agree and agree whereas 31(9.54%) and 58(17.85%) students disagree and strongly disagree that they are influenced by advertisements through android application in the Nanded district. 44(13.54%) and 115(35.38%) students strongly agree and agree, whereas 55(16.92%) and 111(34.15%) students disagree and strongly disagree that they are influenced by advertisements through android application in the Latur district. It is found that 10(20%) and 6(12%) parents strongly agree and agree whereas 13(26%) and 3(6%) parents disagree and strongly disagree that they are influenced by advertisement through android applications in the Nanded district. 3(6%) and 0(0%) Parents strongly agree and agree whereas 18(36%) and 16(32%) parents disagree and strongly disagree that they are influenced by advertisement through android applications in the Latur district. It is observed 31% and 18% of Tutors(owners)/Directors/Managers strongly agree and agree whereas 25% and 26% of Tutors(owners)/Directors/Managers disagree and strongly disagree, they believed that advertising through the Android application can be targeted for the specialized group it effective way in the Nanded district. It is observed that 26% and 11% of Tutors(owners) /Directors/Managers strongly agree and agree whereas 19% and 44% of Tutors(owners)/Directors/Managers disagree and strongly disagree, they believed that advertising through the Android application can be targeted for the specialized group its effective way in the Latur district.

**Advertising through social media:**

**What's App:**It is observed that 92(28.31%) and 42(12.92%) students strongly agree and agree whereas 96(29.54%) and 60(18.46%) students disagree and strongly disagree that they are attracted by what's app social media advertising in the Nanded district. 26(8.00%) and 85(26.15%) students strongly agree and agree, whereas 112(34.46%) and 77(23.69%) students disagree and strongly

disagree that they are attracted by what's app social media advertising in the Latur district. It is found that 2(4%) and 2(4%) parents strongly agree and agree whereas 14(28%) and 13(26%) parents disagree and strongly disagree that they are attracted by what's app social media advertising in the Nanded district. 5(10%) and 3(6%) Parents strongly agree and agree whereas 14(28%) and 28(56%) parents disagree and strongly disagree that they are attracted by what's app social media advertising in the Latur district. It is observed 24% and 32% of Tutors(owners)/Directors/Managers strongly agree and agree whereas 18% and 26% of Tutors(owners)/Directors/Managers disagree and strongly disagree that what's app social media advertising creates an extraordinary exposure for brand loyalty in the Nanded district. It is observed that 27% and 32% of Tutors(owners) /Directors/Managers strongly agree and agree whereas 10% and 31% of Tutors(owners)/Directors/Managers disagree and strongly disagree that what's app social media advertising creates an extraordinary exposure for brand loyalty in the Latur district.

**Facebook:** It is observed that 32(9.85%) and 110(33.85%) students strongly agree and agree whereas 75(23.08%) and 98(30.15%) students disagree and strongly disagree that they are influenced by Facebook social media marketing in the Nanded district. 92(28.31%) and 96(29.54%) students strongly agree and agree, whereas 98(30.15%) and 24(7.38%) students disagree and strongly disagree that they are influenced by Facebook social media marketing in the Latur district. It is found that 15(30%) and 9(18%) parents strongly agree and agree whereas 8(16%) and 7(14%) parents disagree and strongly disagree that private coaching classes in the Nanded district. 20(40%) and 15(30%) Parents strongly agree and agree with whereas 9(18%) and 3(6%) parents disagree and strongly disagree that they are influenced by Facebook social media marketing in the Latur district. It is observed 32% and 19% of Tutors(owners)/Directors/Managers strongly agree and agree whereas 26% and 23% of Tutors(owners)/Directors/Managers disagree and strongly disagree that advertising through Facebook helps to communicate their reach in the Nanded district. It is observed that 33% and 24% of Tutors(owners) /Directors/Managers strongly agree and agree whereas 33% and 10% of Tutors(owners)/Directors/Managers disagree and strongly disagree that advertising through Facebook helps to communicate their reach in the Latur district.

**Instagram:** It is observed that 89(27.38%) and 148(45.54%) students strongly agree and agree whereas 52(16.00%) and 36(11.08%) students disagree and strongly disagree that they are influenced by Instagram social media advertising in the Nanded district. 63(19.38%) and 88(27.08%) students strongly agree and agree, whereas 52(16.00%) and 85(26.15%) students disagree and strongly disagree that they are influenced by Instagram social media advertising in the Latur district. It is found that 2(4%) and 5(10%) parents strongly agree and agree whereas 18(36%) and 12(24%) parents disagree and strongly disagree that they are influenced by Instagram social media advertising in the Nanded district. 7(14%) and 15(30%) Parents strongly agree and agree whereas 4(8%) and 12(24%) parents disagree and strongly disagree they are influenced by Instagram social media advertising in the Latur district. It is observed 36% and 33% of Tutors(owners)/Directors/Managers strongly agree and agree whereas 11% and 20% of Tutors(owners)/Directors/Managers disagree and strongly disagree that influence created by Instagram social media advertising acknowledge the young generation segment in the Nanded district. It is observed that 18% and 33% of Tutors(owners) /Directors/Managers strongly agree and agree while 16% and 33% of Tutors(owners)/Directors/Managers disagree and strongly disagree that influence created by Instagram social media advertising acknowledge the young generation segment in the Latur district.

**Twitter:** It is observed that 27(8.31%) and 80(24.62%) students strongly agree and agree whereas 44(13.54%) and 95(29.23%) students disagree and strongly disagree that they are notified by Twitter social media advertising of private coaching classes in the Nanded district. 74(22.77%) and 47(14.46%) students strongly agree and agree, whereas 46(14.15%) and 89(27.38%) students disagree and strongly disagree that they are notified by Twitter social media advertising of private coaching classes in the Latur district. It is found that 7(14%) and 6(12%) parents strongly agree and agree whereas 8(16%) and 12(24%) parents disagree and strongly disagree that they are notified by Twitter social media advertising of private coaching classes in the Nanded district. 0(0%) and 18(36%) Parents strongly agree and agree whereas 12(24%) and 9(18%) parents disagree and strongly disagree that they are notified by Twitter social media advertising of private coaching classes in the Latur district. It is observed 18% and 23% of Tutors(owners)/Directors/Managers strongly agree and agree whereas 31% and 28% of Tutors(owners)/Directors/Managers disagree and strongly disagree that Twitter social media advertising creates awareness in the cream layer and

high-profile society of Nanded district. It is observed that 30% and 25% of Tutors(owners) /Directors/Managers strongly agree and agree whereas 29% and 16% of Tutors(owners)/Directors/Managers disagree and strongly disagree that Twitter social media advertising creates awareness in cream layer and high-profile society in the Latur district.

**Google blogs:** It is observed that 59(18.15%) and 88(27.08%) students strongly agree and agree whereas 66(20.13%) and 37(11.38%) students disagree and strongly disagree that they are attracted by google blogs and reviews of other members of private coaching classes in the Nanded district. 81(24.29%) and 67(20.62%) students strongly agree and agree, whereas 48(14.77%) and 85(26.15%) students disagree and strongly disagree that they are attracted by google blogs and reviews of other members of private coaching classes in the Latur district. It is found that 19(38%) and 12(24%) parents strongly agree and agree whereas 17(34%) and 2(4%) parents disagree and strongly disagree that they are attracted by google blogs and reviews of other members of private coaching classes in the Nanded district. 18(36%) and 23(46%) Parents strongly agree and agree whereas 1(2%) and 8(16%) parents disagree and strongly disagree that they are attracted by google blogs and reviews of other members of private coaching classes in the Latur district. It is observed 29% and 32% of Tutors(owners)/Directors/Managers strongly agree and agree whereas 17% and 22% of Tutors(owners)/Directors/Managers disagree and strongly disagree that attraction created by google blogs and review of other members creates trust in the Nanded district. It is observed that 16% and 34% of Tutors(owners) /Directors/Managers strongly agree and agree whereas 34% and 16% of Tutors(owners)/Directors/Managers disagree and strongly disagree that attraction created by google blogs and review of other members creates trust in the Latur district.

**YouTube:** It is observed that 86 (26.46%) and 71 (21.85%) students strongly agree and agree whereas 34 (10.46%) and 69 (21.23%) students disagree and strongly disagree that they are influenced by YouTube videos of private coaching classes in the Nanded district. 89 (27.38%) and 78 (24.00%) students strongly agree and agree, whereas 67 (20.62%) and 34 (10.46%) students disagree and strongly disagree that they are influenced by YouTube videos of private coaching classes in the Latur district. It is found that 15 (30%) and 5 (10%) parents strongly agree and agree whereas 7 (14%) and 13 (26%) parents disagree and strongly disagree that they are influenced by YouTube videos of private coaching classes in the Nanded district. 9 (18%) and 10 (20%) Parents strongly agree and agree whereas 17 (34%) and 14 (28%) parents disagree and strongly disagree that they are influenced by YouTube videos of private coaching classes in the Latur district. It is observed 32% and 27% of Tutors(owners)/Directors/Managers strongly agree and agrees with whereas 18% and 23% of Tutors(owners)/Directors/Managers disagree and strongly disagree that with the help of YouTube media for advertising helps to comply with the students within the targeted group in the Nanded district. It is observed that 22% and 29% of Tutors(owners) /Directors/Managers strongly agree and agree whereas 16% and 33% of Tutors(owners)/Directors/Managers disagree and strongly disagree that with the help of YouTube media for advertising helps to comply with the students within the targeted group in the Latur district.

**Pinterest:** It is observed that 42 (12.92%) and 52 (16.00%) students strongly agree and agree whereas 91 (28.00%) and 52 (16.00%) students disagree and strongly disagree that they are attracted by Pinterest social media advertising in the Nanded district. 49 (15.08%) and 56 (17.23%) students strongly agree and agree, whereas 67 (20.62%) and 87 (26.77%) students disagree and strongly disagree that they are attracted by Pinterest social media advertising in the Latur district. It is found that 15 (30%) and 16 (32%) parents strongly agree and agree whereas 8 (16%) and 7 (14%) parents disagree and strongly disagree that they are attracted by Pinterest social media advertising in the Nanded district. 25(50%) and 17(34%) Parents strongly agree and agree whereas 4(8%) and 4(8%) parents disagree and strongly disagree that they are attracted by Pinterest social media advertising in the Latur district. It is observed 25% and 23% of Tutors(owners)/Directors/Managers strongly agree and agree whereas 25% and 19% of Tutors(owners)/Directors/Managers disagree and strongly disagree that by Pinterest social media advertising is the best media advertising for speeding the attractive and pleasant information through the picture notes and diagram in the Nanded district. It is observed that 19% and 21% of Tutors(owners) /Directors/Managers strongly agree and agree whereas 29% and 31% of Tutors(owners)/Directors/Managers disagree and strongly disagree by Pinterest social media advertising is the best media advertising for speeding the attractive and pleasant information through the picture notes and diagram in the Latur district.

### **Conclusions:**

1. It is observed that advertising through print media through daily newspapers influenced students to create a brand image of private coaching classes in the Nanded and Latur districts.
2. It is observed that the use of digital hoardings for the promotion of the brand created a monopoly in the private coaching business in the Marathwada region.
3. It is observed that Television advertising exposes that the brand too much to the larger audience and drives all other forms of promotion. Television advertising is greater in the Nanded district than in the Latur district.
4. It is observed that the influence created by private coaching classes advertising through cinema is greater in the Latur district than in the Nanded district.
5. It is observed that Tutors believe that radio advertising media has a low cost of production and it is an ideal for promoting practical advertising messages at short notice it is highly costefficient medium it passes within a short time and with the huge information.
6. It is observed that the rate of radio advertising is greater in the Latur than in the Nanded district.
7. It is observed that the use of advertising through Facebook social media is much higher in the Latur than in the Nanded advertising sources are found to be believed in advertising through Facebook helps to communicate their reach and breaking the regional boundaries.
8. It is observed that YouTube media provides the best method of pedagogy that students and their parents can favour. The rate of advertising through YouTube media is much higher in the Latur than Nanded district.
9. The satisfaction level among students of private coaching classes in the Latur district is greater than the students of private coaching classes in the Nanded district.
10. The students of the Latur district believed that services are unique to being successful in the higher secondary exam and entrance examination.

### **Suggestions:**

1. Though the advertising and promotional practices of private coaching classes in Marathwada region are effective in all respect.
2. It is suggested to students and their parents that make confirmation with actual result and then make your suitable choice.
3. It is suggested to the traditional coaching players that they must adopt new technological digital media platform to encash the opportunity of current scenario.

### **References:**

1. Philip Kotler, "The gap between the vision for marketing and reality", MIT Sloan Management Review, Vol.54, 2012, pp. 13-14. 74.
2. Smith, P. R., Taylor, J., "Marketing Communications an Integrated Approach (4th Ed). London", UK: Kogan Page Limited, 2004.
3. Rosenbloom, B., & Dimitrova, B., "The marketing mix paradigm and the Dixonian systems perspective of marketing", Journal of Historical Research in Marketing, Vol.3 (101), 2011, pp. 53-66.
4. Enache, I. C., "Marketing higher education using 7 Ps frameworks", Bulletin of the Transilvania University of Brasov, Vol.4 (53), 2011, pp. 23-30.
5. Paul Fifield, Marketing Strategy, Chapter 10, 1998, pp. 245.
6. Welch statistic: Brown, M. B., and Forsythe, A. B. The small sample behavior of some statistics which test the equality of several means. Technometrics 16 (1974a): 129-132.
7. Brown-Forsythe: Brown, M. B., and Forsythe, A. B. The small sample behavior of some statistics which test the equality of several means. Technometrics 16 (1974a): 129-132.
8. Levene Statistic: Analysis of Variance: Hays, W. L. Statistics for the Social Sciences. Second edition. New York: Holt, Rinehart, and Winston, 1973. p. 457
9. t-test: Hays, W. L. Statistics for the Social Sciences. Second edition. New York: Holt, Rinehart, and Winston, 1973. p. 404, 410.
10. Analysis of Variance: Hays, W. L. Statistics for the Social Sciences. Second edition. New York: Holt, Rinehart, and Winston, 1973. p. 457

## **Importance Of Natural Resources In Rural Development.**

**Dr. Dilip S. Patil**

**Abstract:** Humans and other life forms have depended on things that exist freely in nature to survive, since the earth came into existence and life started to develop on earth. These things include water, land, soils, rocks, forests, animals (both land and water), fossil fuels and minerals. They are called Natural Resources and are the basis of life on earth. We make use of their supply to survive and also to function properly. Natural resources are all connected in a way i.e. they are interdependent. Therefore if one is taken away, it will affect the supply and quality of all others. Natural resources are very important in the developmental process. Other similar supportive arrangements can work to their efficiency with the co-operation of the natural resources. In this development process economic, social, cultural, political and environment changes take place. Human being is always in search of way to develop him-self and with the available technique & technology, research and hard work he always has tried to raise his standard of living. Developmental process is nothing but the numerical changes and the qualitative changes that are brought in the living standard of human beings.

**Keywords:** Rural Areas, Natural Resources, Forest, Water, Weather, Land, Conservation.

### **Introduction:**

Humans and other life forms have depended on things that exist freely in nature to survive, since the earth came into existence and life started to develop on earth. These things include water, land, soils, rocks, forests, animals (both land and water), fossil fuels and minerals. They are called Natural Resources and are the basis of life on earth.

We make use of their supply to survive and also to function properly. Natural resources are all connected in a way i.e. they are interdependent. Therefore if one is taken away, it will affect the supply and quality of all others. Natural resources are very important in the developmental process. Other similar supportive arrangements can work to their efficiency with the co-operation of the natural resources. In this development process economic, social, cultural, political and environment changes take place. Human being is always in search of way to

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develop him-self and with the available technique & technology, research and hard work he always has tried to raise his standard of living. Developmental process is nothing but the numerical changes and the qualitative changes that are brought in the living standard of human beings.

### **Concept of Natural Resources:**

Natural resources are very important for the process of development. They are used on a large scale for the rapidly increasing population, industrialization and the race between different countries to become economically strong. To preserve the quantity and quality of the natural resources and also to keep stable the available resources is a major problem faced by the world.

Natural resources come in many forms. It may be a solid, liquid or gas, organic or inorganic, Metallic or non-metallic, renewable or non-renewable.

Renewable source of energy can be regenerated – Plants, animals, air, water etc. Renewable

resources are those that are constantly available or can be reasonably replaced or recovered, like vegetative lands. Animals are also renewable because with a bit of care, they can reproduce off springs to replace adult animals. Even though some renewable resources can be replaced, they may take many years for example soil, forest. Renewable resources come also from non-living things like solar energy from sun, tidal energy tidal waves, hydro - electric power from water and geothermal energy.

Non-Renewable source of energy cannot be regenerated. Metal minerals are available in the natural form. If used its shape and form can be changed but its existence is not destroyed. But if mineral oil is used, it cannot be regenerated. It takes years and years for the formation of mineral oil again. So they have to be used very carefully as they are extinct. Non-renewable resources are those that cannot easily be replaced once they are destroyed for example fossil fuels. Minerals are also non-renewable because even though they form naturally, it takes thousands of years to be renewed thus making it non-renewable. Some animals can also be considered non-renewable, because if people hunt for a particular species without ensuring their reproduction, they will be extinct. So we must ensure that we protect resources that are endangered. Non-renewable resources include minerals, wind, land, soil and rocks. Some non-renewable resources come from living things - such as fossil fuels.

**Metallic and Non-metallic Resources-** Metallic minerals are those that have metals in them. They are harder, shiny, and can be melted to form new products. Examples are iron, copper and tin. Non-metallic minerals have no metals in them and they are softer and do not shine. For example: clay and coal.

Man started making use of natural resources to make progress in the industries and technology long back by using the available natural resources. In other words we can say that “The developmental process is meant to raise the standard of living of human beings”. In this process contribution of plants has great importance. Therefore it is essential to study rural development and natural resources in totality. Robert McNamara has defined rural development as - “Rural Development means an overall development of the rural areas by giving stress on the development of the weaker sections of the society like small farmers, landless agricultural laborers and rural artisans”.

Rural development is a process and natural resources are essential for this. These natural resources are available in the form of land, weather, forest, animals, oceans, energy, human resource and waste material. These resources are not available equally everywhere. It is available in different forms and in different quantity in different places and is used as per its availability. So the available natural resource in different places more or less is to be used very skillfully. If developmental planning is done taking into consideration the availability of natural resource then the desired objectives can be achieved.

#### **Importance of Natural Resources:**

Natural resources are available to sustain the very complex interaction between living things and non-living things. Human beings are benefited to a great extent from this interaction. All over the world, people consume natural resources directly or indirectly. Developed countries consume resources more than under-developed countries. The world economy uses around 60 billion tons of resources each year to produce the goods and services, which we all consume. On an average, a person in North America consumes about 90kg per day, in Europe consumption is about 36kg of resources per day, in Asia consumption is about 14kg and a person in Africa consumes about 10kg of resources per day. People consume natural resources in three major forms - Food and drink, Housing and infrastructure, and Mobility. These three make up more than 60% of the resource use.

**Food and Drink:** This, include agricultural products as well as naturally available foods such as food-grains, fish from fresh water and seas, seeds and nuts, medicines, herbs and plants. They also include drinking water, as well as water for sanitation and household use.

**Mobility:** This includes automobiles, trains, water vessels, airplanes together with all the fuel from natural resources that power them.

**Housing and Infrastructure:** The houses, public places, roads and constructed objects, all the energy for heating and cooling that we consume in our homes come from the wood, metals, stone and other materials. Beyond these three major areas of resource consumption, we consume much more resources from our environment on a daily basis. The role of natural resources in sustaining life on earth is extremely important and we must ensure that we protect the environment and also make it easy for it to replenish itself naturally.

#### **Natural resources are the bases of life.**

**Source of Fresh Air and Water** - Life without air and water is impossible and natural environment is the source of fresh air, water necessary for all living and non-living things on earth. If these important sources are polluted, it will affect all the living beings on earth. Nature always seems to apply its natural processes to refine and purify them.

**Habitat** - Soil, forests and water are the habitat of different animals. Human beings use soil, water, minerals and forest resources for building houses, bridges and roads. Soil is the habitat of micro - organisms, insects, worms and plants. Water is habitat for aquatic animals. Forest is the living place of wild animals and it also purifies the environment by reducing the CO<sub>2</sub> level and other various harmful and poisonous gases in the atmosphere. Without forest and trees help in the increase in rainfall.

**Source of Food** - The land and forest are important natural resources and good source of food to living beings.

**Natural Beauty** - Natural beauty of a country attract tourists from different places and leads to the economic growth of the country. Tourism industry flourishes and develops contributing to the National Economy of the country. It also helps for the development of tourism industry by attracting tourists.

**Economic Development** - Economic development of a nation depends on the availability and utility of its natural resources. Proper use of natural resources helps in the economic development. Agriculture and industrial development depend upon the availability of these resources. Natural resources help for the tourism development and increase revenue.

**Area of Study and Research** - Nature is a vast and complex phenomenon. It is so wide that even a tiny part of it is enough for conducting study and research programs.

### **Problems associated with Natural Resources:**

Even though natural resources are the basic support structures of life, too much or too little off it can come with a lot of trouble and conflict.

**Too little Natural Resources:** In many regions of the world a mix of limited resources, overpopulation and environmental degradation, ecological imbalance, has produced extreme poverty and income inequality in the society which in turn have fueled grievances, rebellions, conflicts and communal wars in the society resulting in the destruction of the available natural resources.

**Too much Natural Resources:** This problem is much bigger in regions with excess natural resources. Greed, corruption, and conflict from revenue distribution, resource ownership, decision making, management, and access has fueled local and international conflict.

#### **Threats to Natural Resources**

**Overpopulation:** This is probably the most significant, single threat that natural resources face. Increasing population at a faster rate puts more pressure on the available natural resources.

**Land Use:** Increasing population leads to more demand for food and in turn this leads to more land under cultivation to increase food production and more land for building houses for the increasing population. Green revolution fulfilled the need for food for the increasing population by making use of hybrid seeds, chemical fertilizers, pesticides, insecticides and fungicides. This technology used small piece of land giving more agricultural production. Many forest or vegetative lands converted to settlements for people, roads and farms. These have serious repercussions on natural resources.

**Forests:** Forests were cut to a large extent to fulfill mainly the demand for wood for human settlements and for fuel purpose resulting in deforestation.

**Fishing:** Fishery occupation is also on the verge of being destroyed slowly due to mechanization in this business. Fishing for subsistence by fishermen at local level did not harm the water ecology. But big companies with big trolleys have created big problems not only for the local fishermen but also to the seafood chain in the sea and oceans. The big trolleys catch fish overall not leaving the next generation small fish to survive. Big and small fish are caught together which results in the decrease in the number of fishes to lay eggs and thereby destroying the fish and other creatures in the sea.

**Need for more:** Human's demand for a comfortable and luxurious life. For this more the development more the destruction of ecology and the surrounding habitat in the environment. Human settlements, transportation, communication, entertainment, recreations are some of the demands, which are fulfilled by destroying mother earth. If all this is done without harming the nature it is more beneficial or else the destruction is for sure by facing the problems of rainfall, drinking water, soil erosion, air pollution, water pollution, sound pollution, ecological imbalance, natural scenic beauty, etc.

#### **Climate Change**

The changes in climate pattern as a result of excessive anthropogenic CO<sub>2</sub> is hurting biodiversity and many other biotic and abiotic natural resources. Species that have acquainted to their environments might perish and others will have to move to more favourable conditions to survive.

#### **Environmental Pollution**

Land, water and air pollution directly affect the health of the environments in which they occur. Pollution affects the chemical composition of soils, rocks, lands, ocean water, freshwater and underground water, and other natural phenomena. This often has disastrous consequences in the environment and the living and non-living things on earth.

#### **Resource Recovery:**

Now-a-days waste is viewed as a potential resource and not something that must end up in the landfill. From paper, plastics, wood, metals and even wastewater, experts believe that each component of waste can be tapped and turned into something very useful. All these waste can be recycled and reused. Wastewater can be treated and used for kitchen gardens, agricultural purpose, in industries. Plastic also can be recycled and reused, paper is recycled, metals also can be recycled and reused for different purposes. Fossil fuel used by the pulp and paper industry largely through energy efficiency measures, power recovery through co-generation and increased use of biomass. Resource recovery is the separation of certain materials from the waste we produce, with the aim of using them again or turning them into new raw materials to be used again and again.

#### **Conclusion:**

Human beings always strive for their development. For this he makes use of the different factors available in the nature for example - animals, land, plants etc. his progress and prosperity depend on the available natural resources. But in the developmental process man has started destroying the natural resources

available to him, which has created problems of environmental imbalance and global warming. So it is very essential for man to make use of the available natural resources very carefully.

For the survival of human being man has to conserve these available natural resources. Human being is always in search of way to develop him-self and with the available technique & technology, research and hard work he always has tried to raise his standard of living. Now-a-days waste is viewed as a potential resource and not something that must end up in the landfill. From paper, plastics, wood, metals and even wastewater, experts believe that each component of waste can be tapped and turned into something very useful.

**References:**

1. <https://www.britannica.com/place/India/Resources-and-power>
2. <https://www.india.gov.in/topics/environment-forest/natural-resources>
3. <https://www.biologydiscussion.com/natural-resources/natural-resources-of-india-availability-and-problems/16685>
4. <https://www.reachtheworld.org/allisons-journey-india/world-connections/natural-resources-india>
5. <https://www.downtoearth.org.in/news/urbanisation/india-loses-natural-resources-to-economic-growth-report-61836>
6. <https://www.yourarticlelibrary.com/economics/what-are-the-different-types-of-natural-resources-produced-in-india/2683>
7. <https://play.google.com/store/apps/details?id=com.olm.magtapp>

## **Problems Of Higher Education In Bihar : A Study**

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**Abstract :-** Bihar is a famous historical state located in the north –eastern part of India and its capital is Patna. Bihar’s heritage has been glorious in the field of higher education. Since ancient times, Bihar has got a different identity in the field of education. Nalanda university, Odantpuri University and Vikramshila University located in Bihar was the oldest university in the world. Dr. Rajendra Prasad , the first president of independent India, was also born in Bihar. The literacy rate in this state, which enjoys the distinction of being the center of education in the world, has decreased from other states. My research study is related to the problems of 13 government universities and colleges of Bihar state. The name of Patna university comes first in the government universities of Bihar state. Even in this university, half the teachers are working from the sanctioned post. Hence also the problem of regular teachers remains. Similarly ,there is a severe shortage of regular teachers in the government universities and colleges of Bihar state. There are many reasons for the problems of higher education in Bihar ,the biggest reason among them is the lack of teachers , which has been there for decades. So , there should be restoration of regular teachers in Bihar so that the problems of teachers can be removed and students can get quality education.  
Education, Teacher shortage, Sanctioned post, Regular reinstatement.

### **Introduction :**

Bihar’s heritage has been glorious in the field of higher education. Since ancient times , Bihar has got a different identity in the field of education. Bihar has been a famous place of education since time immemorial. It has been the land of enlightenment for the founders of some of the major religions of the world like Buddhism , Jainism and Sikhism. Bihar is a famous historical state located in the north – eastern part of India and its capital is Patna. Present Bihar is made up of various historical regions. The regions of Bihar such as Magadha, Mithila and religious texts are described in the epics of ancient India. Dr. Rajendra Prasad , the first president of independent India ,was also born in Bihar. Nalanda university located in the Bihar was the oldest university in the world. Bihar is the holy land, where is the birthplace of Mother Sita, it is the Tapobhoomi of Gautam Buddha. Bihar is the place where Ganga, Bagmati, Koshi, Kamala, Gandak, Ghaghara, Son , Punpun, Phalgu, Kiul rivers flow. The literacy rate in this state ,which enjoys the distinction of being the center of education in the world ,has decreased from other states. Before independence, Bihar was one of the major educational centers of Eastern India. Major educational reforms were implemented in the 1960s by the then Education Minister and educationist Late Satendra Narayan Sinha to streamline the education structure of the state. At present ,the number of government universities in the state of Bihar is 13. My research study is related to the problems of government universities in Bihar.

### **The government universities in the state of Bihar are as follows :**

The name of Patna University comes first in the government universities of Bihar state. If you look at the history of Patna university, this university was established in 1 October 1917 and even today’s this university is known as the most prestigious university of Bihar. It was established as the seventh oldest independent university in the Indian subcontinent. It is located on the bank of the Ganges on either side of the Ashok Rajpath in Patna. The major colleges of this university are Patna College, Science College, Commerce College, Bihar National College and Magadha women’s College etc. There is a huge shortage of teachers in Patna university. The post of Assistant Professor to professor is vacant. The posts of Associate Professor and Professors never get reinstated. If these posts are also filled, then there will be no shortage of teachers in the university. According to the vice chancellor of the university, Prof. Giris Kumar Chaudhary ,about 72 percent of the posts of teachers are vacant. According to him, only Assistant professor should not be reinstated ,but we should also reinstated Associated Professor and Professor. By the way, we have 592 posts of Assistant professor, 144 of Associate Professors , while there are 69 posts of professor. All together it is 805 but from the university department to the various colleges ,there are about 225 teachers are teaching. From this it can be estimated that how education can be expected in a university where more than half the posts are vacant. About 72 guest teachers have been reinstated in different subjects in this university, yet there is a severe shortage of teachers. In the absence of a regular teacher, the research student does not get a supervisor. In Patna University ,the principal of all the colleges is obliged to run regular classes from the Adhoc Teacher through the managerial arrangement. Patna Univeristy is the oldest and most prestigious of the 13 university of the Bihar. When 72% posts of teachers are vacant in it,

than the situation of other universities can be easily understood. If the posts of so many professors are vacant then how can we expect better and quality education Patna college is the oldest institution of higher education in Bihar. This college was established on 9 January 1863 during the British Raj. This college is a constituent unit of Patna university. Patna college has been the talent capital of Bihar. Patna college has contributed immensely in the development of Bihar. At present there are total 61 sanctioned posts of teachers. In which only 18 regular teachers and four guest teachers are working. There is an enrollment of about 12,000 students including undergraduate, postgraduate and vocational courses. There are 17 departments in this college, some department do not have a single regular teacher. The college which was once known as the "Oxford of the East". Today there is a severe shortage of teachers in this college. Higher education can not be envisaged here and research work can not be done smoothly. Due to non-reinstatement of regular teachers, problems of higher education remain in Patna college. Similarly, there is a severe shortage of teachers in all the colleges under Patna university. Manjhi Bhagalpur university was established on 12 July 1960. This university is a public university in Bihar. It is located in Bhagalpur district. This university is named after the famous revolutionary Tilka Manjhi. Under this university, graduation, Post graduation and vocational courses are taught. Hence the number of sanctioned posts including postgraduate department and various colleges is about 899. 129 guest teachers have been reinstated in this university, yet more than half of the regular teachers posts are vacant. There are serious problems of regular teachers in this university.

**Similarly,**

1. Babasaheb Bhimrao Ambedkar Bihar University Muzzafarpur.
2. Kameshwar Singh Darbhanga Sanskrit University, Darbhanga.
3. Magadh Univeristy Bodh Gaya
4. Lalit Narayan Mithila University, Darbhanga.
5. Jai Prakash University, Chhapra.
6. B.N.M.U Madhepura.
7. Veer Kunwar Singh University, Ara
8. Maulana Mazharul Haque Arabic and Persian University, Patna.
9. Purnea university Purnea.
10. Patliputra University, Patna.
11. Munger University, Munger.

approved posts are also vacant for a long time. Accor The condition of higher education in all these government universities and colleges of Bihar state is embarrassing. Now if we look at the higher education system of Bihar, we find that there is a complete lack of quality based education from lower to higher education. If we look at the education system of Bihar, than the picture that emerges is not going to bother from anywhere. The education system of a state where more than half the sanctioned posts are vacant in all government universities and colleges seems to be embarrassing. If we observe the student teacher ratio in higher education on a world scale, then we find that the condition of the country is very pathetic. In the country where the student –teacher ratio was 25:1, in Brazil and China it is 19:1, in the UK it is 16:1, in Russia it is 10:1 and in Canada it is 9:1. Although in the New Education Policy 2021, the government of India has set a target of 1 on 25 or 30, perhaps just to tell the world the figures, while the ground reality is something else. The government is only engaged in collecting okre. According to the Education Quality Upgradation and Inclusion Program report, due to the pathetic condition of student-teacher ratio, pressure on teachers has increased, students are getting less time and research projects are not being done. There are many such colleges in Bihar in which there is not a single regular teacher in any department. If the ratio of student and teacher is seen in the colleges here, in some colleges one teacher is working for 500 students. Thus it is clear that here on one hand the number of students is increasing every year and the number of teachers is decreasing, on the other hand, the post created in the college since its inception remains the same. In such a situation, achieving the purpose of education mentioned above is like a daydream. This is only increasing the literacy rate. Bihar government should avoid the appointment of category wise teachers, so that the youth of Bihar can get quality education. There are many reasons for the problems of higher education in Bihar, the biggest reason among them is the lack of teachers, which has been there for decades. The talk of creation of additional posts of teachers in 13 universities and colleges of Bihar state remained for away, most of the previously ding to the research study, about 25 percent sanctioned posts are vacant in the postgraduate departments and colleges of the government universities of Bihar state. About 1600 guest teachers have been reinstated in the state of Bihar, yet there is a severe shortage of teachers. Vocational courses are taught in all the universities and colleges of Bihar state, yet the post of regular teachers are not created. All the institute here are bound to run classes with

Adhoc teacher through managerial system. The process of restoration is going on by the Bihar government , it is difficult to predict when the regular teachers will be available to the universities and colleges. There should be restoration of regular teachers in Bihar so that the problems of teachers can be removed and students can get quality education.

**Reference Book :-**

1. Bharat Main Shiksha Vyavastha ka Vikas. M.K.Mishra , U.P Sharma.
2. Bhartiya Samaj Main Shiksha – Dr. P.D Sharma.
  - a. Publisher Shri Vinod Pustak Mandir.
3. Bhartiya Shiksha ki Samsamayik Samasyayein- Dr. Ram Sharkad Pandey, Dr. Karuna Shankar Mishra.
4. Shiksha Evam Itihas – Jagmohan Singh Rajput.

## **Affect Of Family Climate And Well-Being On Spiritual Intelligence Among Adolescents.**

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**Abstract :** Adolescence is a period of many changes and transitions. This period includes changes in the physical, mental, social, and spiritual outlook of a person. During this period adolescents are not fully prepared to manage stress. The basis for healthy development can be served by spiritual intelligence among adolescents. Spiritual intelligence presents richer perspectives of life. The purpose of the study was to find out the Affect of Family Climate and Well-Being on Spiritual Intelligence among Adolescents In this study, **100** people were selected from the age group 13-17 yrs, in which 50 were males and 50 females through **the Simple Random Sampling method** to determine the relationship. For data collection, the Spiritual Intelligence scale by Dr. Misra, K.S. (2014), the Family climate scale by Shah, Beena (2006), and the Well-being scale by Singh, J. and Gupta, A. (2001) were used. Data were analyzed through SPSS, Pearson Correlation Coefficient was used to see the relationship among variables. In correlation, it was found that there is a positive and significant relationship between the spiritual intelligence of adolescents with family climate ( $\rho=0.61$ ). Also, the coefficient of correlation of spiritual intelligence of adolescents with well-being came out to be positive and significant ( $\rho=0.34$ ).

**Keywords:** Spiritual intelligence, family climate, adolescents, well-being.

### **Spiritual Intelligence**

Spiritual intelligence is made up of two words 'Spiritual and Intelligence'. The word 'spiritual' can again be broken off to the word 'spirit'. The word spirit has been derived from the Latin word 'spiritus' which means "breath" or "soul". The term 'soul' is regarded as a metaphysical concept in philosophy. The soul is considered as an immaterial force within a human being thought to give the body life, energy, and power. According to religion, the soul has no physical or material existence.

### **Concept of Spirituality**

Now we will discuss the concept of spirituality. Spirituality may have many perspectives. Some people believe that spirituality is God or spirit or the source of all that is, which is outside of you. But some believe that spirituality is inside of us. In general, spirituality is about knowing all about your spirit or soul. It is about the understanding of your spiritual qualities such as love, peace, purity, and bliss. Being spiritual means the capacity to see every human being as a soul or spirit. We can go beyond the limits of all wrong identities such as caste, color, gender nationality, and religion. Spirituality is highly personal. Many of the authors have defined spirituality according to their perspectives.

**Astrow, Pulchalski and Sulmasy (2001)** defined spirituality as a search for transcendent meaning which can be expressed in religious practice or expressed exclusively in their relationship to nature, music, a set of philosophical beliefs, the arts, or relationships with and family and friends.

### **Intelligence**

Intelligence is the capacity or relational, constructive creative, and original thinking directed to the attainment of some end. It is the ability to learn, the ability to solve problems, and the ability to make adjustments. Many psychologists tried to define Intelligence.

**Binet** defined Intelligence as the capacity to think well, to judge well, and to be self-critical.

**Wechsler** defined it as the aggregate or global capacity of the individual to act purposefully, to think rationally, and to deal effectively with the environment.

### **Concept of Spiritual Intelligence**

Spiritual intelligence is the expression of inner spiritual qualities through our thinking, deeds, and point of view. With inner strength of mind and spirit and its connection with existence in the universe, spiritual intelligence is used. Spiritual intelligence is our capacity to acquire an accurate and deep understanding of multiple levels of awareness. Spiritual intelligence enlarges our ability to understand others at the inmost level.

### **Origin of Spiritual Intelligence**

**Danah Zohar** was the first psychiatrist who coined the term "Spiritual Intelligence". In the book '**Rewiring the Corporate Brain**' in 1997 by Danah Zohar, the concept of spiritual intelligence was introduced. The concept of spiritual intelligence was also suggested by Ken O 'Donnel (an

Australian author and consultant) in his book *Endo- quality-* the emotional and spiritual aspects of the living person in associations.

**Wolman (2001)** described spiritual intelligence as it is the human capability to enquire about ideal questions regarding the meaning of life and to feel at the same time the precise relationship among each of us and the universe we exist in.

**King in 2008** introduced a new paradigm of spiritual intelligence. Spiritual intelligence is, according to him, a collection of intellectual abilities focused on non-material and transcendent dimensions of reality.

### **Family Climate**

Family Climate is constituted by two words: family and climate. Family is considered to be the first agency of socialisation. The family is responsible for the growth and development of its all family members. Family provides a protective environment for its members and here in the family, each child grows physically, emotionally, and mentally. The basic requirements of children are fulfilled in the family. The miniature form of society is family and family is preserved by the society. An individual is also a small unit of society. The requirements of children are satisfied in their family. Family assists the mental, physical, and psychological growth of children. Psychologists, sociologists, educationists agree that the development of a child is mostly affected by the family. The word 'Family' has been derived from the Roman Word 'famulus' which means a servant. Family is that small unit where children learn to behave within society. Here are some definitions of the family.

**Burgess and Locke (1963)** define family as to where a group of individuals united by the bond of marriage, blood, or adoption living together in a single house. These persons communicate with each other while playing their respective social roles of husband and wife, mother and father, son and daughter, brother and sister thus help in establishing and sustaining a shared culture."

Family offers the early external impact on the child's personality that persists throughout the whole life. Family is an important factor that helps in shaping one's mental capabilities along with their physical and social structure. The favorable family climate can help in making an average person into a well-defined personality but all the chances for the success of a smart person can be ruined by an unfavorable family climate.

Family Climate refers to the climate prevailing in the family, which varies from family-to-family, society-to-society, and culture-to-culture. Family Climate can be explained as the combination of all the physical and psychological conditions that determine the growth and development of an individual. Family Climate can be regarded as a system where the behavior and relationship among all family members are interdependent. Better family climate leads to better performance and better adjustment..

### **Well-Being**

In today's society, well-being is a topic of great importance. Well-being refers to the internal or personal sense of joy, a person's place in the world of work, feeling of attainment, usefulness, attachment, contentment with experiences of life, and absence of distress, dissatisfaction, or worry. Well-being is the contented condition of feeling healthy, happy, and successful. Well-being unites mental health (mind) and physical health (body) which results in more general approaches to disease prevention and health promotion. Well-being is a term that involves the existence of positive emotions and moods (e.g. contentment, happiness), the absence of negative emotions (e.g. depression, anxiety) satisfaction with life, fulfillment, and positive functioning. It is the state of an individual or group. An individual or group's positive condition in some sense refers to the high level of well-being.

### **Significance Of The Study**

The study of spiritual intelligence relies on self-reporting. A self-assessment that positively checked the validity of the criterion and defined validity. This study will tell us about the measurement of spiritual intelligence among adolescents. The higher aspect of intelligence is spiritual intelligence. Spiritual intelligence operates the attributes and capacities of the genuine self in the form of empathy, insight, cohesion, delight, imagination, affection, and peace. This study will show the result in a perception of profound motive and sense, merged with refinements in a broad range of major skills of work and skills of life.

The emotional and spiritual environment of the family greatly influences the spiritual intelligence of adolescents. The formation of beliefs and ideas about the essence of God is largely affected by the family climate. Family is an important factor in developing spiritual values among

adolescents. Family plays a major role in the development of spiritual intelligence and spiritual recognition among adolescents. Better family background can help in developing spiritual feelings among adolescents. Spiritual intelligence helps adolescents to cope better with illness and stress. Spiritually intelligent people face less stress in their life. Spiritual intelligence helps in promoting the healthy development and 0 between spiritual intelligence and the family climate of adolescents.

1. There is no significant relationship between spiritual intelligence and the well-being of Adolescents.

In this study, sample size of **100** people were selected from the age group 13-17 yrs, out of which 50 were males and 50 females 0

<b>Variables</b>	<b>Mean</b>	<b>Median</b>	<b>S.D.</b>
<b>Spiritual Intelligence</b>	158.05	147	21.24
<b>Family Climate</b>	138.19	111.40	18.01
<b>Well-Being</b>	138.36	163	17.98

Table 1 indicates the mean, median and standard deviation values of the adolescents spiritual intelligence variable are 158.05, 147.00 and 21.24; Family Climate Variables are 138.19, 111.40 and 18.01 and Well-being Variables are 138.36, 163 and 17.98.

**Table No. 2: Correlation Matrix of Spiritual Intelligence of Adolescents with Family Climate and Well-Being (N=36)**

<b>Variables</b>	<b>Spiritual Intelligence</b>	<b>Family Climate</b>	<b>Well-being</b>
<b>Spiritual Intelligence</b>	1	0.61	0.34
<b>Family Climate</b>		1	
<b>Well-being</b>			1

Table 2 indicates that there is a positive and significant relationship of spiritual intelligence of adolescents with family climate. Also, the coefficient of correlation of spiritual intelligence of adolescents with well-being came out to be positive and significant ( $r=0.22$ ;  $p<0.05$ ).

### **Conclusion:**

In correlation, it was found that there is a positive and significant relationship between the spiritual intelligence of adolescents with family climate ( $\rho=0.61$ ). Also, the coefficient of correlation of the spiritual intelligence of adolescents with well-being came out to be positive and significant ( $\rho=0.34$ ).

### **Delimitations of the Study:**

- 1) The data is delimited to only Lucknow districts of Uttar Pradesh.
- 2) The data is restricted to 100 adolescents of age group 13-17 years.
- 3) The study is restricted to Kendriya Vidhyalaya Aliganj School.
- 4) The study is restricted to the students of the 8th-11th grade.
- 5) The present study is delimited to the variables of spiritual intelligence, family climate, and well-being.

### **Educational implications:**

1. Parents should provide moral spiritual assistance to their children.
2. Teachers should install spirituality by the means of curriculum and by adopting a pedagogy that is respectful to the values of all students.
3. Attention should be given to improve family climate which will help the students to have good spiritual intelligence.

4. Yoga activities should be practiced in the educational institutions for the enrichment of spiritual intelligence of the students.
5. Lectures should be organised on value education especially in schools.
6. Concept of spirituality should be included in the syllabus of school education to make sure the spiritual development of the students.
7. Parents should try to create a healthy atmosphere in their homes. They should behave with their children sympathetically and affectionately, so that they feel secure.
8. Schools need to start to train the students to make use of their spiritual intelligence effectively to create social platform, promote contact and strengthen the idea of learning how to live together with each other.
9. Teachers should be spiritually develop enough to deal with the emotional and spiritual necessities of the students.
10. Some meditational activities may also prove useful for the students.

**References:**

1. Akhter, S. (2015). Psychological well-being and emotional intelligence in relation to students ' gender differences. *The International Journal of Indian Psychology*, 2(4), 153- 161.
2. Astrow, A., Pulchalski, C. & Sulmasy, D. (2001). Religion, spirituality, and health care: Social, ethical, and practical considerations. Retrieved on Feb 23, 2019 from <https://www.researchgate.net>
3. Banerjee, R., Pathak, R. & Yadav, S. (2019). Family relationship and spiritual intelligence: with reference to students of professional courses. Retrieved on Feb 4, 2019 from <https://ssrn.com/abstract>
4. Burges, E.W. & Locke, H.J. (1963). *The family: From, institution to companionship*. 3rd Ed, New York: American Book Company.
5. Coles, R. (1990). *The spirituality of children*. Boston, Houghton-Mifflin Co.
6. Daud, S. (2015). A co relational study of spiritual intelligence and mental health of 12th science students. *Journal of Contemporary Psychological Research*, 2, 56-59.
7. Devi, P. & Kumar, M. (2014). Relationship between family environment well-being: A study of adolescents. Retrieved on Feb 1, 2019 from [www.ijifr.com](http://www.ijifr.com)
8. Devi, R. K., Nakulan, V.R. & Devi, M.A. (2017). Study of spiritual Intelligence and adjustment among arts and science college students. Retrieved on Jan 6, 2019 from <https://pubmed.ncbi.nlm.nih.gov>
9. Diener, E. & Suh, E. (1997). Measuring quality of life: Economic, social, and subjective indicators. *Social Indicators Research*, 40 (1-2), 189-216.
10. Donnel, K. (1997). Endoquality-as dimensoesemocionais e spirituals do serhumanonasorganizacoes. Brazil, Casa da Qualidade.
11. Hannan, A. A. (2008). Intelligence, emotional intelligence and spiritual intelligence as related to academic achievement of adolescents. Unpublished Master in Education Dissertation, Panjab University, Chandigarh.
12. Hansain, N. & Ansari, A.S.S. (2011). Spirituality and happiness as correlates of well- being in religious women. Retrieved on Feb 21, 2019 from <https://www.researchgate.net>
13. Jaya, A.T. & Joseph, M.I. (2012). Relationship among spiritual intelligence, emotional intelligence and subjective well-being. *Journal of Indian Academy of Applied Psychology*, 38(3), 175-183.
14. King, D.B. (2008). The spiritual intelligence self report inventory. Retrieved on 24 March, 2019 from [http://www.dbking.net/spiritual intelligence](http://www.dbking.net/spiritual%20intelligence).
15. Kocayoruk, E., Altintas, E. & Icbay, M.A. (2015). The perceived parental support, autonomous-self and well-being of adolescents: A cluster analysis approach. *Journal of Child and Family Studies*, 24(6), 1819-1828.
16. Kumar, R. & Lal, R. (2014). A study of pattern of relationship between academic achievement and family environment. *The International Journal of Indian Psychology*, 2(1).
17. Lawrence, A.S. (2017). General well-being of higher secondary students. *Journal on Educational Psychology*, 10(3), 20-27.
18. Mishra, G.S. (2012). The correlates of academic achievement in adolescents. *Indian Journal of Research*, 1(11).
19. Misra, S.K. (2014). *Manual of spiritual intelligence scale*. Agra: National Psychological corporation.

20. Mohammadyari, G. (2012). Relationship between parent's spiritual intelligence, level of education and children's mental health. *Social and Behavioral sciences*, 69, 2114-2118.
21. Mohr, W. (2006). Spiritual issues in psychiatric care. Retrieved on Jan 17, 2019 from <https://onlinelibrary.wiley.com>
22. Moosa, J. & Ali, N. M. (2011). The study relationship between parenting styles and spiritual intelligence. *Journal of Life Science and Biomedicine*, 1(1), 24-27.
23. Naik, P.K. & Shukla, R. (2018). Impact of home environment on social and emotional intelligence of adolescents: A study. *International Journal of Advanced Education and Research*, 3(5), 47-51.
24. National Survey of Child and Adolescents Well-Being (NSCAW) (1997-2014). Research Project. Washington DC: Office of Planning, Research & Evaluation.
25. Paul, E., Martin, A.J. & Ivcevic, Z. (2018). Personality, Coping and School well-being: An investigation of high school students. *Social Psychology of Education: An International Journal*, 21(5), 1061-1080.
26. Rani, F. & Bala, M. (2017). Comparative study of emotional intelligence of kendriyavidyalya and public schools students in relation to their family climate. *Educational Quest. An International Journal of Education and Applied Social Science*, 8, 277-282.
27. Rani, M. & Latha (2005). Perceived family environment in relation to adjustment and academic achievement. *Journal of the Indian Academy of Applied Psychology*, 31(1), 18- 23.
28. Rapheal, J., Damodaran, D.K. & Paul, V.K. (2014). Influence of home environment on adolescent psychological well-being. *The International Journal of Indian Psychology*, 2(1), 47-58.
29. Shah, B. (1989). Home adjustment of adolescents 'student: Effect of family climate, *Indian Educational Review, Vocational*, 24(3), 125-132.
30. Shah, B. (2006). *Manual of family climate Scale*. Agra: National Psychological Corporation.
31. Shah, H. & Marks, N. (2004). *A well-being manifesto for a flourishing society*. London: New Economics Foundation. Retrieved on Feb 6, 2019 from <http://www.neweconomics.org>
32. Shamoo, A.E. & Resnik, B.R. (2003). *Responsible Conduct of Research*. New York, Oxford University Press.
33. Singh, J. & Gupta, A. (2001). Well-being scale. *Recent Researches in Education and Psychology*, 6.
34. Singh, J.K. (2015). A correlation study of aggression, emotional intelligence and well- being among judo players. Retrieved on Jan 19, 2019 from [www.erpublications.com](http://www.erpublications.com)
35. Relationship between different types of educational, emotional and spiritual intelligence and second grade high school female students' religious orientation in Sari, Iran. Retrieved on March 22, 2019 from <https://www.semanticscholar.org>
36. Wolman, R.N. (2001). *Thinking with your soul: Spiritual intelligence and why it matters*. New York: Harmony Books.
37. Zamani, M.R. & Karimi, F. (2015). Relationship between spiritual intelligence and job satisfaction among female high school teachers. Retrieved on Jan 7, 2019 from <https://academicjournals.org>
38. Zohar, D. & Marshall, I. (2000). *SQ: Connecting with our spiritual intelligence*. New York: Bloomsbury Publishing.
39. Zohar, D. (1997). *Rewiring the corporate brain: Using the new science to rethink how we structure and lead organizations*. San Francisco, Berrett-Koehler Publishers.

## **R. K. Laxman's Art Of Cartooning: Reflection Of Contemporaneous Public Mood**

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**Abstract :** The art of cartooning has multiple features. Cartoons have created to exchange a few words and pass on messages, ideas, and judgments about the contemporary affairs and events. Sometimes ideas are light-hearted, pinching, contemptuous, savage or compassionate and sympathetic. Cartoonists use symbols, colours and signs to point out the eminent personalities of the world. It has also considered as a drawing representing existing public figures or issues. Generally cartoons are regarded as amusing pieces designed most especially to bring to mind mirth. The art of cartooning is the live telecast of the day today events in the world. An art of cartoon never torments the people but it forces us to think over the hilarious and comical behaviour of the socio-political celebrities. Cartoons have used to mock at people, issues in the country and political leaders. Cartoons use to depict the triviality of the ridiculed persons, parties or issues involved. In general, cartoon defined as a drawing to portray humorous situation, often accompanied by a caption or subtitle. A cartoon is a drawing representing existing public figures or issues. Cartoons carry one line and pictorial jokes.

**Keywords:-** Cartooning, Reflection, Contemporaneous, Public Mood. For the present research paper, the researcher has used explorative method. Laxman's cartoons will be read and selected cartoons will be studied and a message is given to the readers in deviant manner

### **Introduction:**

In general, a cartoon defined as a drawing depicting humorous situations, often accompanied by a caption. The word cartoon derived from the Italian 'cartone' and the Dutch word 'kartone', meaning heavy paper or pasteboard. According to Oxford Advanced Learners Dictionary, "a cartoon is a form of two dimensional illustrated visual arts", while the specific definition has changed over time. Modern usage refers to a typically non-realistic drawing or painting. Cartoons intended for satire, caricature, humor, or the artistic style of such work. Cartoons have been used for creativity rather than criticism. Cartoons show distorted image of the society not the destructive one. Cartoons try to detract the recklessness and foolishness of the person. Cartoons generate laughter rather than insulting anybody. There are different types of cartoons political or editorial cartoon, comic strips, web comics or animation, and movie cartoons. Cartoons are used to create an art of tapestry in the Anglo-Saxon age. In the same age, art of cartooning developed to create paintings to put onto walls. In the 17<sup>th</sup> century, William Hogarth made humorous and funny cartoons about the political subjects, such as poverty, war, riots, elections and religious conflicts. Political cartoons create the lifelike picture of the society. Political cartoons personify socio-political leaders. Cartoons tatter the hollow image of the self-declared great personalities. Political cartoons manipulate the image of politics into a monster or the ruffian. The purpose of political cartoons is not to abuse the image of them but to laugh at. Political cartoons are utilized to focus on the current situations. Cartoons throw light on the political policies and decisions, which have declared and stopped by the government. A cartoonist opines on the ongoing conditions and tries to disclose it. It corrects the stupidity and faults of the society. Cartoons and cartoonists are divulging and exposing the reality of the present conditions with hilarity. Political cartoons and cartoonists give final and comic comment over the situation to lesson down the impact of serious or comic political scenario. Cartoons not only entertain but also pinch the human beings over the grave mistakes of the social and political life. Comic strips had published in newspaper to tell the funny stories in a series of pictures that is why they have called comic strips. Comic strips cartoons scroll down to show different characteristics of constant events of political affairs. Gag cartoons are the type of cartoon, which found on the greeting cards to draw the laughing images or pictures. The art of cartooning has multiple features. Cartoons have created to communicate and pass on messages, ideas, and judgments about the current affairs and events. Sometimes ideas are light-hearted, pinching, mocking, savage or sympathetic. Cartoonists use symbols, colours and signs to indicate the famous personalities of the world. It has also considered as a drawing representing current public figures or issues. Generally cartoons are regarded as humorous pieces designed most especially to evoke mirth. Cartoons are the live telecast of the day today events in the world. An art of cartoon never tortures the people but it forces us to think over the hilarious behaviour of the socio-political celebrities. Cartoons have used to scoff at people, issues in the country and political leaders. Cartoons use to depict the worthlessness of the ridiculed persons, parties or issues involved. In general, cartoon defined as a drawing depicting humorous situation, often accompanied by a caption or subtitle. A cartoon is a drawing representing current public figures or issues. Cartoons bring one line and pictorial jokes. The basic aim of a cartoon is to draw attention towards contradictions in social and political spheres of human life. It exposes the

imbecility, double standard and duplicity in human behavior and thereby results into corrective laughter. Cartoon is normally humorous but may be positively savage. A cartoon is very expressive in the sense that it is more effectively revealing than a bland or weak article. Cartoons allow us to laugh by attracting our concentration to something that is bizarre, unexpected and abnormal. Cartoons and cartoonists focus on the aspects of an eminent personality in the field of politics, social work, cinema, business and so on. The intention is not to rub the wrong way or to criticize with a view to correcting them. The objective of the cartoonist is 'correction through entertainment'. The readers enjoy the fuzzy and nebulous portrait of a political and social person and feel surprised. Cartoon, an art is very lucid to understand. Cartoons are very clear-cut, specific and straightforward to point out vagueness, absentmindedness and opaqueness of the socio-political issues. Cartoons remark on a variety of topics- private and public life, national and international associations, love, war, adventures, favouritism, nepotism, corruption, pollution, population, and so on. Cartoons also indirectly jest at the tendency of political leaders who change political parties at the time of elections for their settlement. Cartoons throw light on the general as well particular characteristics of human behaviour. Cartoonists and cartoons have deeper sense of purpose, which help people to come on the moral path. Cartoons enlighten the mood of the readers. Cartoons help to understand the serious problem very effortlessly. Cartoon plays heterogeneous functions as an art form. The cartoon entertains as well as plays didactic, educative and corrective roles in the society. Cartoons help to wash out the evils from the society in a democratic way. Cartoons laugh at the follies and the pretentious tendency of the political leaders. A cartoonist shows rational opposition against the irrational behavior of society. The cartoons create the social awareness. An art of cartooning gives oblique or slanting messages to the society. It is interesting to note that cartoons are used as authentic material for teaching and learning of the English language. A cartoon is primarily a drawing. It is a full-size pattern for accomplishment in painting, tapestry, and mosaic. It is an independent art of entertainment. Cartoons have developed gradually out of a caricature from the 15<sup>th</sup> century. In the Renaissance age cartoon was supposed to be final stage in the painting tradition. In the early 1840s, paintings lost their status; rather cartoons have gained new meanings. Cartoons express themselves in various forms such as parody, and side-by-side placements. Cartoons raise awareness about public various types of happening, political and social trends. Cartoon is an essence of an editorial idea. It is a passing comment and commentary over social unrest and changes. Its intention is to correct the social lethargy as well as follies. Cartoon cannot be regarded just as a harmless drawing. It is a full size pattern for execution in painting, tapestry, mosaic, or other form. To create humorous satire is the basic aim of cartoons. Cartoons are one of the sources of laughter in the modern world. Cartoons can be classified into different types. Political cartoons, social cartoons, captioned cartoons, captionless cartoons, humorous and editorial cartoons, etc. are the types of cartoon. The art of cartooning reached India from England and the United States. It boosted the morale of Indian journalism. It became the vehicle of protest, agitation, and peaceful revolution against the British Raj. It appears that cartooning became an important part of Indian newspapers and magazines. Its appeal lied in altogether different way of looking at the humdrum reality of life. Political cartoons acquired central stage. Consequently, art of political cartooning flourished in India. There is long list of cartoonists who played an important role in developing this tradition. To name a few it begins with Keshav Shankar Pillai, Bal Thackrey, and reaches to the cartoonists like R. K. Laxman, Mangesh Tendulkar, Monick Sorcar, and Sudhir Tailang, Vikas Sabnis, E. P. Unny, Chandi Lahiri.

The following cartoon of the R. K. Laxman will bring into focus the contemporaneous public mood which brings into light the condition of the country through the declared budget.

The economy was hamstrung because of the government's dogged adherence to some outdated models, and weighed down by non-performing public sector enterprises.



It would be inadvisable to close down this sick unit, sir. Thousands would be out of jobs and there would be trouble.

In the above cartoon, Laxman cleverly depicts the stereotypical and clichéd condition of all the government plants, schemes and planning. The art of cartooning used for the study of various grammatical patterns, figures of speech, model auxiliary and other aspects of language. Cartoons can be considered from point of view of infotainment. Let me elucidate the contextual meaning of the cartoon first. This cartoon brings out the factual and wretched picture of the government sector. The cartoon discloses the concealed secrets of the government economy. The cartoonist describes that the economy of our country is on deathbed. In addition, the government bureaucrats are closing the public plants without considering the resource of survival of the common and middle class people. The number of unemployed and jobless people has been increasing day by day but the government and so called political leaders do not even think of dangerous consequences. The government wants to continue the existence of sick units even though they have become liability on the government. These units can not execute effectively and proficiently. It is a dilemma. If the government put up the shutters down these indisposed units, and hundreds and thousands of young generations will lose their jobs within a fraction of moment. On the other hand if the government look after their jobs and allows the sick units to continue to exist, the economy will suffer. In the above cartoon, the speaker/ manager uses the indirect speech act to safeguard the 'face', the public self-image of the listener. The manager in the cartoon responds very courteously to the comment done by the other speaker which we do not know but which is heard by the manager on the telephone. The speaker on the other end is not perceptible to the readers. But he gives direct commands to the listener, manager in the cartoon to shut down the sector. However the readers can see in their mind's eye what the speaker at the other end must have said. The existing comment helps out us to guess what the invisible speaker must have said. Use of direct speech act makes threat to the public image of the listener. The speaker threatens the public image of the manager by passing an order to the manager. The present speaker proposes a suggestion in a deviant manner. He does not act in response in a direct and blunt manner. Had he said, 'sir, your order asking me to shut down the unit is not advisable', he would have threatened and endangered the listeners face. Consequently, his interpersonal relationship with the other person would have been in threat. Therefore he impersonalises his reply to the other persons order. His response, which linguistically discloses itself as, 'sir, it would be inadvisable to close down this sick unit'. Even this indirectly unfavourable response is likely to insult the other person. This threat is minimized or even neutralized when the speaker offers a clarification which offers the reason why closer of sick units is not prudent. The speaker makes use of indirect speech act to save the 'face', public self-image of the listener. The speaker or manager in the cartoon is conscious about the face saving activity in the cartoon. He safeguards the public position of the listener who has a extraordinary social status. He does not intimidate the public figure of the listener. In the cartoon, the speaker maintains the reputation of the listener who may be superior to him. It is the exquisiteness of the politeness principle, which upholds the public self-image of each other. The repetitive use of 'would' describes that the indirect speech act explores the numerous magnitudes of the economy and social situation of the society. On the one hand, skilled young hands are not getting jobs according to their ranks and qualifications and on the other; the government is shutting and selling the mills, industries, companies without making adjustments for the present and upcoming generations. The recent example of Uttar Pradesh and Bihar is the dying reality of the country. The government pounce bread and butter in the hands of middle and working class people. The youngsters are crying for jobs to their hands and government is very busy in election rallies and fake propaganda. The government is filing charges against the young doctors and jobless youngsters who are asking for the jobs. The cartoonist notes down the hilarious and astonishing reaction of the common man on the communication. Through his reaction the readers of the cartoon understand the seriousness of the problem. According to Laxman, "I had not only to show the ministers who mooted policies or programmes; I also had to convey the reactions of those who were affected by government planning and programmes - namely the masses. Each time I had to show in my cartoon not one Indian citizen but several: Tamils, Gujratis, Bangalis, Punjabis, and Maharashtrians. All were Indians of course but their looks, habits, dress varied vastly, I had to draw quite a crowd to indicate the common citizen. Sometimes when I had to work against time because I wasn't inspired early enough in the day, I used to reduce the number of these common citizens. Gradually the reader came to know that the crowd, however small represented the people. I eliminated a few more in the course of time. Finally, there was only me left--- this man. Finally minimized my deadline against and took over the strenuous task of representing the mute millions of the country". (TOT, 143-44) Now let us go back to the cartoon we are discussing. In the above dialogue, it can be said that, the speakers have followed positive politeness strategies of seeking agreement and avoiding disagreement to which they give great importance. By following the positive politeness strategy, the speakers are safeguarding their images in the social relations. This dialogue focuses on the social status and maintaining of each other's public images, which

are important aspects of the politeness principle. Politeness principle maintains the public image and completes the discourse of communication.

**References:-**

1. Laxman, R. K. Laugh with Laxman. New Delhi: Penguin Books (1999).
2. Laxman, R. K. The Best of Laxman. New Delhi: Penguin Books (2005).
3. Laxman, R. K. Brushing up the Years. New Delhi: Penguin Books (2005).
4. Leech, G.N. and Short M.H. Style in Fiction: a Linguistics Introduction to English Fictional Prose. Longman, London and New York, 1981.
5. LoCastro, Virginia. Pragmatics for Language Educators: A Sociolinguistic Perspective. New York: Routledge, 2012.
6. Mey, L. Jacob. Pragmatics: An Introduction. U. S. A.: Blackwell Publishing, 1993.
7. Patil, Z. N. Style in Indian English Fiction. New Delhi: Prestige Books, 1994.
8. Patil, Z. N. Indian English Fiction: A Stylistic Approach. New Delhi: Prestige Books, 2008.

## **Impact of Service Quality And Customer Satisfaction On Customer loyalty Of Public Sector Banks (A Post COVID 19 Study in the State of Bihar)**

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**Abstract:** A Bank is a financial institution which provides different kind of financial services to their different targeted customers. Different kind of products and services are provided by different organizations including banks, but providing only products or services are not sufficient enough, now a day, to be in the competitive market, but quality of products or services matters a lot. For success of any business, loyal and strong customer base is essential for any business and a customer satisfied with the products or services of an organization can only be loyal. The satisfaction of the customer depends upon the quality of services provided by the banks. Through this paper an attempt has been made to find the extent of impact of service quality and customer satisfaction on customer loyalty. For this study primary data has been collected from 422 respondents who belong to different kind of occupation. The total collected data is approx. 70% of total targeted respondents. Data has been presented via different tables, made by using MS excel 2010 as well as Kendall's W test has been used to test the hypothesis. The results of the study shows that banking services are good enough to provide the day to day services to their banking customers, but it is also true that many of the respondents from different category of occupation are not satisfied with the banks because banks are lacking on many aspect of services.

**Keywords:** Banks, Service Quality, Customer Satisfaction, Customer Loyalty, Occupation.

### **Introduction**

A Bank is a financial institution which provides different kind of financial services to their customers (individuals, corporate and groups) like-loans, wealth management, investment services, currency exchange. Apart from above, banks provide different kind of payment and remittance services, overdraft, currency exchange, consultancy, online banking, mobile banking, home banking, investment banking, credit and debit cards, lockers, money transfer also to their customers. Although, products and services are provided by many organizations, but providing only products or services are not sufficient enough to be in the competitive market, but quality of products or services matters a lot. It is all pervasive that success of a service provider depends upon the quality of services provided by the service provider and relation between the service provider and the customer. The service quality, generally, means the output of the service delivery system which is also linked with the consumer satisfaction. Service quality, basically, is a perception of the customers about the services. If the quality of the services provided by the service provider match with perception of the customers about the quality of services, the customer feels satisfied. Higher quality of services results in greater customer satisfaction and greater customer satisfaction results in loyalty of customer towards the organization. A satisfied customer can only be loyal with the organization for products and services. Here, loyalty means an ongoing emotional relationship between the organization and customers which attract customer to engage themselves and repeatedly purchase with same organization and not from others. Service quality affects results of an organization or service provider like improved performance, increased sales, more market share, better relation with customers and ameliorate corporate image. All these factors work on loyalty of customers towards their service provider. Providing a good quality services to their customers have become essential for success and survival for all businesses including banks. In this paper we are going to find out the impact of service quality and customer satisfaction on loyalty of customers. For this research, respondents were asked questions which were based upon the SERVQUAL model. Approximately, three questions have been asked from each dimension of SERVQUAL model i.e. Tangibility, Reliability, Responsiveness, Assurance and Empathy. Kendall's W using SPSS25 has been used for hypothesis testing.

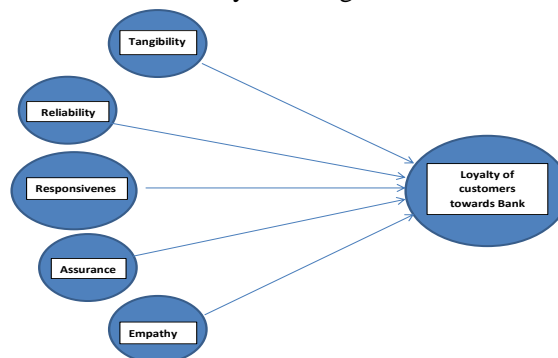
### **Review of Literature**

The author in this study examined an interrelationship among service quality, satisfaction and customer's loyalty by identifying and measuring the variables underlying with this relationship. It is also found that the customer satisfaction and reputation of the bank lead greater loyalty. In the next study, (Okoe, Adjei, & Osarenkhoe, 2013) SERVQUAL dimensions of service quality were used to structure

the questionnaire and data collected was analyzed using one sample T- test of the mean weighted differences between perception and expectation of customers. The findings from this study show that gaps exist between customers' expectations and perceptions of service delivery in all the banks even though the banks performed better on the tangibility dimension. The next study, **(Kamble, Dhume, Raut, & Chaudhuri , 2013)** aimed to assess and compare the perceived level of bank service quality and to investigate the dimensions of quality banking service in private and public sector bank. Results of this study shows that the customers of public sector and private sector banks differ in terms of their service quality perceptions. Another study **(Jha, Sureka, & Shitika, 2014)**conducted on the Customer's satisfaction for ATM services of all the banks of Patna District in Bihar. The results indicate that people of Bihar are satisfied from ATM service of various public and private sector banks. The next study **(Ramu & Anbalagan, 2017)**aimed to identify quality dimension significant to enable the banks to develop the strategies improving the quality of service delivery. It is found through the present study that the public sector banks in Karur district are losing market share to private and foreign banks. An another study **(Prasad, 2018)** conducted to find out whether the customers of State Bank of India are satisfied with the ATM services provided by the SBI and for finding results the author used some basic descriptive analysis like mean and standard deviation and one sample t-test. **(Srinivas & Rao , 2018)**in this study, the author has stated that dissatisfied customers find responsiveness and empathy dimension as the twin concept that is lacked by the bank. As well as so far as the satisfied customers are concerned, there exist a long gap between the expected service quality and actual service quality. The result of the next study **(Anjalika & Priyanath, 2018)**revealed a significant positive relationship between tangible and customer satisfaction as well as responsiveness and customer satisfaction of both public and private banks. Moreover, the author has also concluded that customer satisfaction regarding the service quality of public banks is higher than that of private banks. In further study**(Kathpalia, Seth, & Verma, 2018)**authors had tried to concentrate on the consumer perception about digital banking. According to authors, 96% of users are satisfied with Electronic banking. The authors have focused on many benefits and facilities which plays a vital role due to which digital banking has replaced the traditional banking practices.

### **Research Methodology**

The nature of this study is Empirical and the data used are primary in nature. These data have been collected by structuring an appropriate questionnaire that has been framed in local language i.e. English and Hindi. The questionnaire contains questions related to banking experience of customers post COVID-19 on a likert scale of 1 to 7. Questions in questionnaire were framed in such a way so that to collect data on each element of SERVQUAL, i.e. Tangibility, Reliability, Responsiveness, Assurance and Empathy. With the help of this questionnaire, respondents were asked about different services and their qualities provided at their banks. Enumerators were appointed to collect the data from the Pubic and emails were sent to the colleagues for the same. An attempt has been made to collect data randomly from 600 customers of public sector banks in state of Bihar. Out of these 600 targeted respondents, 178 responses are either incomplete or not properly filled, and only 422 respondents have given full and complete information. The study has been conducted during October, 2021 to February, 2022. The data collected have been presented via tables and diagrams using Excel 2010 and analyzed using SPSS 25.



### **Objective of the study**

- To know the impact of servicequality and customer satisfaction on customer loyalty.
- To know the different loop holes in quality of services as per customer's perception.

### **Hypothesis of the Study**

**H<sub>01</sub>:** Service Quality and Customer Satisfaction have a positive impact on Customer Loyalty.

**H<sub>02</sub>:** There is no unanimous between the respondents.

**Limitations of the Study**

The area of study is limited to the state of Bihar.

The results of the study are based on the perception and experience of the respondents.

**Results and Analysis**

A survey has been conducted with the help of questionnaire in Bihar, in which response rate was 70.33%. the responses were collected on a likert scale of 1 to 7 where 1 means very poor and 7 means very good.

**Table 1:- Availability of sufficient equipment in your bank.**

Occupation	Scale of 1 to 7							Grand Total
	1	2	3	4	5	6	7	
Business	0	14	0	6	0	12	0	32
Government Job	12	26	4	8	14	12	6	82
Household	6	0	0	0	0	0	0	6
Private Job	0	4	8	6	12	8	2	40
Professional	4	4	6	0	0	4	0	18
Student	42	48	70	44	18	8	14	244
<b>Grand Total</b>	<b>64</b>	<b>96</b>	<b>88</b>	<b>64</b>	<b>44</b>	<b>44</b>	<b>22</b>	<b>422</b>

**Table 2:- Availability of sufficient employees in your bank.**

Occupation	Scale of 1 to 7							Grand Total
	1	2	3	4	5	6	7	
Business	0	4	6	0	8	14	0	32
Government Job	14	30	12	2	14	4	6	82
Household	6	0	0	0	0	0	0	6
Private Job	0	6	4	12	2	16	0	40
Professional	0	8	4	6	0	0	0	18
Student	44	66	70	30	14	8	12	244
<b>Grand Total</b>	<b>64</b>	<b>114</b>	<b>96</b>	<b>50</b>	<b>38</b>	<b>42</b>	<b>18</b>	<b>422</b>

**Table 3:- Proper functioning of the ATMs**

Occupation	Scale of 1 to 7							Grand Total
	1	2	3	4	5	6	7	
Business	0	0	6	6	12	8	0	32
Government Job	18	20	8	10	16	2	8	82
Household	6	0	0	0	0	0	0	6
Private Job	2	10	4	16	6	2	0	40
Professional	2	8	4	4	0	0	0	18
Student	44	52	62	42	10	16	18	244
<b>Grand Total</b>	<b>72</b>	<b>90</b>	<b>84</b>	<b>78</b>	<b>44</b>	<b>28</b>	<b>26</b>	<b>422</b>

The Tangibility element of the SERVQUAL model was reflected by above mentioned 3 tables (Table 1, 2 and 3). Through these tables respondents were asked about the availability of sufficient equipment like cheques scanners, receipt printers, EVM card printers, Multifunction printers, Passbook printers, Pin pads, Currency authenticators, Currency discriminators, Currency counters, proper working website, sufficient number of employees and proper functioning of the ATMs like availability of cash, receipt generated or not, working of CCTV, security guard etc. The above table no. 1 depicts that out of 244 respondents from students group, 160 respondents have rated 3 and less than 3 which shows that banks are lacking on availability of sufficient equipment. The group of professionals and households also agree with the students group. However, 50% respondents from the groups of businessman, government job and private job are satisfied with the available equipment but rest 50% perceived that banks are lacking on this part. Table no. 2 shows that most of the number of respondents i.e. 180 out of 244 respondents from student group, 56 out of 82 from government job, 12 out of 18 from professionals, 6 out of 6 from household and 10 out of 40 from private job have rated less number of employees are there in the banks. Table no. 3 shows 158 respondents from students group rated 3 or less on the scale of 1 to 7 which reflects that they are less satisfied with the service quality of ATMs. The other reason for this response may be due to very less number of ATMs of banks in the area and that too working without guards,

sometime receipt of transactions are not generated and CCTV also not works properly. Respondents from government job, private job and households also rated 3 or less on the scale which reflect that they also not satisfied with the services.

**Table 4:- Favorable working condition of ATMs**

Occupation	Scale of 1 to 7							Grand Total
	1	2	3	4	5	6	7	
Business	0	4	6	0	22	0	0	32
Government Job	18	8	26	14	6	2	8	82
Household	0	0	0	6	0	0	0	6
Private Job	2	0	16	6	8	8	0	40
Professional	0	2	8	8	0	0	0	18
Student	46	56	54	52	16	12	8	244
<b>Grand Total</b>	<b>66</b>	<b>70</b>	<b>110</b>	<b>86</b>	<b>52</b>	<b>22</b>	<b>16</b>	<b>422</b>

**Table 5:- Efficiency of staffs in finishing the work within assigned time**

Occupation	Scale of 1 to 7							Grand Total
	1	2	3	4	5	6	7	
Business	0	4	0	6	6	4	12	32
Government Job	16	10	28	14	4	4	6	82
Household	0	6	0	0	0	0	0	6
Private Job	0	6	4	16	10	4	0	40
Professional	2	8	4	0	4	0	0	18
Student	36	46	80	46	14	18	4	244
<b>Grand Total</b>	<b>54</b>	<b>80</b>	<b>116</b>	<b>82</b>	<b>38</b>	<b>30</b>	<b>22</b>	<b>422</b>

**Table 6:- Availability of all transaction options and services in your bank**

Occupation	Scale of 1 to 7							Grand Total
	1	2	3	4	5	6	7	
Business	0	6	0	0	4	16	6	32
Government Job	18	10	20	14	10	6	4	82
Household	6	0	0	0	0	0	0	6
Private Job	0	0	6	8	24	0	2	40
Professional	4	2	0	12	0	0	0	18
Student	32	42	50	60	38	10	12	244
<b>Grand Total</b>	<b>60</b>	<b>60</b>	<b>76</b>	<b>94</b>	<b>76</b>	<b>32</b>	<b>24</b>	<b>422</b>

The Reliability element of the SERVQUAL model was shown in above mentioned 3 tables (Table 4, 5 and 6). Through these tables, respondents were asked about the reliability of bank services, like whether there is availability of cash in ATMs whenever you need, whether the bank staffs complete their promised work, if any, on given time or date, whether all the transaction options are available in your bank. The table no.4 shows that students group is not satisfied with the conditions of ATMs and 156 out of 244 respondents have rated 3 or less on the scale of 7. Same is the condition with Government job group, they are also not satisfied with this and 52 out of 82 have rated negatively. When respondents are asked about efficiency of bank staffs in completing the promised work within time (Table no.5), once again students group and Government job group have rated negatively which shows inefficiency of bank staffs in completing their promised work also. On the question of availability of transaction options and services in bank (Table no.6), business man group and private job group have rated positively between 4 to 7 but many from students group and Government job group have rated negatively. So there is no clear cut opinion here. In authors opinion, positive response from business man group and private job group is more reliable since business man frequently use different type of payment options and different services as compared to other groups and their positive response is also supported by the other groups like private job,

professionals and by students and Government job group also to a large extent.

**Table 7:- Promptness of employees in giving attention to customer's problem**

Occupation	Scale of 1 to 7							Grand Total
	1	2	3	4	5	6	7	
Business	0	0	8	6	6	6	6	32
Government Job	18	6	22	16	12	2	6	82
Household	6	0	0	0	0	0	0	6
Private Job	2	0	6	18	10	4	0	40
Professional	0	6	8	0	4	0	0	18
Student	44	52	68	24	16	34	6	244
<b>Grand Total</b>	<b>70</b>	<b>64</b>	<b>112</b>	<b>64</b>	<b>48</b>	<b>46</b>	<b>18</b>	<b>422</b>

**Table 8:- How quick complaints are rectified in time in your bank**

Occupation	Scale of 1 to 7							Grand Total
	1	2	3	4	5	6	7	
Business	0	0	10	10	6	6	0	32
Government Job	24	16	6	20	6	4	6	82
Household	6	0	0	0	0	0	0	6
Private Job	0	2	6	14	12	6	0	40
Professional	0	2	12	0	0	4	0	18
Student	40	60	50	41	19	20	14	244
<b>Grand Total</b>	<b>70</b>	<b>90</b>	<b>92</b>	<b>82</b>	<b>38</b>	<b>40</b>	<b>10</b>	<b>422</b>

**Table 9:-Satisfaction with real-time information provided after every transaction**

Occupation	Scale of 1 to 7							Grand Total
	1	2	3	4	5	6	7	
Business	0	0	10	10	6	6	0	32
Government Job	6	4	6	20	6	16	24	82
Household	4	1	0	0	1	0	0	6
Private Job	0	2	6	14	12	6	0	40
Professional	0	2	12	0	0	4	0	18
Student	4	20	14	38	58	70	40	244
<b>Grand Total</b>	<b>70</b>	<b>90</b>	<b>92</b>	<b>82</b>	<b>38</b>	<b>40</b>	<b>10</b>	<b>422</b>

The next element of the SERVQUAL model, i.e. Responsiveness was shown in above mentioned 3 tables (Table 7, 8 and 9). In these 3 tables, respondents were asked 3 questions related to their services like- how quick bank responds to the customers problems (for change of registered mobile number, passbook update), how quick bank respond to their calls/emails, how quick it respond to application for approval of any kind of loan, how quick their complaints are rectified in time and how much they are satisfied with real-time information provided after every transaction. The responses from the respondents show (Table no. 7) that banks need to be more attentive towards problem of customers, since not only students group but Government job, Professionals and households also have rated negatively. They have also negative opinion (Table no.8) regarding time lagging in solving problems in banks. However, business man and private job holders are of the opinion that time lagging in solving complaints is tolerable and have rated positively. But the table no.9 reflects that respondents from all the groups are very satisfied with the real time information provided after every transaction through emails and messages to the customers. They are of the opinion that real time information helps them a lot about knowing any transaction in their account and they feel more secure. Respondents from all the groups, i.e. students, Government job, Business man, Professionals and Private job holders have rated 4 or more on the scale of 7.

**Table 10:- Peace of mind and sense of security while making transactions**

Occupation	Scale of 1 to 7							Grand Total
	1	2	3	4	5	6	7	
Business	0	4	2	0	0	10	16	32
Government Job	6	10	10	20	14	12	10	82
Household	6	0	0	0	0	0	0	6
Private Job	0	0	2	12	2	4	20	40
Professional	4	4	0	10	0	0	0	18
Student	34	24	22	36	36	58	34	244
<b>Grand Total</b>	<b>54</b>	<b>78</b>	<b>54</b>	<b>78</b>	<b>34</b>	<b>48</b>	<b>76</b>	<b>422</b>

**Table 11:- Satisfaction with the charges taken for the services rendered**

Occupation	Scale of 1 to 7							Grand Total
	1	2	3	4	5	6	7	
Business	0	2	0	0	6	8	16	32
Government Job	14	4	24	14	14	8	4	82
Household	1	4	1	0	0	0	0	6
Private Job	4	6	0	6	6	14	4	40
Professional	0	0	0	0	6	8	4	18
Student	34	48	56	44	18	12	32	244
<b>Grand Total</b>	<b>64</b>	<b>64</b>	<b>88</b>	<b>64</b>	<b>44</b>	<b>42</b>	<b>56</b>	<b>422</b>

The next element of SERVQUAL model is Assurance, where the respondents were asked about the whether they feel secure while making transactions (both offline and online) in their banks and whether they are satisfied with the charges taken by the banks for the services rendered by them. On the question of secure feeling (Table No.11), students have given split response, i.e. 80 respondents have rated 3 or less on the scale of 7, whereas 164 have rated 4 or more on the scale of 7 which shows feeling of security and peace of mind while making transaction among different respondents is different. Same responses were gathered from Government job group also. Here 26 out of 82 have rated 3 or less and 56 have rated 4 or more on the scale of 7. Private Job holders feel more secure as compared to household and professionals group. On the question of how much they are satisfied with the service charges taken by banks, business group, Private Job group and Professionals group have rated 4 or more on the scale of 7 mostly. However, students and Government Job group have given un-united response.

**Table 12:- Suggestion regarding suitable banking products or policies**

Occupation	Scale of 1 to 7							Grand Total
	1	2	3	4	5	6	7	
Business	0	4	4	14	6	4	0	32
Government Job	16	10	20	18	4	8	6	82
Household	3	1	2	0	0	0	0	6
Private Job	4	0	4	4	8	16	4	40
Professional	6	4	0	4	0	4	0	18
Student	50	46	52	40	22	12	22	244
<b>Grand Total</b>	<b>82</b>	<b>64</b>	<b>80</b>	<b>80</b>	<b>40</b>	<b>44</b>	<b>32</b>	<b>422</b>

**Table 13:-Immediate block of access and replacement of duplicate card facility.**

Occupation	Scale of 1 to 7							Grand Total
	1	2	3	4	5	6	7	
Business	0	0	4	6	0	6	16	32
Government Job	18	0	14	10	8	22	10	82
Household	4	1	1	0	0	0	0	6
Private Job	0	2	6	8	0	4	20	40
Professional	4	0	2	8	0	0	4	18
Student	26	48	48	56	26	10	30	244
<b>Grand Total</b>	<b>54</b>	<b>50</b>	<b>74</b>	<b>88</b>	<b>34</b>	<b>42</b>	<b>80</b>	<b>422</b>

**Table 14:- Bank employees are polite while solving your problems or not**

Occupation	Scale of 1 to 7							Grand Total
	1	2	3	4	5	6	7	
Business	0	0	6	4	16	6	0	32
Government Job	16	12	24	6	12	8	4	82
Household	6	0	0	0	0	0	0	6
Private Job	4	0	2	10	0	12	12	40
Professional	0	4	6	4	4	0	0	18
Student	24	40	62	54	20	20	24	244
<b>Grand Total</b>	<b>50</b>	<b>56</b>	<b>100</b>	<b>78</b>	<b>52</b>	<b>46</b>	<b>40</b>	<b>422</b>

In Empathy element of the SERVQUAL model, respondents were asked 3 questions related to banking services, i.e. whether their bank suggest suitable banking products or policies for them, whether they are being facilitated by immediate block of access and duplicate card facility in case of loss of cards and whether the bank employees behave polite while solving problems of the customers. The response of the respondents reveals that most businessman and Private Job holders was of the opinion that banks suggest them for suitable products and policies, however students have given scattered response upon this in which most of them rated 3 or less on the scale of 7, reflecting that they are not being suggested by the bank personnel. Same was the response of the students when we asked about immediate block of access and replacement of duplicate card facility. However, more than 50% of the students accept that bank employees are polite with the customers while solving their problems and Private job and business men group were also agree with it. But the government job group believes that behavior of bank employees was not up to mark.

## Testing of Hypothesis

Descriptive Statistics						
Variables	N	Mean	Std. Deviation	Minimum	Maximum	Mean Rank
Table1	422	3.35	1.749	1	7	7.86
Table2	422	3.19	1.704	1	7	7.22
Table3	422	3.28	1.734	1	7	7.66
Table4	422	3.75	1.690	1	7	9.45
Table5	422	3.35	1.616	1	7	7.83
Table6	422	3.39	1.714	1	7	7.87
Table7	422	2.97	1.699	1	7	6.46
Table8	422	3.21	1.621	1	7	7.19
Table9	422	3.72	1.938	1	7	9.02
Table10	422	3.69	1.982	1	7	8.84
Table11	422	3.31	1.812	1	7	7.79
Table12	422	3.45	1.858	1	7	8.41
Table 13	422	4.05	1.998	1	7	10.54
Table14	422	3.77	1.789	1	7	9.47
Table15	422	3.81	1.829	1	7	9.64
Table16	422	4.18	1.865	1	7	10.74

Test Statistics	
N	422
Kendall's W <sup>a</sup>	.086
Chi-Square	543.469
df	15
Asymp. Sig.	.000
a. Kendall's Coefficient of Concordance	

Kendall's W is a non-parametric statistic. It is used for assessing the agreement among respondents. It ranges between 0 to 1, where 0 means no agreement and 1 means complete agreement. Here, **Kendall's W** value is **.086** which means we failed to accept the null hypothesis. The result of the study shows that different respondents have rated different services as their "most satisfying service which attracts loyalty of the respondents towards their banks". However, the value of Kendall's W test (.086) is reflecting that only 8.6% respondents have rated unanimously.

In descriptive statistics table above, Table No 15 and 16 is dependent variables and Table No 1 to 14 is independent variables. In this table the mean ranks shows that 'immediate block of access and replacement of duplicate card facility' variable (Table No 13) is mostly selected by the respondents as their "most satisfying service which attracts loyalty of the respondents towards their banks", followed by 'Bank employees are polite while solving your problems' (Table 14), 'Favorable working condition of ATMs' (Table4) and 'Satisfaction with real-time information provided after every transaction' (Table 9).

### Conclusion and Discussion

After, all the questions related to bank services, at last respondents were asked about the opinion of the respondents that whether they will continue transaction in their banks (Public sector) and also suggest your friends, relatives and colleagues to get services from this bank.

**Table 15:- Will you continue transactions in this bank?**

Occupation	Scale of 1 to 7							Grand Total
	1	2	3	4	5	6	7	
Business	0	2	0	4	8	12	6	32
Government Job	12	0	24	12	16	6	12	82
Household	1	1	4	0	0	0	0	6
Private Job	0	0	4	8	6	18	4	40
Professional	0	2	2	0	10	4	0	18
Student	30	24	52	40	36	28	34	244
<b>Grand Total</b>	<b>48</b>	<b>28</b>	<b>92</b>	<b>64</b>	<b>66</b>	<b>68</b>	<b>56</b>	<b>422</b>

**Table 16:- Will you suggest your friends, relatives, colleagues about your bank or not**

Occupation	Scale of 1 to 7							Grand Total
	1	2	3	4	5	6	7	
Business	0	0	2	8	4	12	6	32
Government Job	12	2	22	18	16	8	4	82
Household	6	0	0	0	0	0	0	6
Private Job	0	4	0	8	2	14	12	40
Professional	4	1	0	0	9	4	0	18
Student	28	50	56	46	26	22	16	244
<b>Grand Total</b>	<b>50</b>	<b>66</b>	<b>80</b>	<b>80</b>	<b>48</b>	<b>60</b>	<b>38</b>	<b>422</b>

30 out of 32 respondents have rated 4 or more on the scale of 7 showing that they will continue transaction in this bank. All the above table (Table No. 1 to 14) shows that business man group was satisfied with the services of banks and they decided to be loyal with their bank and they have also decided to suggest to their friends, relatives and colleagues about bank and its services. 46 out of 82 respondents of Government Job have rated 4 or more on the scale of 7 which shows they are satisfied enough with services of the bank. However, 36 respondents have rated 3 or less reflecting that they are not sure about to continue transaction in this bank and to suggest others about the bank. The reason behind this response by some Government job holder is that some of them believe that banks are lacking on part of sufficient equipment, proper banking staffs, and proper functioning of ATMs as well as they might have faced some problems in transaction options with bank and behavior of the staffs. Moreover, many of them have complaint whit their banks that they are not suggested by the banks about suitable banking products and services and neither the bank employees behave politely with the customers while solving their problems. The Private Job holders and Professionals group are also satisfied enough to continue with the bank and to suggest others too. In student group, 138 out of 244 respondents are sure about continuing transactions with their bank, but 106 respondents are not sure enough to continue transaction with the bank and for encouraging others too. And the reasons for this were the same as was in the case of Government Job holders.

The results are reflecting that banking services are good enough to provide the day to day services to their banking customers, but it is also true that many of the respondents from different category of occupation are not satisfied with the banks because banks are lacking on many aspect of services like sufficient equipment, proper banking staffs, proper functioning of ATMs problems in transaction options with bank, behavior of the staffs, no suggestion about suitable banking products and services and unpleasant behavior with the customers while solving their problems. Therefore, to attract the different targeted customers as well as to retain the existing customer base (loyalty of old customers) bank needs to work on above mentioned points which will help them in surviving more appropriately and serving their customers in more attractive and innovative way.

## Bibliography

1. Alexis, N., & Chen, W. (2019). An Empirical Study Analyzing the ATM Service Quality and Customer Satisfaction Relationship in Rwanda. *International Journal of Business and Economics Research*, 8(6), 439-451.
2. BAICU, C. G., GÂRDAN, I. P., & GÂRDAN, D. A. (2020, October). The impact of COVID-19 on consumer behavior in retail banking. Evidence from Romania. *Management & Marketing: Challenges for the Knowledge Society*, 15(Special), 534-556.

3. Brahmabhatt , M., & Panelia, D. (2008, August). An Assessment of Service Quality in Banks. *Global Management Review*, 2(4), 01-17.
4. Dhar , R. K., & Kushwah, S. V. (2009, October-December). Service Quality Expectations and Perceptions of Public and Private Sector Banks in India: A Comparative Study. *IMJ*, 1(3).
5. Hussaien, Sivathmajasarma, Abeysekara, Hansani, Thelijjagoda, & Madhavika. (2020). Service Quality and Customer Satisfaction in Banking Sector during COVID-19 – An Empirical Analysis of Sri Lanka. *Global Journal of Management and Business Research: B Economics and Commerce*, 20(11).
6. Islam, S., & Ali, M. (2011). Measuring Service Quality of Banks: An Empirical Study. 2(4).
7. Jha, B. K., Sureka, S., & Shitika. (2014). Customer's Satisfaction For ATM Services In Bihar, India. *International Journal of Interdisciplinary and Multidisciplinary Studies*, 1(4).
8. Kamble, S., Dhume, S., Raut, R., & Chaudhuri , R. (2013). Measurement of service quality in banks:a comparative study between public and private banks in India. *Int. J. Services and Operations Management*, 10(3).
9. Karatepe, O. M., Yavas, U., & Babakus, E. (2005). Measuring service quality of banks: Scale development and validation. *Journal of Retailing and Consumer Services*(12), 373-383.
10. Nandi, D. R., Malakar, M. G., & Das, M. (2015, September). Assessing the Service Quality of Banks using SERVQUAL - A Study on Bank of India. *IJEMR*, 5(9).
11. Okoe, A. F., Adjei, J. S., & Osarenkhoe, A. (2013). Service Quality in the Banking Sector in Ghana. *International Journal of Marketing Studies*, 5(9).
12. Perwej, D. (2020, october). THE IMPACT OF PANDEMIC COVID-19 ON THE INDIAN BANKING SYSTEM. *International Journal of Recent Scientific Research*, 11(10(B)), 39873-39883.
13. PHAN, C. A., & NHAM, P. T. (2015). IMPACT OF SERVICE QUALITY ON CUSTOMER SATISFACTION OF AUTOMATED TELLER MACHINE SERVICE: CASE STUDY OF A PRIVATE COMMERCIAL JOINT STOCK BANK IN VIETNAM. *Verslas: Teorija ir praktika / Business: Theory and Practice*, 16((3)), 280–289.
14. Prasad, R. (2018, October). Service Quality of Automated Teller Machine and CustomerSatisfaction: A Case Study of State Bank of India, Patna (Bihar). *International Journal of Management Studies*, V(4(5)), 26-34.
15. Rather, D. M. (2013, June). Assessment and Comparison of Indian Public and Private Sector Banks throughCustomers' Experience and Customers' Satisfaction Survey. *Pacific Business Review International*, 5(12).
16. Sangeetha, J., & Mahalingam, S. (2011). Service quality models in banking: a review. *International Journal of Islamic and*, 4(1), 83-103.
17. Srinivas , D., & Rao , P. H. (2018, July–Aug). SERVICE QUALITY IN COMMERCIAL BANKS:A STUDY OF PUBLIC SECTOR BANKS IN WARANGAL DISTRICT. *Journal of Management (JOM)*, 5(4), 9–17.

## **A study on Digital Banking during post demonetization**

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### **Abstract:-**

A bank is an institution/entity that deals with the money or money equivalent and provides financial services in order to have smoothen in the functions of the various institutions, people, society etc. The operative, Investment, Financial role of the Bank is to be realized through the activities of deposits, transfer, withdrawal, providing loans and allied function of the bank. On order to understand the significant role of the banks, one of the most active and oldest bank will be known as State Bank of India (SBI). The research paper signifies the requirement of digital banking after the Demonetization and the possible outcomes due to the implementation of provisions associated with the demonetization. It can be come to known the cashless services to be rendered, use of different UPI system, application of various online payment platforms to deposits, withdrawal and transfer.

**Keywords:-**Demonetization, Cashless transactions, Digital Banking, outcomes in the society

### **Introduction:-**

The Prime Minister of India Shri Narendra Modi has announced the Demonetization dated on 8<sup>th</sup> November 2016. Stripping a currency of legal tender in order to curb the black money, as it helped to come out the constructive outcomes to somewhat extent. It is required because of increasing corruption or illegal storage of cash & cash equivalent or violation of the principle of equality of income being held with the people in a society. Earlier the demonetization took place in the year 1946 and in 1978, the ultimate aim for the both was to curb the black money and to come out the results as to pay an adequate amount of taxes to the government, to keep an efficiency in the infrastructural things and allied things to have the developmental path in the organizational achievements. At a micro level, it would be interesting to know what could be the effect of the demonetization policy on the distinct parameter such as growth, inflation, revenue to be generated by the government etc. this would have differential aspects and impact in a different manner, however some of the currency which was not part of the financial system comes back to the banking system and there are policies to increase the cashless transaction in the economy, one should expect the improvement in the money and allied things. Initially the move was received from several bankers as well as from some international commentators. The move was also criticized as poorly planned, and unfair and was met with protests, litigation and strikes against the government in several places across India. Debate also took place concerning the move in both the houses of the parliament. Digital banking is a part of the broader context for the move to online banking, where banking services are rendered over the internet. The shift from the traditional to digital banking has been gradual and remains ongoing and is constituted by differing degrees of banking service digitalization. Digital banking involves high levels of process automation and web-based services and may include APIs enabling cross-institutional services composition to deliver banking products and to provide transactions. It provides the ability for users to access financial data through desktop, mobile and ATM centers. It also represents a virtual process that includes online banking and beyond. As end-end platforms digital banking must performs the front end that consumers see back end that bankers see through their servers and admin control panels and the middleware that connects these nodes. Ultimately, a digital banking should signify all functional levels of banking on all service delivery platforms. In other words it should have all the same functions as a head office, branch office, online service, bank card, ATM and point of sales machines.

### **Benefits of Digital Banking:-**

1. **Business efficiency:** - not only do digital platforms improve interaction with customers and deliver their needs more quickly, they also provide methods for making internal functions more efficient. While banks have been at the forefront of digital technology at the consumer end for the decades, they have not completely embraced all the benefits of the middleware to enhance the productivity.
2. **Cost Savings:** - one of the keys for banks to cut costs is automated applications that replace redundant manual labor. Traditional bank processing is costly, slow and prone to human error, according to McKinsey & Company. Relying on people and paper also takes up office space, which increase energy and storage costs. Digital platforms can future reduce costs through the synergies of more qualitative data and faster response to market changes.

3. **Increased accuracy:** - Traditional banks that rely mainly on paper processing can have an error rate of up to 40% which requires reworking. By simplifying the verification process, it's easier to implement IT solutions with business software, leading to more accurate accounting. Financial accuracy is crucial for banks to comply with government regulations.
4. **Greater agility:** - the use of automation can speed up both external and internal processes, both of which can improve customer satisfaction. Following the collapse of the financial market in 2008, an increased emphasis was placed on risk management. Instead of banks hiring and training risk management professionals, it's possible for risk management software to detect and to respond market changes more quickly than even seasoned professionals.

Thus, this could be the constructive outcome due to which one can analyze, will make the estimate of the future course of actions in order to deal with the coming hurdles and to overcome such uncertainties in the social aspects. Considering the post demonetization period, it was really digital scenario, where all transactions could be done in a cashless mode and allied transactions too.

**Research Methodology:-**The study revealed the descriptive type of survey, after looking into the requirement of the study, it has also focused over the distinct methods of collecting data such as web articles, web tools, books, magazines etc. purposively secondary sources of information is being gathered to present the article.

**Objectives of the Study:-**

- 1) To know the impact of demonetization on the society
- 2) To know the digital services rendered during post demonetization.
- 3) To find out the changes of adoption level of digital banking services after demonetization.
- 4) To know the impact of the demonetization on the Cash & cash equivalents of the customers
- 5) To know the accessibility towards financial services after the demonetization.

**Data Collection:-**The source of data is primarily through the secondary. It has assisted to gather required source of an information and also helped to make the sound generalization as per the survey. The secondary source of an information includes web tools, web journals, magazines, books and allied sources. It has shown the required amount of data in a prescribed manner to put the generalizations accordingly to put the required suggestions for the overall scenario. The way, the data has gathered would reflect the research outcome for the identified problem and also helped to sort out the source of allied problems.

**Demonetization and Digital Banking:-**In order to identify the factors which affect in adoption of digital banking service in India, different aspects have been considered. The change in adoption levels for different kind of ways of payments method and digitalization has been considered. The demonization policy of the Government of India has made a cash crunch in India. This cash crunch has said to be a boon for the e-banking sector. However, the findings of the research conducted reveal that no much growth in the e-banking sector has occurred, and a digital economy has not formed. The data was quite insufficient in order to make the conclusion regarding the affectivity in the process of digital banking and to have the constructive outcomes from the survey. But it has resulted into the use of digital platforms of transactions to make the deposits, withdrawal, transfer and allied functions. Banking sector has evolved too many functions and operated in a cashless manner for its functions. It has also turned into various payment modes such as UPI, online payment method, internet banking method and similar other methods of payment gateways. Digital banks lead to the use or an application of digital platforms to have an acknowledgment of different methods of payments in the prescribed manner regulated by Banking Regulation Act, 1949. It has resulted into the growing application of digital platforms during the post demonetization.

**References:-**

1. [https://en.wikipedia.org/wiki/2016\\_Indian\\_banknote\\_demonetisation#:~:text=12%20External%20links-,Background,outside%20the%20formal%20economic%20system.](https://en.wikipedia.org/wiki/2016_Indian_banknote_demonetisation#:~:text=12%20External%20links-,Background,outside%20the%20formal%20economic%20system.)
2. [https://en.wikipedia.org/wiki/Digital\\_banking](https://en.wikipedia.org/wiki/Digital_banking)
3. S.Dhir Banking on innovation : Technological innovations at ICICI Bank, AGBA Conference, 2014

## **A Study of Consumer Buying Behaviour in a Shopping mall with Special Reference to Treasure Bazaar in Nanded City Prof. Dr. H.S. Patange<sup>1</sup> Dr. S.B. Todkar<sup>2</sup>**

**Introduction:** - Today super mall are replacing kirana store all over India. Life style of marketing is a process of establishing relationship between product offered in the market and targeted life style group. Consumer today see an existing explosion of choices, new categories and new shopping option have increasing disposable income to fulfill their aspiration. Consumers increasingly seeking convinces in shopping and well to the shopping experience to be enjoyable. That is India retail infrastructure is slowly undergoing a change with many hi-fi super malls being constructed and operating various cities. The malls concept has come to stay for good. The Indian consumer seems to be undergoing a shift in terms of personality, buying motives, interest attitude, beliefs and values when he or she making a shift from kirana stores towards shopping malls. Malls are fast becoming a place for socializing and recreation, and customer have set high expectations from the malls. they see malls a one stop destination from various purpose like dinning, watching movies, hanging out, meeting old/ new friends and shopping. Considering prospective growth of the shopping mall in India. In the present study an attempt is made to analyze the consumer behaviour in shopping mall with special reference to Treasure Bazaar in Nanded city.

### **Review of Literature**

- 1) Shivakumar R. Sharma (2012) in his study indicated that, the scope of this research is to assess the overall customer satisfaction response of customers with regard to the availability and quality of products and services offered at shopping malls and the comfort level of the respondents towards shopping in the shopping malls in Mumbai. The conclusion that it is revealed that a majority of the Mumbaikars do prefer to shop at shopping malls as it is a convenient place to buy anything they desire.
- 2) Anselmsson (2006) in his study found selection as the most important determinant of shopping mall choice, followed by atmosphere, ambiance of the mall and third most important determent of satisfaction was convenience, which include opening time, parking, space of movement and ability to find one's location in the mall. On the other hand. If a center is behind competitors and needs to increase sales and visit frequency, management should focus more on promotional activities and location aspects in terms of improving geographical convenience.

### **Objectives of the study:-**

- 1) To find out the impact of demographics like age, income, gender on buying behavior of consumer.
- 2) To find out the customer opinion about benefit derived from shopping in Treasure Bazaar Mall

### **Research Methodology:-**

**Primary data:** - Primary data was collected through self administered structured questionnaire, personal interviews, will be conducted with the customer who frequently visit the mall.

**Secondary data:** - Secondary data was collected from internet, newspapers, journals, magazines, and company web links, reports of printed and unprinted materials.

**Sampling plan and design:** - Only one Mall presently functions in Nanded city.

**Sample size:** - Total sample size for the research undertaken was, including 200 customers randomly selected in Treasure Bazaar.

**Area of research:** - Nanded City.

### **Limitation of the study: -**

- 1) The study was limited to Nanded city related to shopping mall.
- 2) The study has focused the customer behaviour at shopping in Treasure Bazaar. There is only one Treasure Bazaar present in Nanded. The analysis is based on the walk in customers of those stores.

### **Analysis and Interpretations:-**

The customer is considered as a king and all organized retailers are trying their best to satisfy the king. The shopping malls are trying to give enjoyable shopping experience, quality good at best prices are attracting the customers by offering various offers. All the activities of the Treasure Bazaar are planned to give maximum satisfaction to the customer, understanding the customers and their feedback is very necessary to satisfy their needs and wants.

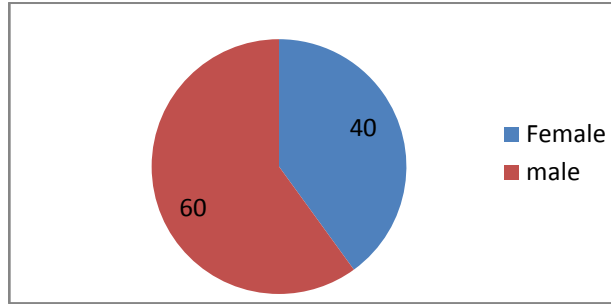
In order to collect information about consumer behaviour towards Treasure Bazaar, 100 questionnaires were distributed to customers. The responses are tabulated, analyzed and explained below.

**Gender wise Distribution of the Respondent Customers**

**Table 1, Gender wise Distribution**

Gender	Frequency of Responses (N)	Percentage of Respondents (%)
Male	120	60
Female	80	40
Total	200	100

**Graph 1, Gender wise Distribution**



Source: Data collected through Survey

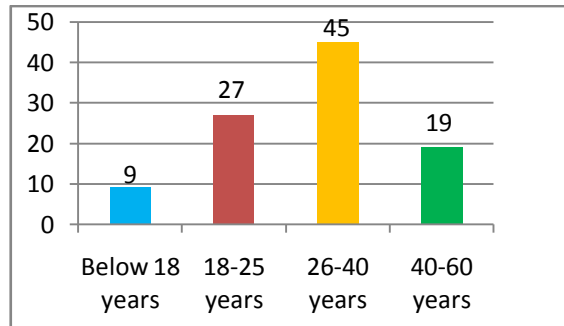
Sources: - Data Collected through Survey

**Age Group wise Distribution of the Respondent Customers**

**Table 2 Age group wise Distribution**

Age group (in Years)	Responses	(%)
Below 18 Ye	18	9
18-25 Years	53	27
26-40 Years	90	45
40-60 Years	39	19
Total	200	100

**Graphs 2, Age Group wise Distribution**



Sources: - Data Collected through Survey

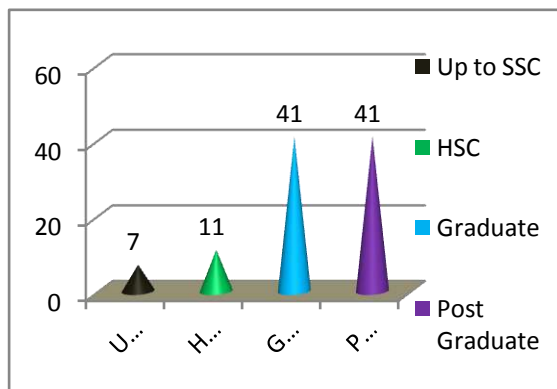
**Educational Qualification of the Respondent Customers**

**Table 3**

Educational Qualification	Frequency of Responses (N)	Percentage of Responses (%)
Up to SSC	14	7
HSC	22	11
Graduate	82	41
Post Graduate	82	41
<b>Total</b>	<b>200</b>	<b>100</b>

Sources: - Data Collected through Survey

**Graph 3**

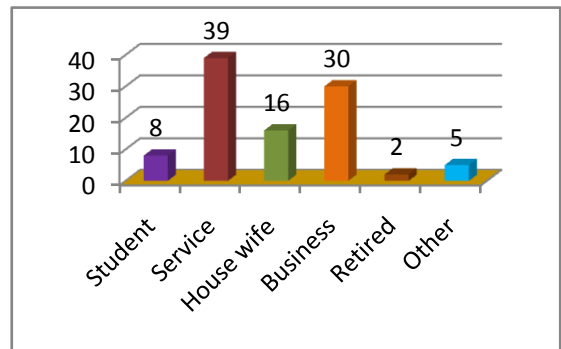


**Occupation of the Respondent Customers**

**Table 4**

Occupation	Frequency of Responses (N)	Percentage of Responses (%)
Student	16	8
Service	78	39
House Wife	31	16
Business	60	30

**Graph 4**



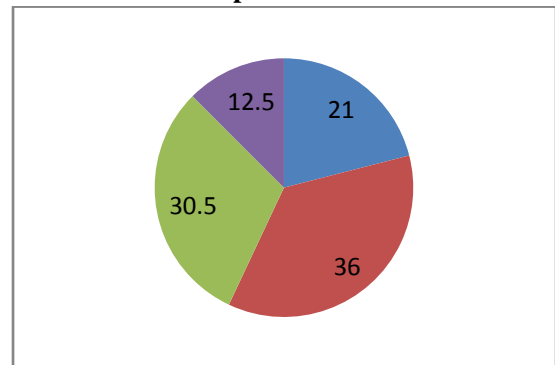
Sources: - Data Collected through Survey

**Monthly Income of the Respondent Customers:**

**Table 5**

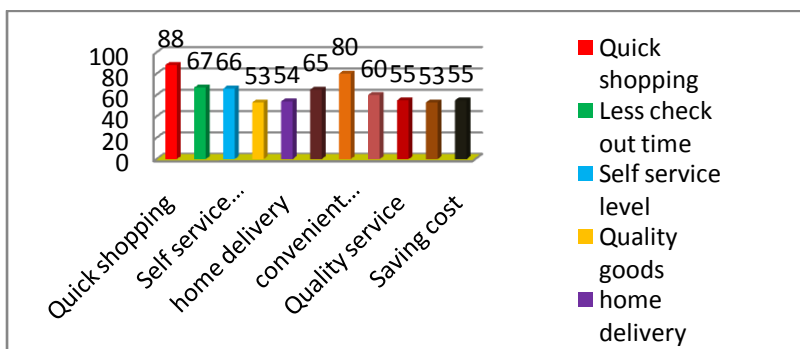
Monthly Incomes ( In Rupees)	Frequency of Responses (N)	Percentage of Responses (%)
Up to Rs.10000	42	21
Between Rs 10000 to 25000	72	36
Between Rs 25000 to 50000	61	30.5
Above Rs.50000	25	12.5
<b>Total</b>	<b>200</b>	<b>100</b>

**Graph 5**



**Customers Opinions about Benefits Derived from Shopping at Treasure Bazaar**

Benefits at Treasure Bazaar	Frequency of response	Percentage of responses
Quick Shopping	175	88
Out time	135	67
Self service level	132	66
Quality goods	106	53
Home delivery	108	54
Convenient	130	65
Convenient timing	160	80
Saving timing	120	60
Quality service	110	55
Entertainment	105	53
Saving cost	110	55



### **Conclusions And Suggestions**

The conclusions are as follow:-

- 1) 60 percent males prefer household shopping mostly from Treasure Bazaar.
- 2) Most of the customers (45 percent) going to Treasure Bazaar are between 26 to 40 years age group.
- 3) 41 percent of customers are graduates and other 41 percent are post graduates
- 4) Most respondent customers from services classes are 39 percent and from business 30 percent and their average income is between Rs. 10000 to Rs. 25000.
- 5) Functioning of Treasure Bazaar, Nanded was satisfactory (50 percent) and it was observed that the most of times (42 percent) Treasure Bazaar provided goods at the best prices and offered benefits like; Quick shopping (88 percent), Less check out time (67 percent), Self service level (66 percent), quality goods (53 percent), Home delivery (54 percent), Convenient location (65 percent), Convenient timing (80 percent), saving time (60 percent), Quality services (55 percent), Entertainment (53 percent), Saving Cost (55 percent) to the customers.

Thus it can be concluded that, the Treasure Bazaar provides enormous benefits to the customers and customers are satisfied with all the facilities, benefits, products and services offered by Treasure Bazaar, Nanded.

### **Suggestions:-**

- 1) Treasure Bazaar should create more awareness of various offers by time to time. Awareness can be created by using various medium such as advertisements through radio, local channels, in store announcement at regular intervals.
- 2) More International Branded products are necessary to stock and highlight.
- 3) Treasure Bazaar stores in Nanded should increase cash paying counters by increasing the number of staff members to provide better service.
- 4) Treasure Bazaar should organize charity events, do good cause for environment protection like tree plantation etc. in the city at a large scale to create positive image in the minds of the customers and society.

### **Reference**

- 1) Retail Management ICFAI Center of Management Research, ICMR May (2003) pp 4-5.
- 2) Anselmsson J. (2006), "Source of customer satisfaction with shopping malls: A comparative study of different customer segments", International Review of Retail, Distributed and Consumer Research, Vol 16 (1), pp 115-138.
- 3) Kotler Philip, (2006), "Marketing Management", 12<sup>th</sup> edition Prentice Hall of India,

## **A Study on Investment decision in Family Business**

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### **Abstract-**

Family businesses constitute the majority of organizations across the world. It's a fact that family businesses play a significant & fundamental role in the country's economy, they help in the form of employment, social & economic development of countries. When we look at various studies in the field of family businesses it seems 60% to 90% of the business worldwide are owned & controlled by families (Family member). Family business is the most common form of business organizations in every country in the world. Almost all firms initially begin as family business & proved to be the lifeblood to domestic and global economies in the world. Looking at statistical figures it seems that a substantial number of business organizations worldwide are in form of family businesses.

Any business that is owned and controlled (operated) by an individual, couple or other family members is considered as family business. The study of revealed that family business provides not only income as livelihood to the families but to the labors. The family system provides some additional resources such as space, money equipment and other factors of productions.

### **History Of Family Businesses In India**

In the world its well-established fact that India has a glorious magnificent and rich cultural history of family businesses. In India especially the joint family system was responsible for survival and growth of these businesses. Family businesses in the world are backbone of every country economy and presently when we go back to the eighteenth century, India was having agriculture as a primary source of income and livelihood of Indian people. So, the Indian economy was totally based on agriculture. There was a poor growth in manufacturing industries like handicrafts and textiles.

After post-independence and particularly from 1995-2015, it has been witnessed that family business spreading their tentacles not only in India but across the globe. Some of the family business organizations expanded their business operations across globe. In 2015, the India's top 30 family business organizations contributed 50% of the total revenue of all listed family-owned companies i.e., 13% contribution to Indian GDP. Overall, all listed family firms contributed 21% to GDP. But, out of the listed family firms, the family business group firm's (FBGF'S) contributed to 21% while state alone family firms contributed to 5%.

### **Family-owned business in India**

Family businesses are the oldest and most prevalent form of business not only in India but across the world. In India initially, family business started in the form of trading confined to certain Indian communities like Gujrati's and Marwari's from Northern & Western India. More than 80% of the companies are family owned in India & contributing 80% to National GDP.

Here there is a list of Indian highly successful family businesses which have been operating for more than hundred years in Indian and all over the world as well. The list includes:

1. Tata Group – Founder: Mr. Jamshedji Tata Founded in 1868
2. Aditya Birla Group - Founder: Mr. Shiv Narayan Birla Founded in 1857
3. Kirloskar Group - Founder: Mr. Laxman Rao Kirloskar Founded in 1911
4. Reliance Group - Founder: Mr. DhirubaiAmbani Founded in 1966
5. TVS Group - Founder: Mr. Sundaram Iyengar Founded in 1911
6. Shapoorji Pallonji - Founder: Mr. Pallonji Mistry Founded in 1865
7. Godrej Group - Founder: Mr. Ardeshir Godrej & Pirojsha Burjorji Godrej Founded in 1897

## **Need of the Study:**

Ample of research literature is available on family business. Research on family business has a great contribution in abroad but very few studies were conducted in India (3). Family businesses account for 85% of GDP. In India family businesses account for 70% of the 2 out of 3 listed companies are family controlled.

## **Objectives of the Study:**

- i. To study the origin of family business and its contribution towards western Maharashtra's development.
- ii. To study the business objectives of family managed business of Marwari, Jain and Sindhi communities in cities of Western Maharashtra i.e. Solapur, Pune and Kolhapur.
- iii. To identify and analyse challenges faced by the family firms of various communities in terms of their competitors.
- iv. To study the scenario/working of family firms in context to emergence of malls and retail stores.

## **Hypothesis Of the study:**

Hypothesis is usually considered as the principal instrument in research. Its main function is to suggest new experiments & observations. In social science, where direct knowledge of population parameter(s) is rare, hypothesis testing is the often-used strategy for deciding whether a sample data offers such support for a hypothesis that generalizations can be made.

**Null Hypothesis  $H_0$ :** Family business management practices of Marwari, Jain and Sindhi community can be a model for other community's business.

**Alternate Hypothesis  $H_1$ :** Family business management practices of Marwari, Jain and Sindhi community may not be a model for other community's business.

### **Hypothesis II**

**Null Hypothesis  $H_0$ :** Business owned and managed by Marwari, Jain and Sindhi communities are contributing in economic development and wealth generation of western Maharashtra.

**Alternative Hypothesis  $H_1$ :** Business owned and managed by Marwari, Jain and Sindhi communities are not contributing in economic development and wealth generation of western Maharashtra.

### **Hypothesis III**

**Null Hypothesis  $H_0$ :** New generation of Marwari, Jain and Sindhi communities are involved in decision making of business with innovative practices.

**Alternative Hypothesis  $H_1$ :** New generation of Marwari, Jain and Sindhi communities are not involved in decision making of business with innovative practices.

### **Scope and Utility Of the study :**

The present study falls under descriptive research. The scope of the study was defined by factors like family business pattern, strengths and challenges of business, decisions and strategies in business operations and basis of expansion as well as growth rate of family business in Pune, Solapur and Kolhapur city. Research is based on primary data collected during the period of

## **Data collection:**

Data collection in research is regarded as one of the important tasks of researcher. The success, failure and utility of the research is based on methods of data collection. Both primary and secondary methods of data collection were used in the present research for collection and information of data.

## **Source of Data:**

Primary data was collected through structured questionnaire; questionnaire included open ended, close ended and multiple-choice questions with (1-5) Likert scale. questionnaires were distributed to the businessmen of Sindhi, Marwari and Jain community in Pune,

Solapur and Kolhapur city to collect data. The questionnaire has three sections, first section asks about personal information of business and businessmen, second for challenges of business management related information and third section ask for business operation and strategies related information. A sample of 385 Marwari, Jain and Sindhi family business owners has been selected at random in three districts Pune, Solapur and Kolhapur.

Secondary information was gathered to have theoretical understanding of evolution of family business, different business models opted by businessmen, innovative strategies used in business expansion, family business practices of Sindhi, Marwari and Jain community, challenges faced by these communities during emergence of cutthroat competition in the market, involvement of new/next generation with their upgraded knowledge and fact finding figures about business' contribution in economic development of western Maharashtra. Secondary information has been collected from various books, surveys, articles, magazine, journals, newspapers, research work on PhD reports as well as authentic related websites.

## **Sample And Sampling Technique**

### **Sample design**

For the present study the state of Maharashtra is selected as a geographical area as Maharashtra is one of the most industrialized states of India; it occupies Central and Western parts of the country. Maharashtra is considered as the third largest state in India. It covers

an area of 307,731 km (118,816 Sq Ft) or 9.84% of the total geographic area of India. Maharashtra has five main regions with 35 districts geographically, historically and according to political sentiments. Five main regions of Maharashtra are:

- 1 Konkan (Konkan Division)
- 2 Vidarbha (Nagpur and Amravati Division)
- 3 Marathwada (Aurangabad Division)
- 4 Northern Maharashtra and Khandesh (Nashik Division)
- 5 Desh or Western Maharashtra (Pune Division) (8)

As family-owned businesses in the districts of western Maharashtra contribute to larger extent in the economic development of the cities of Pune, Solapur and Kolhapur are considered for the study.

### **Sampling Technique:**

The simple random sampling will be used to collect primary data. Simple random sampling is the process in which each and every element of the population has equal and independent chance of being selected in sample. Simple random sampling will be done which represent a balanced mix of various demographic factors (gender, age, education, caste and family members).

The researcher will approach personally to the respondents to collect the required information and data from respective communities of Pune, Solapur and Kolhapur city.

### **Universe/Population:**

In the present research universe consists of all family business run by Jain, Marwari and Sindhi communities in Pune, Kolhapur and Solapur city. Type of Business includes industry, small scale, medium scale, trading, retail, service sector, franchisee etc. Population in this study is indefinite (larger, unknown and uncertain) in nature.

### **Sample Size:**

A Sample is a percentage of the total population in statistics. Researcher can use the data from a sample to draw inferences about a population as a whole. Determining a sample size is one of the most challenging tasks of a researcher and depends upon many factors including the size of original population. The size of sample means number of items to be selected from the universe as a sample.

The sample size must fulfil the main criteria of flexibility, reliability, efficiency and representativeness. Sample size for the present research is considered as indefinite and unknown and hence calculated according to Cochran's formula as:

### **Sampling Unit:**

Businessmen owning family business of Marwari, Jain and Sindhi community from the cities of Pune, Solapur and Kolhapur of Western Maharashtra will be the sampling unit of this research study.

### **Statistical Tools and Techniques:**

To justify the objectives of the study, both conventional and non-conventional statistical techniques will be used. Suitable statistical tools and techniques will be used to present and analyze the data. Tables, graphs, bar chart, pie chart, line charts will be prepared to present data by using frequency and percentage. Analytical statistical techniques such as mean, percentage, rank correlation and testing of hypothesis (t-test and chi-square test) will be applied to analyze the data.

### **Limitation of the Research:**

Most of the objectives of the study are justified by using the primary data from businessmen by survey method. As many of the respondents (businessmen) furnished the required information from their experience, the collected data is subject to recall bias, though the biases were minimized through cross checks.

The present study is subject to following limitations:

1. The geographical coverage of the study will be restricted to selected study area of western Maharashtra and the findings may not be applicable to other areas of the state. Hence, the findings of the study may be considered appropriate for the situations similar to study area and extra care should be taken while generalizing the results to other locations.
2. The various tools and techniques that would be used for present study may not be free from limitations.
3. Conclusion and inferences drawn through this study will be based on the assumption that respondents will provide the true and fair data.

### **Demographic Profile Of The Respondents:**

According to table 4.1 there is a study of 495 respondents. In case of gender wise classification the survey reflects that 442 are male (89.29%) and 53 are female as illustrated in the table. This can be an indication that the male segment is dominantly involved in the family business as compared with the women. With regard to age, 495 of respondents indicate their age out of which 76 respondents come under up to 30 years ( 15.35%), 307 come under 31 to 45 years, 112 respondents come under above 45 years ( 22.63%). the average age of respondents indicate that they are in mid life transition phase

. Level of education indicates in the table that 265 respondents i.e. 53.54% have completed their education up to HSC, whereas 179 (36.16%) respondents are graduate and only 51 respondents have completed their post graduation.

It shows that the majority of the respondents have completed their education up to HSC. With regard to Nature of Business Most of the Businessman engage in Retail sector that is 227 (45.86%), Least of the businessmen deal in service sector that is 30 (6.06%), 193(38.99%) respondents are engaged in wholesale business and 45 (9.09%) Businessmen

deal in manufacturing sector. It indicates that retail sector gives more business and cover final customer and help to the companies to promote their products to huge numbers of customers.

**Base Of Family Business:**

Table 4.2 indicates how family business is being initiated by family members. In this 343 (69%) of businessmen established new entity itself to start the business operations, 14% of respondents took over existing business. At the same time there is 6% respondents started business with the option of either merger or with acquisitions, however, 11% of the business initiated in other category.

<b>Table: 1.2</b>					
Base of family business					<b>Total</b>
	a. Established the business	b. Took over existing business	c. Merger & Acquisitions	d. Other	
F	343	69	31	52	<b>495</b>
%	69	14	6	11	<b>100</b>

Source: Primary Data

**Graph No. 1.1, Base of Family Business**

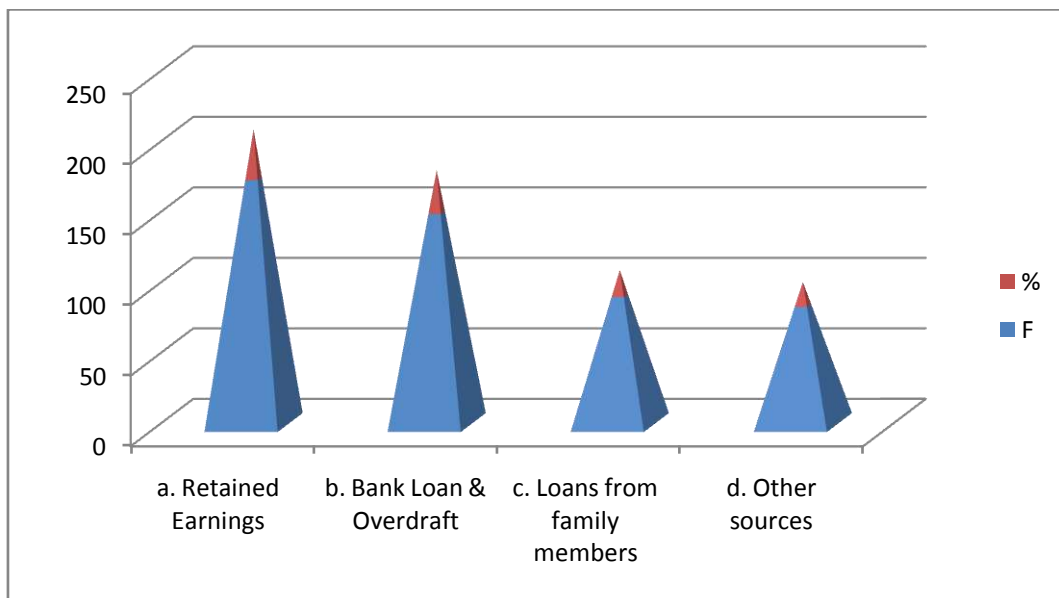


Source: Table No. 4.2

**Source Of Business Funds:**

<b>Table: 1.3</b>					
	Source of business funds				<b>Total</b>
	a. Retained Earnings	b. Bank Loan & Overdraft	c. Loans from family members	d. Other sources	
F	173	149	90	83	<b>495</b>
%	35	30	18	17	<b>100</b>
Source: Primary Data					

**Graph No.1.2 Sources of Business Funds**



Source: Table No. 1.3

To start any business it needs funds and there are many sources to raise the funds. This table shows the source from where businessmen raise their funds. In this 173 of respondents raised their funds by retained earnings, 90(18%) raised by loans from family members. It also consists of 83 respondents i.e. 17% raised funds by other sources such as private finance, lending from others etc. However, 30% of the family business entities i.e. 149 respondents raised their funds with the help of bank loan and overdraft.

**Conclusion:**

The primary data collected on the basis of the questionnaire reflects the difference in the opinion of the classes of the respondents based on the age, education, family size, etc. It is quite certain from the opinion of these respondents that there is a resemblance of the community practices. There is the inclusion of business orientation, nature and period of establishment, family interactions, etc. In terms of the region of western Maharashtra, there is

comparatively limited spread of the communities under this study. However, as compared with the economic impact of these family businesses in the study area, the impact observed is quite noticeable.

According to the data it can be said that most of the businesses from the communities under this study are having strong base of business operations. In the latter part of the topic there was an application of statistical test to understand the validity of the hypothesis made related to the various parameters in this research work. The chi square tests along with 't' tests are applied to various group of workers based on the gender, education and community group so as to check the viability of the hypothesis. In this regards there was a complete attempt to provide better approach towards data analysis and its interpretation in the present context of the study. It was assisted with the tabulation, graphs and tests to have a platform for drawing relevant conclusions.

## **Impact Of Ict On English Language Learning During Covid -19 Pandemic: An Analytical Study**

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**Abstract:**Information technology has made the education process more effective and productive. It has increased the well-being of the students. Education methods had developed and made the process easier by the replacement of books with tablets and laptops. ICT in education improves engagement of knowledge. ICT is integrated into lessons, this is because technology provides different opportunities to make it more enjoyable in terms of teaching. The importance of ICTs extends beyond identifying, tracing, understanding, managing, treating, and perceiving pandemics (Wilson & Jumbert, 2018).<sup>[15]</sup>English is the language of international communication, media and internet therefore learning English is important for socializing and entertainment. Challenges faced by second language students of English can include lack of exposure, over use of first language, unskilled teachers, no emphasis on English, cultural barriers to learning and cost. However, a good teacher can develop strategies and methods to tackle challenges and include as many students as possible. Language education is an area where open-access, online courses and resources, virtual classrooms and social networks based on ICT are being increasingly used to give learners access to information, promote interaction and communication and enhance digital learning. The pandemic caused shocks to the system with institutions forced to shut down during the lockdown period, and the transition of students and teachers to online teaching-learning. Moreover, ICTs are best to maintain social order during a pandemic. This paper aims to explore the impact and implication of ICT on English Language learning during covid-19 pandemic.

**Keywords** Pandemic, Language learning, English teaching, Communication, Information Communication technology, Literacy skills

### **Introduction**

#### **Definition of ICT**

ICT is the diverse set of technological tools and resources used to transmit, store, create, share or exchange information. These technological tools and resources include computers, the Internet (websites, blogs and emails), live broadcasting technologies (radio, television and webcasting), recorded broadcasting technologies (podcasting, audio and video players and storage devices) and telephony (fixed or mobile, satellite, video-conferencing, etc.)<sup>[1]</sup>The term ICT stands for information and communication technology. The term “information and communication technologies” (ICT) refers to forms of technology that are used to transmit, process, store, create, display, share or exchange information by electronic means. This broad definition of ICT includes such technologies as radio, television, video, DVD, telephone (both fixed line and mobile phones), satellite systems, and computer and network hardware and software, as well as the equipment and services associated with these technologies, such as videoconferencing, e-mail and blogs. In a document of UNESCO shared online, the ICT has been defined with broader perspective advocating its scope, importance and nature of use, especially highlighting in the field of education: “Information and Communications Technologies (ICTs) are a diverse set of technological tools and resources used to communicate, and to create, disseminate, store, and manage information. Communication and the information are at the very heart of the educational process, consequently ICT use in education has a long history. ICT has played an educational role in formal and non-formal settings, in programs provided by governmental agencies, public and private educational institutions, for profit corporations and non-profit groups, and secular and religious communities” (unesco.org).<sup>[3]</sup>

#### **Importance Of English Language Learning**

English is a universal language as it is understood and used worldwide. The Internet today has emerged as an immense source of information. The majority of the websites, blogs, and even search engines use English as their primary language. Social media websites, for instance, Facebook, Twitter, and Instagram are also using English as a basic language. Although these platforms provide multi-language capability and automated translators, most users prefer the English language version. E-Commerce is getting popular quickly with the advancement of the internet and business technology. All the popular E-Commerce platforms like Amazon, AliExpress, and Daraz also use English as their primary language. People, especially students in developing and developed countries, are highly focused on freelancing due

to the job saturation in respective countries. Moreover, the number of unemployed educated persons is increasing alarmingly during this pandemic. So, switching to freelancing is a promising dimension to earn a livelihood. Most clients on freelancing platforms like Fiverr, Upwork, and People Per Hour are native English people. The primary mechanism to deal with a client is written communication, although some platforms support video conversation. No matter what the scenario is, a freelancer should communicate clearly and precisely with their client to achieve his goals. Hence, English is the need of the hour to develop a strong communication skill in human beings.

### **Covid-19 Pandemic**

On March 11, 2020 World Health Organisation (WHO) declared Covid-19 as a pandemic. Covid-19 has affected more than 4.5 million people worldwide (WHO). In India, the first affected case of Covid-19 was detected on 30 January 2020 in the state of Kerala and the affected had a travel history from Wuhan, China. In India, the first death was reported on March 12, 2020 and the nation observed Janta Curfew for a day on March 22, 2020. India again observed 14 hours of Janta Curfew on March 24 to combat the Coronavirus pandemic and assess the country's ability to fight the virus. Then, the 1st phase of lockdown was announced by the Prime Minister on March 25, 2020 for 21 days. Monitoring the effects of the virus, the Indian Government has been extending the lockdown period in different phases and the lockdown 5.0 was declared on April 30 which is effective from 1st June to 30th June 2020. In all the phases of lockdown starting from lockdown 1.0 to lockdown 5.0, the educational institutions throughout the nation have never got any relaxation to start their educational activities. Thus, pandemic Covid-19 impacted significantly on the education sector. According to the UNESCO report, Covid-19 has affected nearly 68% of the total world's student population as per the data taken during 1st week of June 2020. Outbreak of Covid-19 has impacted about 1.2 billion students and youths across the globe by school and university closures. Several other countries have also implemented localized closures impacting millions of additional learners. In India, more than 32 crores of students have been affected by the various restrictions and the nationwide lockdown for Covid-19.<sup>[7]</sup> The shutdown of universities has also affected the student's learning in universities. In order to ensure the continuity in institutes and universities, one immediate measure is essential. To conduct the class smoothly, an online teaching methodology is adopted. Learning management software and open-source digital learning solutions are adopted by the universities to run online classes. Higher education is a critical determinant of the economic future of the country and the higher education sector has significantly affected by the pandemic as well. Many students from India enroll in universities abroad. Due to the global closure of the institutes and universities, it is expected that it will reduce the demand for international higher education. The main concern which is coming in the mind of everyone is the effect of the pandemic on the rate of employment. Because of the current situation, graduates who have recently completed their graduation are fearing from the withdrawal of job offers from corporate. Teaching methodology in institutes and universities has also transformed due to the lockdown in India. It has replaced the old chalk-talk model with the new technology. E-learning solutions are making teaching and learning possible in this situation but engagement is a big problem attached with the e-learning. The policy makers are trying to solve the problem of engagement and tackling the digital divide. In order to manage the crisis in the Indian education sector, a multi-pronged strategy is necessary in the long term. An effective education and well rounded practices are needed in India to build the capacity of young minds in this time of crisis. To ensure the overall progress in India and worldwide, It will drive employability, well being, health and productivity through the development of skills.<sup>[12]</sup>

### **Significance And Relevance**

A language is a tool used to communicate with each other, so there is an understanding between the parties involved. The language itself can make it easier for us to channel ideas, feelings and many other things. In this world, many languages are used, even one country can have up to 2 or more languages. And in this modern world, many languages are also used by many people. Those languages used by many people are known as the English language. Even though English today is used for many things. We were starting from education, business, politics, to technology. The importance of learning English in today's times cannot be underestimated or ignored seeing English as the language spoken in most parts of the world. English does not only play a role as a communication tool but can also make it easier for us to adapt to the environment and work in the present and future. Involvement of Information communication technology is the need of the hour to uplift the English language learning process during pandemic and post pandemic situations. Hence it is necessary to analyze the impact of ICT on English language learning. The study will be based on an international scenario.

### **Aims And Objectives**

1. To increase the scope of English teaching and learning
2. To create student motivation, increased social interactions, positive outcomes, enhanced student learning, and enhanced student engagement.
3. For learners to have English communicative skills for their future development.
4. ICT improves the effectiveness of education.
5. Implementation of multimedia technology in English teaching that can help students to make use of English listening materials and develop their capacities.
6. Technology creates an atmosphere for young language learners and increases their language awareness.
7. Give learners access to information, promote interaction and communication and enhance digital literacy skills.
8. Transforming students from passive recipients to active learners.

### **Methodology**

The research methodology assumed for exploration in my research will be based on content analysis. Therefore, in this article Qualitative research methods will be used for the study. The methodology of research that is proposed to be pursued in the present study would be based on the depth analysis of the impact and role of Information Communication Technology on English language learning during Covid-19 Pandemic.

The Qualitative research methods which will be used by me will elucidate the discourse analysis and criticism and introspect in the respect of English language learning at the global level in a crucial time. The proposed research work would depend upon the use of primary and secondary sources. These works would be analyzed and interpreted critically in respect of Covid-19 pandemic scenario.

### **Literature Review**

Technology grows as an important tool to help learners facilitate language learning. Role of using new technologies in learning English as a second or foreign language, which supports English language learners to increase their learning skills. Broad principles relating technology on language use, language teaching and language learning are focused. Ways that technological media influence contexts and forms of expression and communication, guide language teachers and researchers in determining how to incorporate technology in their teaching or research.<sup>[5]</sup>Evaluating suitability and impact of technology and goal of helping learners to pay critical attention and culturally encode connection among forms, context, ideologies. When technology is used in language education it encounters and produces traditional and new mediums.<sup>[4]</sup>Technology plays an effective role in the language learning process. Technology use has become an integral part of the learning process. How new technologies are introduced into language education with maximum impact for the language teacher is a matter of concern.<sup>[10]</sup>

E- learning technology employed in instruction to enhance teaching and learning. Advantages and barriers to the use of technology integration in language instruction is a crucial step. Introducing and supporting the extensive use of technology by teachers in the classroom, thus successfully integrating technology in education.<sup>[14]</sup>Society 's changing means of communication which is increasingly mediated by technology. Children make the best use of communication technology to promote their language and literacy development. Young children are being exposed to computers at home and at school. Children 's use of technology has increased over the past decade, and there are certain impacts of technology on children's development. The impact of computer use on pre-school students enhance social and cognitive capacity and language development and motivation and boost learner's confidence. Technology focuses on children 's learning of language and literacy skills. Mobiles and computers are a popular medium of electronic communication. There are some serious impacts of increased use of technology on children's language development. Technology has negative effects on existing literature. Communication technologies have beneficial effects on language. New media developed with advanced skills, the academic professionals need to update their skills. The way and types of computer usage may influence outcomes and affect specific aspects of technological advances, consequences of changing trends.<sup>[11]</sup>The purpose of comparisons prospects and future research are discussed. Every language classroom uses a form of technology relating to the history of socio-technical innovation and develops the theoretical basis of the concept. Technology helps and improves language learning skills and enables teachers to adapt classroom activities which encourage them.Thus, computer technology use affects students' achievement in formal interactions in classrooms and informal settings. A study level meta- analytical validation compares the classroom that does not use technology to the classroom which uses technology.<sup>[12]</sup>

## **Research Findings**

Impact of Communication technology in respect to Indian perspective, large focus on impact of Internet in Indian education system and English language teaching and training in India is promoted with the help of Internet from middle school to tertiary levels in India. We come across the constraints faced by Internet users and highlight the future of Internet usage in language teaching in India.

Technologies are used in daily life in language learning. The Younger generation can't imagine life without mobile technologies. Learning can be supported by mobile devices too. Mobile learning is becoming a salient feature of education. Mobile applications are used in the learning of English as a foreign language, a great opportunity for foreign language learning which is beneficial and effective. It also helps low grade students to reach their education goals. They need multiple language skills in authentic learning environments. In this digital age any event uses ICT, it shares or exchanges information by electronic means. ICT has a presence within education. The role and use of ICT in education lends to students centered learning environments in the 21st-century. Such as Google is a collaborative and communicative tool which supports online blended language learning. Therefore, researchers can refer to google applications for the process of learning, teaching and developing of the English language. Translation practices also got modified with the help of google translate website, google speech recognition system also emerged for further research. The technological research also covers four social media sites: Facebook, Twitter, YouTube, and WhatsApp. The learners spend more time using social media for learning the English language. By using social media learners acquire and practice new vocabularies and decrease their spelling errors as listening is the most improved skill when using social media for learning the English language. YouTube is the most used social media platform for learning the English language. Further research is also recommended for investigating the impact of social media. More research is needed to clarify the impact of other social media such as Snapchat, Instagram, Wechat, etc. on EFL learners. It highlights the various impacts and the role of ICT in contemporary higher education, transforming the teaching and learning in the universities and colleges which showcases possible future developments. ICT helps teachers to interact with students. It helps them to prepare their teaching, provide feedback. ICT also helps teachers to access institutions and universities, NCERT, NAAC NCTE and UGC etc. It also helps in effective use of ICT software and hardware for teaching –learning process.

## **Conclusion**

The pandemic greatly expanded and normalized the use of technology in education. The coronavirus may be troublesome for English language learners. 5 million students are still learning English. Information technology helps teachers and learners to participate co-operatively in the teaching learning process. It broadens their thinking, knowledge and enables them to perform various educational activities in the educational sector. ICT provides more opportunities for communication between peer learners. With the use of ICT there is a two-way exchange of knowledge between home and schools and colleges. The teacher abides with the key to the successful use of ICT for learning. ICT has a positive effect on the way we communicate, as it has made it easier & cheaper. Students can collaborate on group projects using technology-based tools such as wikis and Google docs. The walls of the classrooms are no longer a barrier as technology enables new ways of learning, communicating, and working collaboratively. ICT not only transforms teaching but also the learning processes. The transformation gets to increase learning gains for students that provide learners an opportunity to develop creativity, communication skills, and other thinking skills. ICT has enhanced distance learning in the 21st century. Successful implementation of ICT to lead change is more about influencing and empowering teachers and supporting them in their engagement with students in English learning rather than acquiring computer skills and obtaining software and equipment. Thus, ICT promotes change to education in the 21st century.

## **References**

1. [1]“Information and communication technologies (ICT) | UNESCO UIS.” *UNESCO Institute for Statistics*, <http://uis.unesco.org/en/glossary-term/information-and-communication-technologies-ict>. Accessed 17 April 2022.
2. [2]Abdel-Reheem Amin, Eman. "A review of research into Google Apps in the process of English language learning and teaching." *Arab World English Journal (AWEJ)* 11.1 (2020).
3. [3].Alkamel, Mohammed Adulkareem A., and Dr. Santosh S. Chouthaiwale. “*THE USE OF ICT TOOLS IN ENGLISH LANGUAGE TEACHING AND LEARNING: A LITERATURE REVIEW.*” *VEDA's journal of English language and literature (JOELL)*, vol. 5, no. 2018. *Academia*, [https://www.academia.edu/45590861/The\\_Use\\_of\\_ICT\\_Tools\\_in\\_English\\_Language\\_Teaching\\_and\\_Learning\\_A\\_Literature\\_Review](https://www.academia.edu/45590861/The_Use_of_ICT_Tools_in_English_Language_Teaching_and_Learning_A_Literature_Review). Accessed 16 April 2022.

4. [4].Bax, Stephen. "Normalisation revisited: The effective use of technology in language education." *International Journal of Computer-Assisted Language Learning and Teaching (IJCALLT)* 1.2 (2011): 1-15.
5. [5].Chun, Dorothy, Richard Kern, and Bryan Smith. "Technology in language use, language teaching, and language learning." *The Modern Language Journal* 100.S1 (2016): 64-80.
6. [6]. Ghasemi, Babak, and Masoud Hashemi. "ICT: Newwave in English language learning/teaching." *Procedia-social and behavioral sciences* 15 (2011): 3098-3102.
7. [7].Jena, Pravat Kumar, *Impact of COVID-19 on Higher Education in India* (June 18, 2020). *International Journal of Advanced Education and Research (IJAER)*, Vol-5, Issue-3, Pg-77-81 (2020) DOI- <http://www.alleducationjournal.com/archives/2020/vol5/issue3/5-3-27>, Available at SSRN:<https://ssrn.com/abstract=3691541>
8. [8]. Naaz, Shahida, et al. *The Role of Smartphones in Learning English: A Study of Learners' prespective*. London, International Conference on Research and Humanities, 7-9 March 2019, <https://www.dpublication.com/wp-content/uploads/2019/03/ICRH-1-232.pdf>. Accessed 16 04 2022.
9. [9]. Putra, Erlangga. "Important of learning English nowadays." November 2020, [https://www.researchgate.net/publication/346400434\\_The\\_Importance\\_of\\_Learning\\_English\\_Nowadays](https://www.researchgate.net/publication/346400434_The_Importance_of_Learning_English_Nowadays). Accessed 17 April 2022.
10. [10]. Riasati, Mohammad Javad, NegahAllahyar, and Kok-Eng Tan. "Technology in language education: Benefits and barriers." *Journal of education and practice* 3.5 (2012): 25-30.
11. [11]. Tamim, Rana M., et al. "What forty years of research says about the impact of technology on learning: A second-order meta-analysis and validation study." *Review of Educational research* 81.1 (2011): 4-28.
12. [12]. Tarkar, Preeti. (2020). *Impact Of Covid-19 Pandemic On Education System*. *International Journal of Advanced Science and Technology*. 29. 3812-3814.
13. [12]. Viswanathan, Revathi. "Recent Impacts of Internet on English Language Training in India." *TESL-EJ* 12.3 (2008).
14. [14]. Watt, Helen J. "How does the use of modern communication technology influence language and literacy development? A review." *Contemporary issues in communication science and disorders* 37.Fall (2010): 141-148.
15. [15]. Wilson, Christopher, and Maria GabrielsenJumbert. "The new informatics of pandemic response: humanitarian technology, efficiency, and the subtle retreat of national agency." *Journal of International Humanitarian Action* 3.1 (2018): 1-13.

## **Medicinalplants Used In Ethno -Veterinary Practices In Ambegaon Tehsil, Pune District, Maharashtra, India**

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### **Abstract:**

This work gives the use of ethnoveterinary treatments to treat animals by tribal peoples. They depend to use plants to cure their animals. The various visits were conducted in Ambegaon region in Maharashtra state. There are 49 plant species belonging to 30 families reported to be used in this area to cure certain veterinary diseases. Total 49 plant species belonging to 30 families were documented for different medicinal uses for animals in the region.

**Key Words:** ethno-veterinary, animals, drug, herbal.

### **Introduction:**

India has a long tradition of using plant resources to cure diseases in horses and cows. In old India, the Rig-Veda oldest knowledge for cattle and their management. Ethno-veterinary practices are especially used for curing animals. A lot of the medicines are prepared from plant parts by livestock owners. Ethno veterinary practices include the use of local medicinal plants. Animals that are afflicted with various ailments are treated using local medicinal plants in ethno veterinary practices.

A number of researchers reported ethnoveterinary practices in various areas in India. Pandey et al (2000), Chitralkha and Jain (2006), Ravikumar and et al. (2004), Kulkarni and Kumbhojkar (2002), Pawar N. B. (2020) and Patole S. N. (2021).

### **Methodology:**

#### **Study Area:**

tehsil is located in the northern zone of the Pune District of Maharashtra state. This region extends between 19°2' 5" north latitudes and 73°50'11" east longitudes. The total villages 142, cities Manchar and Ghodegaon. The human population according to the 2001 census approximate 2,13,842 and tribals population 42,907 percentage of total population to the tribal population 20.06 %. The total area is approximately 87,851 hectares. Adavasi tribes are found in large number in this region. This tehsil falls to the foothill of Sahyadri Mountain range.

The present study has been conducted in two steps:

Step I- A survey was conducted among the tribal peoples of Ambegaon region Pune district during 2019-2021 to gather knowledge on plants used for treatment on different disorders as used by them.

Step II- Plants in circumstances of flowering and fruit were identified by the help of Cooke, T. (1958), Hooker, J. D. (1872-1897). The tribals of Ambegaon tehsil provided knowledge on the medicinal uses of plants, including which species they used for different disorders.

### **Results And Discussion:**

The present study brought knowledge of tribal for the treatment of different disorders of domesticated animals. The plant specimens have been identified by the flora, the plants species are alphabetically arranged.

1. *Abrus precatorius* L. Family- Fabaceae, Local name -Gunja, Part used- Leaves, seeds, Use- Leaf paste is applied to treat swellings, the small amount of seed powder is given in the stomach problems. Seeds crushed and mixed with jaggery are given in retention of the placenta of Cattles.
2. *Achyranthes aspera* L. Family- Amaranthaceae, Local name- Aghada, Parts used- Seeds, Uses- Seeds Juice is given in luke-warm water in Gastric ailments of Cattles.
3. *Aeglemormelos* (L.) Correa, Family -Rutaceae, Local name- Bel, Part used- Fruit, Uses -Crushed fruits are given in diarrhoea.
4. *Aloevera* Mill. Family- Liliaceae, Local name- Korphad, Part used- Leaf, Uses- Leaf juice and used on burns, itching and Wounds.
5. *Andrographis paniculata* Nees Family- Acanthaceae, Local name- Bhuineemb, Part used- Whole plant, Use- Decoction of whole plant is used to treat fever and cough

6. *Annonasquamosa* L. Family- Annonaceae, Local name-Sitaphal, Part used- Leaves, Uses-Paste of fresh leaves is applied topically onwounds.
7. *Aristolochia bracteolate* Lam Family-Aristolochiaceae, Local name -Kidmari, Part used- Leaves, Use- Leaves are heated with gingerly oil and applied on affected places to cure skin infections and wounds. Leaf is made into a paste along with pepper and given to cure insect bite.Paste of leaves is applied topically on parasites on skin.
8. *Asparagus racemosus*Willd. Family- Asparagaceae, Local Name- Satavari, Part used- Root, Use- Roots are used to increasethe milk in cows and buffaloes.
9. *Bauhinia variegata* L. Family-Caesalpiaceae, Local name-Kachnar, Part used-Stem bark, Use- Bark powder is appliedtopically on wounds.
10. *Brassica campestris* L. Family- Brassicaceae, Local name- Mohri, Part used- seed, Use- Few drops of seed oil are poured into the nasal cavity of animal to lubricate the nasal passage to enhances breathing.
11. *Bryophyllumpinnatum* (Lam.) Oken, Family- Crassulaceae, Local name- Panphuti, Part used- Leaves, Use- Paste of leaves are given in Urinary and stomachproblems.
12. *Buteamonosperma*(Lam.) Taub. Family- Fabaceae, Local name-Palas, Part used- Stem Bark, Use- Bark powder is appliedtopically on wounds.
13. *Calotropisprocera*(Aiton) Dryand. Family- Asclepiadaceae, Local name- Rui, part used- Leaf, Use- Leaf is applied topically onjoint inflammation, leaf latex is used to cure the wound and skin problems.
14. *Cassia fistula* L. Family- Caesalpiaceae, Family-Amaltas, Part used- Seed, Use-Seeds are given forstomach problems.
15. 15.*Cassia tora* L. Family – Caesalpiaceae, Local name - Tarota, Part used- Seed, Use- Seed is mixed with water and ground into paste and applied topically to cure skin diseases like ringworms and fungal infections.
16. 16.*Cissusquadrangularish* L. Family- Vitaceae, Local name -Haddijodi, Part used-Stem, Use- Stem are used to treat the bone fracture and muscular pain in goats and cows as well as bulls and buffaloes.
17. 17. *Citrulluscolocynthis* L. Family - Cucurbitaceae, Local name - Indravan, Part used- Root, fruit, Use- Root is ground with water and the decoction obtained is given to cure cough. Dry Fruit powder is given in the treatment of diarrhea and dysentery in goats, cows.
18. 18. *Cissampelospareira* L Family - Menispermaceae, Local name - Pahadvel, Part used- Leaves, Use- An extract from tender leaves in warm water is given internally with a pinch of rock salt and also applied topically on the bitten region of goats and sheep for relieving pains of scorpion bite.
19. 19. *Clematis gauriana*Roxb.ex., Family- Ranunculaceae, Local name-Morvel, Part used - Stem, Leaves, Use-Leaf paste and stem boiled in water and used to treat parasites on animals.
20. 20. *Curcuma longa* L. Family-Zingiberaceae, Local name- Halad, Part used - Rhizome Use- Rhizome paste applied asantiseptic on wounds due to cut or any skin problem due to infection.
21. 21. *Daturametel* L. Family- Solanaceae, Local name- Dhotra, Part used-Leaves, Use- Paste of leaves is appliedon injuries of ankle bone
22. 22. *Ecliptaalba* (Lamk.) Hassk. Family-Asteraceae, Local name-Brungraj, Part used- Leaves, Use- Paste of leaves is appliedtopically on wounds.
23. 23. *Ficusbenghalensis* L. Family-Moraceae, Local name-Vad, Part used- Stem bark, Use-Paste of Bark applied onfractures.
24. 24. *Ficusracemosa* L. Family-Moraceae, Local name- Umbar, Part used- Stem bark, Use- Paste of Bark is used onwounds.
25. 25. *Ficusreligiosa* L. Family-Moraceae, Local name-Pimpal, Part used- Stem bark and leaves, Use- Bark and leaves Juice is given for urino-genital problems.
26. 26.*Gliricidiasepium*(Jacq.) Kunth ex Walp. Family - Fabaceae Local name- Undirmari, Part used - Leaves, Use-Leaves are crushed and paste is used to wash livestock's to remove external parasites.
27. 27.*Holopteliaintegrifolia*(Roxb.) Planch. Family - Ulmaceae, Local name-Papada, Part used -Stem bark, Use- Bark paste mixed with coconut oil and applied externally to treat inflammation and skin diseases.
28. 28.*Mangiferaindica*Lam. Family- Anacardiaceae, Local name-Amba, Part used- Stem bark, Use- Bark ash is given in cough.
29. 29. *Mimosa pudica* L. Family- Mimosaceae, Local name - Lajalu, Part used- Leaves, Use- Leaf is ground with pepper, garlic and onion then fed to cows to cure fever.

30. 30. *Murrayakoenigii* (L.) Spreng. Family-Rutaceae, Local name-God neem, Part used- Leaves, Use- Leaves are given during diarrhea.
31. 31. *Ocimum sanctum* L. Family-Lamiaceae, Local name-Tulas, part used-Leaves, Use-Leaves used as antiseptic and antibacterial.
32. 32. *Plumbago zeylanica* L. Family- Plumbaginaceae, Local name- Chitrak, Part used-Root, Use-Root paste is externally applied on local inflammation, inflammation caused by any internal injury.
33. 33. *Pongamia pinnata* (L.) Pierre Family - Fabaceae, Local name - Karanji, Part used- Stem and leaves, Use-Leaf is ground with pepper and given to cure fever. Decoction of stem bark is given orally to treat dysentery.
34. 34. *Psoralea corylifolia* L. Family-Fabaceae, Local name-Bavachi, Part used- Seed, Use-Paste of seeds applied topically on itching and skin problems.
35. 35. *Pueraria tuberosa* (Willd.) DC. Family- Fabaceae, Local name-Vidarikand, Part used- Tuber, Use-Tubers are given to increase milk production.
36. 36. *Puncagranatum* L. Family-Punicaceae, Local name- Dalimb, Part used- Fruit, Use Decoction of fruit is given in diarrhea.
37. 37. *Ricinus communis* L. Family - Euphorbiaceae, Local name - Erand, Part used- Leaves, use-The fresh 50 gm leaves are given to the goat and sheep to get relief from the indigestion and gas trouble.
38. 38. *Semecarpus anacardium* L. Family-Anacardiaceae, Local name-Bibba, Part used- Fruit, Use-Fruits are given to treat retention of the placenta.
39. 39. *Solanum xanthocarpum* Schrad. & H. Wendl. Family- Solanaceae, Local name- Bhuringani, Part used- Fruit, Use-Fruits are given for curing cough
40. 40. *Syzygium cumini* (L.) Skeels Family- Myrtaceae, Local name, - Jambhul, Part used- Stem bark, leaves, Use-Stem bark is mixed with curd and made into a paste and given to cure dysentery. Leaves paste is applied as antibacterial on wounds.
41. 41. *Tagetes erecta* L. family- Asteraceae, Local name- Zendu, Part used- Flower, Use- Paste of flowers are applied to cure wounds.
42. 42. *Tamarindus indica* Family: - Mimosaceae, Local name- Chinch, Part used- Leaves and fruits, Uses -The leaves are used to treat the stomach problems in goat, cow, bull and buffalos. The fruits are dipped in cold water for some time and then the extract is given to the animal in high dose to remove the poisonous elements from the digestive system.
43. 43. *Terminalia bellirica* (Gaertn.) Roxb. Family- Solanaceae, Local name - Behada, Part used- Stem bark, Use- The dried stem bark powder is boiled in a water and the decoction obtained is given orally to the goats for curing blood dysentery.
44. 44. *Tridax procumbens* L. family-Asteraceae, Local name-Unhali, Part used- leaves, Use- Leaves extract is applied topically on wounds
45. 45. *Vitexnugundo* L. Family-Verbenaceae, Local name-Nirgudi, Part used- Leaves, Use- Paste of leaves applied topically for inflammation.
46. 46. *Wattakavolubilis* (L. f.) Stapf. Family- Asclepiaceae, Local name - Malkani, Part used- Leaves, Use- Leaf paste is mixed with common salt and applied on affected places to treat all types of swellings and wounds.
47. 47. *Withania somnifera* (L.) Dunal in DC. Family-Solanaceae, Local name-Aswagandha, Part used- Root, Use-Mixture of root powder is given along with fodder for curing weakness and maintaining animal in healthy condition.
48. 48. *Woodfordia fruticosa* (L.) Kurz. Family- Lythraceae, Local name- Dhayati, Parts used - Flower, Use-Fresh flowers extract given in treatment of dysentery.
49. 49. *Zingiber officinale* Roscoe, Family- Zingiberaceae, Local name- Adrak, Part used- rhizomes, Use-Rhizomes with jaggery is given in indigestion.

### Conclusion:

Ethno-botanical research work is an enlist the plants for the treatments of different disorders to domesticated animals with the help of tribals. The tribals in the area are dependent on limited agriculture land and local plant products. In this investigation 49 plants belonging 30 families have been documented. There is need for further investigation on these plants for active principle and to test their safety and efficacy so that it can be further utilized in animal health care needs.

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**References:**

1. Cook, T. (1901-1908) The Flora of Presidency of Bombay Vol. I-III, (Reprint 1958)
2. Botanical Survey of India, Calcutta.
3. Chitralkha K. and Jain, A. K. (2006) Plants used in ethno-veterinary practices in Jhabua
4. District, M. P. Ethnobotany 18: 149-152.
5. Chopra RN, Nayar SL and Chopra IC (1956), Glossary of Indian Medicinal Plants, CSIR,
6. New Delhi.
7. 4. Hooker J. D. 1872-1897. The Flora of British India, VII vols. London.
8. 5. Joshi, S. G. (2000), Medicinal Plants, Oxford and IBH Publishing Co. Pvt. Ltd. New Delhi,
9. 102.
10. 6. Kulkarni DK and Kumbhojkar MS, (2002). Ethno veterinary Medicinal practices in
11. Mahadeokoli tribe. J. Maharashtra agric. Univ., 27(2): 172-176.
12. 7. Pandey, H. P., Verma B. K. and Narain S. (2000) Ethno-veterinary plants of Gonda region,
13. U. P. In Ethnobotany and Medicinal plants of Indian subcontinent ( Edn. J. K. Maheshwari)
14. Scientific Publisher, Jodhpur, 199-203.
15. 8. Patole S. N. (2021) Studies on Ethno-Veterinary Uses of Plants around Akot Tehsil, Dist.
16. Akola, Maharashtra, Journal of Emerging Technologies and Innovative Research, 8(9):688-
17. 691.
18. 9. Pawar N. B. (2020), Ethno-Veterinary Plants of Baglan Region from Nashik District,
19. Maharashtra, International Journal of Research and Analytical Reviews, 7(1): 809-811.
20. 10. Ravikumar RK, Rao BS, Bose SC and Sudhakar K, (2004). Validity of ethno-veterinary
21. practices adopted by farmers in Dindigul District of Tamil Nadu. J. Asian Agri History,
22. 8(1): 55-61.
23. 11. Sharma, B.D., Karthikeyan, S., and Singh, N. P (1996) Flora of Maharashtra State
24. Monocotyledons BSI, Calcutta.
25. 12. Singh, N. P., Karthikeyan, S, (2000) Flora of Maharashtra State Dicotyledons Vol. 1 BSI,
26. Calcutta.
27. 13. Singh, N. P., Lakshiminarsimhan, P. Karthikeyan, S and Prasanna, P. V., (2001) Flora of
28. Maharashtra State Dicotyledons Vol. 2 BSI, Calcutta.

## Biosynthesis Of Zinc Oxide (Zno) Nanoparticles Using Ruta Chalepensis Sp. Plant Leaves And Its Antibacterial Activity

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**Abstract:** Zinc oxide is an inorganic metal compound which has wide range of application in various field. Biosynthesis of nanoparticles from plants is an ecofriendly approach alternate to conventional physical and chemical method. Recently synthesis of nanoparticles using bioactive resources gaining importance due to its least cost, simplicity and effective antimicrobial activity. Present study focus on synthesis of ZnO nanoparticles using *Ruta chalepensis* plant leaves extract. The prepared ZnO nanoparticles have been characterized by UV- vis absorption spectroscopy, also prepared ZnO nanoparticles determined by the antibacterial activity against standard strains of *E.coli*, *S.typhi*, *S.aureus* and *B.subtilis*. It is observed that the ZnO synthesized in the process has the efficient antimicrobial activity.

**Key words:** Zinc oxide nanoparticles, UV- vis spectroscopy, *Ruta chalepensis*, Minimum inhibition concentration, Antibacterial activity.

### Introduction:

Nanotechnology is the developed technology which deals the synthesis of nanomaterials. These nanoparticles are having the well defines shape and size (Kartiresan et al.,2009). Nanotechnology deals with the production and usage of material with nanoscale dimension. From the last decade, the metal nanoparticles have been intensively studied. The nanoparticles ranging between 1 to 100 nm size scale. Biosynthesis of nanoparticles has greatly reduced the use of physical and chemical methods. Use of green synthesis method is rapidly increasing due to usage of least toxic chemicals and environmentally safe to nature (M.Sundrajan et al.,2015). The bioactive resources involved in green synthesis of nanoparticles are plants and their derivaties, microorganisms like bacteria, fungi, yeast and algae. Inorganic metal nano particles have been of great importance due to their distinctive features such as catalytic, optical, magnetic, electronic, and antimicrobial wound healing and anti inflammatory properties. Nanoscale zinc oxide nanoparticles had been in current researches because of their potential applications like antibacterial, antifungal, wound healing, antioxidant and optic properties (Kumar et al., 2013; Happy Agarwal et al., 2017; Madhusudanan et al., 2019). Among all the metals, zinc oxide have the wide range of applications such as semiconductor, thermoelectrical, magnetic, electroluminescent material and are mostly used in the cosmetics, etc. The Zinc oxide (ZnO) nanoparticles have the good conductivity, catalytical activity, unique antibacterial and antifungal properties (Meruvu et al., 2011). Antimicrobial properties with nano sized particles are of substantial interest in the recent past. *Ruta chalepensis* is an aromatic angiospermic flowering plant belongs to Rutaceae family commonly called fringed rue. It is one of the frequently used plants for medicinal purposes (Enis Ben et al.,2009). Aerial parts of the plants such as leaves, stem and flowers were used for medicinal purpose. Leaveas and young stem of plant has high content of alkaloids, furocomourins, comourins, flavonoids, phenols, amino acid and saponin. Rutachalepensis has anti-inflammatory, antihelmintic and spasmolytic effect. ZnO NPs have been reported in different morphologies like nanoflake, nanoflower, nanobelt, nanorod and nanowire [63–65]. Bio synthesis of zinc oxide nanoparticles by plant *Ruta chalepensis* has been reported. This study therefore is aimed to synthesis ZnO nanoparticles using bio method, to analyse their characteristics using spectroscopic techniques and to evaluate its antimicrobial activity.

### Materials and Methods:

#### Plant material and preparation of extract:

*Ruta chalepensis* L. leaves were collected and shed dried at room temperature and powder was prepared using mixer grinder. 5 gm of powder of *Ruta chalepensis* L. was dissolved in 100 ml of distilled water and stirred magnetically at 70°C for 1 hour. The obtained solution was allowed to cool at room temperature and filtered through Whatman No.1 filter paper. The filtrate of aqueous extract was used as reducing agent.

#### Synthesis of Zinc oxide Nanoparticles:

For the synthesis of zinc oxide nanoparticles, 0.3M zinc acetate dihydrate solution was prepared by adding 4 gm of zinc acetate dihydrate, was dissolved in 60 ml of distilled water and stirred for 10 minutes. 40ml of prepared plant extract was added into the 60 ml of zinc acetate dihydrate solution. Then the solution was stirred for 20 minute. The reacted solution was dried at 80°C overnight to yield the zinc oxide nanoparticles

and employed for calcination at 100°C for 2 hours. The brown colored zinc oxide nanoparticles obtained after calcination and these synthesized ZnO nanoparticles were used for antimicrobial studies.

#### UV-Vis spectra analysis:

The sample was measured for its maximum absorbance using UV-Vis spectrophotometry. The optical property of ZnO nanoparticles was analyzed via ultraviolet and visible absorption spectroscopy in the range of 350-450 nm.

#### Determination of antibacterial activity of Zinc oxide Nanoparticles:

##### Antibacterial activity:

Antibacterial activity of synthesised nanoparticles was carried out by agar well diffusion method against four bacterial species i.e. two Gram negative bacteria *Escherichia coli*, *Salmonella typhi* and two Gram positive bacteria *Staphylococcus aureus* and *Bacillus subtilis*. Nutrient agar plate were prepared, 100 ul of 24 hour mature broth culture of individual bacterial strain and swabbed on plate using sterile L Shaped glass rod. The well were prepared by using sterile cork borer, 4mm size well are created with the help of sterile cork borer in each Petri plate. 40 ul sample of ZnO nanoparticles was added in the well. *Sterptomycin* was used as positive control. Plates were kept in refrigerator for diffusion process about 30 minute, and then the plates were incubated at 37°C for 36 hours.

##### Determination of minimum inhibitory concentration:

Minimum inhibitory concentration of zinc oxide nanoparticles was determined using Alamer Blue Assay (Yajko et al., 1995; Rampersad, 2012) for four different bacterial species (*E.coli*, *S. typhi*, *S. aureus* and *B. subtilis*). Each well of microtitre plate was initially added with 100 ul of sterile broth. Then 100 ul of sample of zinc oxide nanoparticles was added in the first well and two fold serial dilutions of sample were made. At last, 20 ul of bacterial cell suspension was added to each well. Microtitre plate was incubated for 24 hours at 37 °C temperature for bacteria. After incubation, 30 ul of Alamer blue dye was added to each well and re-incubated for 4 hours at room temperatu

#### Results and Discussion:



Figure.1- photograph of Ruta chalepensis plant

#### Habit and Habitat:

It is perennial herb widely distributed in Mediterranean area (Polunin and Huxley, 1987) and the Canary Islands. It grows on rocky slope. This plant was introduced in America after Spanish. It is cultivated in the tropics as a potherb or medicinal plant and has widely become naturalized. In tropical Africa it has been introduced in several countries, including the Cape Verde Islands, Sudan, Ethiopia, Somalia.

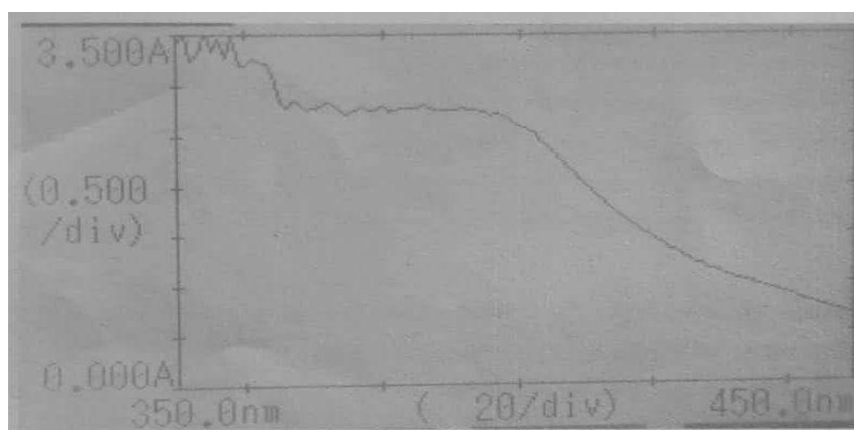
#### Morphometric character:

- 1) The *Ruta chalepensis* belongs to class- Magnoliopsida, order- Sapindales and family- Rutaceae.
- 2) It is an aromatic plant characterized by glabrous, alternative bipennatisect leaves, narrow obovate segments.

- 3) *Ruta chalepensis* is a small yellowish-grey-green shrub-like plant of 20 – 80 cm height, a perennial herb that is more or less woody below.
- 4) The leaves are generally 10-20 cm, prominently dotted with oil-glands and having strong smell.
- 5) The plant have yellow colour flowers with 4-5 sepals and petals and have cymose inflorescence.
- 6) The fruit has long-pointed erect lobes and seeds are many and are angled

**Biosynthesis of ZnO nanoparticles:**

The synthesis of ZnO nanoparticles was confirmed by the appearance of brown colored precipitate at the end of the reaction. The synthesis was further confirmed by spectral analysis. Figure-2 shows the UV-vis absorption spectra of biosynthesized ZnO nanoparticles sample exhibiting absorption peak at 370 nm. The obtained precipitate was dried in hot air oven to yield zinc oxide nanopowder.



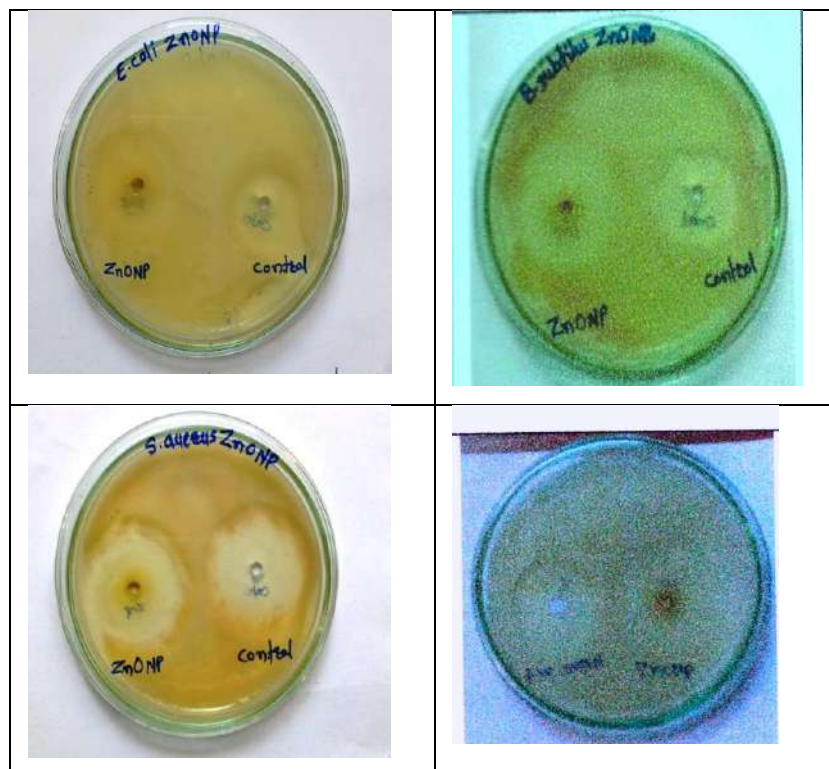
(Figure-2): UV-vis absorption spectra of biosynthesized ZnO nanoparticles

**Antibacterial activity:**

After 24 hours of incubation it was observed that synthesized ZnO nanoparticles had good activity against all the four selected bacterial species viz. *Escherichia coli*, *Salmonella typhi*, *Staphylococcus aureus* and *Bacillus subtilis*. Table-1 shows the maximum zone of inhibition was 34 mm in diameter recorded against *S. aureus* followed by 28 mm against *S. typhi* and *Bacillus subtilis*. While, it was 26 mm in diameter for *E.coli*.

(Table-1). Antibacterial activity of ZnO nanoparticles on various pathogenic bacterial strains

Sr.No	Name of the Bacteria	Gram Nature	Zone of inhibition (mm)	
			ZnO nanoparticles	Streptomycin (µg/ml)
1	<i>E.coli</i>	-ve	26	21
2	<i>S.typhi</i>	-ve	28	20
3	<i>S.aureus</i>	+ve	34	24
4	<i>B.subtilis</i>	+ve	28	26



(Figure-3). Antibacterial activity of ZnO nanoparticles against *Escherichia coli*, *Bacillus subtilis*, *Staphylococcus aureus*, *Salmonella typhi*,

**Minimum inhibitory concentration:**

The antibacterial activity of ZnO nanoparticles was analyzed by the MIC (minimum inhibitory concentration). MIC of zinc oxide nanoparticles was determined using Alamer Blue Assay (Yajko et al.,1995; Rampersad 2012) for four different bacterial species. The minimum inhibitory concentration for *E.coli*, *S.typhi*, *S.aureus* and *B.subtilis* was 250 ug/ml respectively.



( nanoparticles. The prepared ZnO nanoparticles was analyzed by UV-visible spectroscopy Figure-4).  
Minimum inhibitory concentration of antibacterial activity of *Escherichia coli*, *Bacillus subtilis*, *Staphylococcus aureus*, *Salmonella typhi*, strain

**Conclusion:**

The present study reports green, eco-friendly and inexpensive approach for the biosynthesis of ZnO nanoparticles using the leaves extract of *Ruta chalepensis*, which acts as an effective reducing and stabilizing agent. The reduction of metal ions through leaves extracts leading to the formation of zinc oxide

nanoparticles. Zinc nanoparticles can exist in ions only in the presence of strong oxidizing substances. The environmental conditions will affect the stability of nanoparticles. Many biomolecules are present in plants such as proteins, enzymes, amino acids, polysaccharides, alkaloids, alcoholic compounds and vitamins could be involved in bioreduction, formation and stabilization of metal which showed absorption peak at 370 nm confirmed the presence of ZnO at nanoscale. The antibacterial activity of synthesized ZnO nanoparticles showed good activity against *Escherichia coli*, *Bacillus subtilis*, *Staphylococcus aureus* and *Salmonella typhi*, strain.

#### References:

1. A. Ingle, A. Gade, S. Pierrat, C. Sonnichsen, M. Rai, Current Nano science (2008)141– 144.
2. Awwadl M , Nida M. Salem, Amany O, Abdeen 2012- Biosynthesis of silver nanoparticles using *Olea europaea* leaves extract and its antimicrobial activity, Nanoscience and Nanotechnology, Vol.2, No.6, pp. 164-170.
3. Aguilar S. and Tortoriello J.,1995- Anticonvulsant and sedative effects of crude extracts of *Ternstroemia pringlei* and *Ruta chalepensis*. Phytother.
4. Applerot et al. 2009- Inorganic Chemistry, Elsevier 22: 24-34.
5. Alagumuthu G. and Kirubha R.,2012- Green synthesis of silver nanoparticles using *Cissus quadrangularis* plant extract and their antibacterial activity University, International Journal of Nanomaterials and Biostructures, Vol. 2, No. 3, pp. 30-33.
6. Bhuyan, T., Mishra, K., Khanuja, M., Prasad, R. and Varma, A. (2015). Biosynthesis of zinc oxide nanoparticles from *Azadirachta indica* for antibacterial and photocatalytic applications. Mater. Sci. Semicond. Process. 32 : 55.
7. Enis Ben Bnina, Chemical Saoussen Hammami, Majda Daamii-remadi, Hinchem Ben Jannet Zine Mighri,2009- Chemical Composition and Antimicrobial effects on Tunisian *Ruta chalepensis* L. essential oils.
8. Happy Agarwal, S., Venkat, K. and Rajeshkumar, S. (2017). A review on green synthesis of zinc oxide nanoparticles—An eco-friendly approach. Resource-Efficient Technologies 7 : 1-8.
9. Kathiresan K. et al.,2009- Studies on silver nanoparticles synthesized by a marine fungus, *Penicillium fellutanum* isolated from coastal mangrove sediment. Colloids Surf B 71:133137.
10. Kumar, S. S., Venkateswarlu, P. and Rao, V. R. (2013). Synthesis, characterization and optical properties of zinc oxide nanoparticles. Int. Nano Lett. 3 : 30-36.
11. K. Paulkumar, G. Gnanajobitha, M. Vanaja, S. Rajeshkumar, C. Malarkodi, K. Pandian, et al., Piper nigrum leaf and stem assisted green synthesis of silver nanoparticles and evaluation of its antibacterial activity against agricultural plant pathogens, Scientific World Journal 2014 (2014) 829894, doi:10.1155/2014/ 829894.
12. K. Paulkumar, S. Rajeshkumar, G. Gnanajobitha, M. Vanaja, C. Malarkodi, G. Annadurai, et al., Biosynthesis of silver chloride nanoparticles using *Bacillus subtilis* MTCC 3053 and assessment of its antifungal activity, ISRN Nanomater 2013 (2013) 1–8, doi:10.1155/2013/317963.
13. Madhusudan, M., Singh, K. and Ramawat, N. (2019). Evaluation of the effectiveness of zinc oxide nanoparticles on growth and yield of rice (*Oryza sativa* L.). Res. Crops.
14. Meruvu S, Hugendubel L, Mueller E. 2011- Synthesis and characterization of zinc oxide nanoparticles and its antimicrobial activity against *Bacillus subtilis* and *Escherichia coli*. J Rasayan Chem 4:217-222.
15. M. Sundrarajan, S. Ambika, K. Bharathi, Plant-extract mediated synthesis of ZnO nanoparticles using *Pongamia pinnata* and their activity against pathogenic bacteria, Adv. Powder Technol. 26 (2015) 1294–1299.
16. N. Duran, P. D. Marcato, O .L. Alves, G. Souza, Journal of Nanotechnology3 (2005)1–7.
17. P. L. Taylor, A. L. Ussher, R.E. Burrell, Biomaterials (2005) 7221–7229.
18. Polunin and Huxley, 1987- Flowers of the Mediterranean Hogarth Press.
19. S. Rajeshkumar, C. Malarkodi, K. Paulkumar, M. Vanaja, G. Gnanajobitha, G. Annadurai, Algae mediated green fabrication of silver nanoparticles and examination of its antifungal activity against clinical pathogens, Int. J. Met 2014 (2014) 1–8, doi:10.1155/2014/692643.
20. Yajko D. et al.,1995- Colorimetric Method for Determining MICs of Antimicrobial Agents for *Mycobacterium tuberculosis* J. Clin. Microbiol ., 33(9):2324-2327.
21. Y. Liu, L. He, A. Mustapha, H. Li, Z.Q. Hu, M. Lin, J. Appl. Microbiol. 107 (2009) 1193–1201.
22. Z. Emami-Karvani, P. Chehrazi, Afr. J. Microbiol. Res. 5 (2011) 1368–1373.

## **Study of Physical Chemical Properties of Deoni Cow Milk**

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**Abstract :** Physico-chemical characteristics of milk are related to its composition for a particular animal species. Cow milk beneficial for human digestion but decreases its cheese yield. We study of Deoni cow, pH, total solid in milk, electrical conductivity and protein. Physico-chemical analysis is important tool to monitor the quality of milk and other dairy products. The quality of milk as well as its safety in the consumption depends on its chemical composition, microbiological, physical and organoleptic properties. A satisfactory quality of milk means it is high in nutritional value and that it is free of any forms of bodies and of foreign constituents which can cause diseases. Deoni cow milk provides a complete source of proteins, lipids and carbohydrates to support the growth of the neonate until they are able to digest foods from other sources.

**Keywords -** pH, total solid in milk, protein, Physico-chemical properties

**Introduction** Milk is one of the most common food sources in the human diet and is also a product that is directly available for consumption. Its role is to nourish and provide immunological protection. Milk has distinct physical, chemical and biological characteristics, which justifies its high quality for consumption. These characteristics present a favorable environment for the multiplication of various bacteria. The newborn baby Breast feeding of infants is highly recommended for at least the first six months of life. Amongst mammals, humans are unique using milk from other species to feed their infants and young children. Thus, due to a myriad of reasons, many are fed milk formula manufactured from cow milk [1]. The physical and chemical composition of the milk is directly influenced by the diets given to animals, the forage: concentrate ratio directly interferes with the volume of milk produced as well as the concentrations of the components, especially the fat content. The use of concentrate in diets aims to raise the energy and protein concentration of the diet, increasing the total digestible nutrient content of the diet, promoting a greater input of nutrients for milk production, increasing the volume produced as well as increasing the amount of total solids [2].

### **Physico-Chemical Properties Of Milk**

Physico-chemical analysis is important tool to monitor the quality of milk and other dairy products [3]. Moisture content, total solid (TS), total protein, ash contents, pH, specific gravity, and total titrable are physico-chemical properties of milk. [4]. Analytical method such as Ultrasonic Milk Analyzer is used to determine refractive index, freezing point and electrical conductivity of goat and cow milk [5]. 2.1 Determination of pH Milk has acidic properties inside of mammals due to the presence dissolved carbon dioxide.

### **Determination of pH**

Milk has acidic properties inside of mammals due to the presence dissolved carbon dioxide. But the milk has alkaline properties outside of the mammals because of losing carbon dioxide to the air. The pH of milk is never determined immediately after milking processing due to the removes of dissolved gasses. The pH is determined after processing the milk to assure that lactic acid is being produced at the desired rate by added microorganisms during the preparation of cheeses and fermented milk. [6].

### **Total Solids in Milk**

Total solids are measured to ensure the quality of milk and milk products. The total solids in milk can be determined from the specific gravity and fat content from lactometer reading and it can be calculate the total solids in milk. Besides carrying out the total solids percentage from the indirect method of taking lactometer reading, a direct method of gravimetric analysis can also be used. This method involves accurately weighing a few grams of the material and subjecting it to heat until all moisture has been driven off on a water bath. The dry residue is weighed, its percentage calculated as total dry solids.

### **Conductivity**

Electrical conductivity (EC), is a measure of a material's ability to carry an electrical current. It ranges in value from 10<sub>-18</sub> to 10<sup>7</sup>Sm<sub>-1</sub> (Siemen per meter), depending on the material. The EC of normal whole milk is about 0.460 Sm<sub>-1</sub>. EC of milk is determined mainly by the charged species present, particularly the salts. There is very little contribution from lactose; casein, also, makes a much smaller contribution than do the milk salts. The main effect of milk proteins in general is to hinder the migration of ions and thus depress EC. However, the release of calcium ions from the casein micelles as a result of a decrease in

pH, caused by either deliberate acidification or bacterial growth, results in an increase in EC. A drop in milk pH to about 5 causes all of the colloidal calcium phosphate to dissolve, and the equilibria of milk buffer systems to change, resulting in saturation of the EC to a constant maximum value. This phenomenon is the basis of the automatic monitoring of the growth of lactic acid bacteria by conductimetric methods. The EC of fresh milk and cream decreases with increasing fat content because the fat globules (themselves non-conducting) occupy volume that would otherwise be filled with the conducting aqueous phase of the product, thus impeding the mobility of the conducting ions and increasing the distance that migrating ions have to travel. For a fat content in the range 0.15–51% (w/w), the EC of milks. [6]

#### **Proteins in Milk**

Milk comprises of casein, lactoalbumins and lactoglobulins. About 82 percent of the protein in milk is casein and the remaining proteins are whey proteins, which are lactoalbumin and lactoglobulin. Casein binds with calcium in milk and forms the calciumcasein ate complex, which is present in the colloidal form. Acid, rennet, alcohol and heat can precipitate this complex. The proteins in milk are of great quality, that is to say, they contain all the essential amino acids, and elements that our bodies cannot produce. It is important to remember that proteins are the building blocks of all living tissue. Milk proteins have roughly the same composition as the egg protein, except for the amounts of methionine and cystine, significantly lower. Indeed, the sulfur amino acids are the limiting factors in milk. Casein and, even more, the complex milk protein contains good proportion of all amino acids essential for growth and maintenance [7]. The denomination crude protein (CP) includes protein (TP) and non-protein nitrogen (including urea). The protein content is an important feature of the milk [8].

#### **Ash content**

Ash is the inorganic residue remaining after the water and organic matter have been removed by heating in the presence of oxidizing agents, which provides a measure of the total amount of minerals within a food. Analytical techniques for providing information about the total mineral content are based on the fact that the minerals can be distinguished from all the other components within a food in some measurable way. The most widely used methods are based on the fact that minerals are not destroyed by heating, and that they have a low volatility compared to other food components. The main analytical techniques used to determine the ash content of foods are based on this principle: dry ashing, wet ashing and low temperature plasma dry ashing.

#### **Composition Of Milk**

**Table 1. The Basic Composition of Deoni cow milk**

<b>Sr. No.</b>	<b>Constituents</b>	<b>Values</b>
<b>01</b>	pH	6.8
<b>02</b>	Total solids (%)	14.6
<b>03</b>	Conductivity (mS)	10.3
<b>04</b>	Viscosity (cP)	1.2
<b>05</b>	Protein (%)	4.3
<b>06</b>	Ash (%)	1.14

**3. Results And Discussion** The pH value of the Deoni cow milk samples was found to be 6.8. Slight variations was found for the other cow milk samples. pH is the parameter that determines the sample acidity and alkalinity. The pH range found in the study was comparable with the findings in a other investigation. The concentration of total solids was from 14.6 as given in Table. Deoni Goat milk had the medium amount of total solids 14.6. The results show that values for the total solids in Deoni cow the milk samples are in good agreement with the reported literature. The conductivity Deoni cow milk sample was 10.3 ms as shown in Table 1. The conductivity of the milk sample is mainly due to the presence of various electrolytes. The variation in conductivity may be due to the different levels of the electrolytes present in the milk samples. The viscosity ranged between 1.2 cP Table 1. The Deoni cow milk had the lowest viscosity 1.2, followed by the other cow milk. In the liquid-packed milk samples are the lowest viscosity. The Deoni milk samples was also subjected to two chemical analyses and the amount of total protein and ash. The amount of total protein was found to be in the 4.3 %. Total protein investigated within the recommended values, i.e., 2% to 4% for the total protein content. These results are also comparable with the other literature work on cow milk. In the milk sample, ash content was in the 1.14 Table 1. The white ash is mainly composed of oxides and chlorides of mineral elements, which include lime, mangnesia, soda ash, potash, phosphorus oxides, sulfur trioxide, ferric oxide, etc. Similar results were reported previously literature work.

## **Conclusion**

The study concluded that deoni cow milk is beneficial for our eyesight, digestive system and even strengthens bones because of the pH values is 6.8 of the present cow milk, the milk is basic so its beneficial for maintaining bacteria's in the milk. The total solid of deoni cow milk is obtained 14.6 %. Its represent the good quality milk, conductivity and viscosity of deoni cow milk is preeminent to other cow's milk. Chemical properties of the deoni cow milk is obtained great interest further investigations are carried out to examine other organic and inorganic components in the milk in the markets.

## **References**

1. Hodgkinson, A.J., Wallace, O.A.M., Boggs, I., Broadhurst, M., Prosser, C.G., Gastric digestion of cow and goat milk: impact of infant and young child in vitro digestion conditions. Food Chemistry (2017),
2. Thiago Vinicius Costa Nascimento<sup>1\*</sup>, Washington Luiz Gonçalves de Almeida Júnior<sup>2</sup>, Edilson Soares Lopes Júnior<sup>2</sup>, Daniel Ribeiro Menezes<sup>2</sup>, Francesca Silva Dias<sup>2</sup> and Matheus Matiuzzi da Costa<sup>2</sup> Physical and chemical characteristics of milk from goats supplemented with different levels of total digestible nutrients in the dry period (2017) v. 39.
3. Helmut K. Mayer, Gregor Fiechter "Physicochemical characteristics of goat's milk in Austria- seasonal variations and differences between six breeds" 2013
4. Kra kas<sup>1</sup>, mégnanou rm<sup>1</sup>, akpa ee<sup>1</sup>, assidjo ne<sup>2</sup>, ls niamké<sup>1</sup> evaluation of physico-chemical, nutritional and microbiological quality of raw cow's milk usually consumed in the central part of côte d'ivoire june 2013 volume 13 no. 3
5. Darshna B. Prajapati<sup>1</sup>, Dharti B. Kapadiya<sup>1</sup>, Amit Kumar Jain<sup>1</sup>, Bhavbhuti M. Mehta<sup>1</sup>, Vijaykumar B. Darji<sup>2</sup> and Kishorkumar D. Aparnathi<sup>1</sup> Comparison of Surti goat milk with cow and buffalo milk for physicochemical characteristics, selected processing-related parameters and activity of selected enzymes May-2017/2 Vol.10
6. O. J McCarthy, Physical and Physico-Chemical Properties of Milk, Massey University, Palmerston North, New Zealand 2002 Elsevier Ltd.
7. Guetouache, Mourad<sup>1</sup> Guess as, Bettache <sup>2</sup> and Medjekal, Samir<sup>3</sup> Composition and nutritional value of raw milk Vol.2(10),pp .115-122, December 2014
8. Mohadeseh Sharifi, Brent Young Milk total solids and fat content soft sensing via electrical resistance tomography and temperature measurement February 2012; Accepted May 2012

## **An Overview On Dynamic Climate Change**

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**Introduction:** Climate change, due to global warming, is a very worrying issue of our time. The world has to pay a heavy price for population growth and economic growth, because this progress is neither healthy nor sustainable for the environment. The amount of GHGs such as carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), chlorofluorocarbon (CFC), nitrous oxide (N<sub>2</sub>O) and ground-level ozone (O<sub>3</sub>) are increasing in the environment and the natural balance is impaired. Due to the burning of fossil fuels, coal, oil and natural gas, GHG emissions are increasing in the atmosphere. Carbon dioxide is increasing in the atmosphere due to emissions and pollution caused by industries. When we destroy trees, the carbon dioxide that accumulates in the trees is also released into the environment. Due to the rise of agriculture, diversity in land use and many other resources, there is a large-scale release of gases such as methane and nitrous oxide into the atmosphere. Nature increases its power to resist the secondary effects of this change and continue to live again. But in order to enjoy the pleasures of life, people create artificial objects which do not decay and do not return to the natural cycle of life. These are the aggregates, solids and gases that contaminate the soil, water and air, affecting all vegetation and organisms. Climate change has both intrinsic and extrinsic causes. Internal reasons include changes in natural processes in the climate system (e.g., thermal circulation, volcanic eruptions) or man-made (e.g., increased greenhouse gas emissions and emissions. dust discharge).

### **Human Causes Of Climate Change:**

#### **Urbanization & Industrialization:**

Due to industrial activities and the increase in the number of vehicles, new greenhouse gases are released into the environment, such as chlorofluorocarbons. Changes in people's living conditions in cities (due to lavish lifestyles, including air-conditioners, cars, etc. are widely used) contribute greatly to the emission of these gases. In large cities, the gases from these sources are so toxic that, on the one hand, they heat up the Earth and, on the other hand, the ozone layer, the roof of human communities, is disrupted by ultraviolet rays.

In fact, homes in the developed world emit more carbon dioxide than any car or truck, thanks to the luxury amenities used in these homes. A large amount of wood is used in the construction of buildings. This leads to large-scale erosion of a large area of forest.

Rivers are in crisis. The growing pressure from urbanization has begun to ease and turn them into sewers; all the waste from the city, dirty water and chemical residues from the factories, making them so toxic that it is impossible to maintain their purity. The amount of toxic elements such as arsenic and cadmium in river water has increased to the point where it poses a threat to humans, animals, birds, trees and plants.

#### **Rising Pollution:**

Due to the growth of cities and population growth, the population is also increasing. China has 16 of the 20 most polluted cities in the world. Due to pollution, about one million people die prematurely in cities every year. Most of them just come from developing countries.

#### **Greenhouse Emissions:**

Excessive emissions of greenhouse gases such as carbon dioxide, methane and nitrous oxide lead to dangerous warming of the Earth, leading to undesirable changes in climate. In recent times, the worldwide climate has become very unpredictable. As the amount of these gases increases, the amount of solar heat absorbed by them also increases. As a result, the Earth's temperature has steadily increased. According to a recent report by the Intergovernmental Panel on Climate Change (IPCC), anthropogenic greenhouse gases are responsible for increasing temperatures in the environment, with carbon dioxide contributing the most. The IPCC is an intergovernmental scientific organization that collects and analyzes all economic and social information related to climate change. IPCC was established in 1988 during the United Nations General Assembly.

#### **Coal-based powerhouses**

The main source of energy in cities is electricity. All of our domestic machines run on electricity from thermal power stations. These power plants use large amounts of fossil fuels (e.g. coal) to generate electricity, resulting in large amounts of greenhouse gases and other pollutants in the atmosphere. With the increased use of coal in rapidly developing countries like India and China, the monsoon system is weakening, which could reduce rainfall in the future.

### **Coal mining:**

Coal mining appears to be a dual problem for biodiversity. It has a major role to play in climate change; Due to coal mining and processing, the entire forest area has been affected by the devastation. As a result, there was a major wildlife and forest crisis in central India.

### **Revolutionary changes in technology and transport sector:**

The indiscriminate use of technology and means harms the environment. Heat multiplies with increasing energy use; Incandescent light bulbs at night are estimated to raise the temperature of the entire atmosphere by more than one degree Celsius.

Cars, buses, and trucks are the main means of transportation for people in most cities . . They mainly run on gasoline or diesel, which is a fossil fuel. It is estimated that 20% of the world's carbon dioxide is emitted from diesel / gasoline engines installed in vehicles.

Indiscriminate use of plastic/polythene:

We create a large amount of waste in the form of plastic that stays in the environment for many years and harms the environment. Widely used polyethylene makes the air toxic, in addition to destroying the fertile power of the Earth.

Unprecedented increase in the area of cultivation:

The 250-year-old world history has proven that over-exploitation of natural resources to increase production has become a cause of human sadness. An increasing population means providing food for more and more people. Since there is very little land for agriculture (in fact, due to ecological devastation it is shrinking), more than a fertile crop is grown in most countries.

However, these high yielding crops require large amounts of fertilizer . More fertilizer use means more nitrogen oxide emissions, which happen in both the field where the fertilizer is grown, and where it is produced. Pollution also occurs from mixing fertilizers into water bodies.

### **Deforestation:**

The destruction of a large number of forests is also a major cause of global warming. Mangroves are cut down along the coast . How can we prevent disasters like tsunamis? By colonizing, by exploiting nature, how can we protect the Earth?

Threat posed by slums:

As cities grow, the facilities available to populations decrease. People flee to cities in search of a better life, but very few fulfill their dreams. According to the World Health Organization (WHO), more than 70% of the developing world's population (about 90 million)

people live in slums. In 2020, this number is estimated to be two billion. In such a situation where health problems increase for them, the environment also faces heavy damage.

Natural Causes Of Climate Change:

### **Earth's Tilt:**

The earth is tilted vertically at an angle of 23.5 degrees. Half a year when it's summer, the northern part is bent towards the sun. During the second half, it is cold, the Earth is far from the Sun. Changes in the earth's tilt

transferred over the waves to the land.

### **Radiation from space :**

According to the previous ISRO, radiation from space reaching Earth is directly related to solar activity . As solar activity increases can affect the intensity of weather-more tilt means more heat and less cold; less tilt means less heat and cold.

### **Sea Waves :**

Ocean waves are a major component of the seasonal system. They spread over 71% of the Earth and absorb radiation from the atmosphere. Ocean waves spread large amounts of heat across the planet. When the oceans are surrounded by land, heat is, cosmic radiation plays a major role in the formation of magnetic clouds. lower floors. Lower-level clouds reflect radiation from the sun, through which heat from the sun on Earth returns to space.

### **Volcanic Eruption :**

When a volcano explodes, it releases large amounts of sulfur dioxide, water vapor, dust, and ash into the atmosphere. Although volcanic activity lasts for several days, large amounts of gas and dust can affect the composition of weather for many years.

**Cyclic changes :**

Many geologists assert that global warming, due to the intensity of natural disasters and the rise in Earth's temperature, is the result of cyclical changes occurring in the world. They say such cyclical changes happened in the past, thanks to which we lived through the ice age and also came out of it.

**Continental Drift :**

The continents we know today were formed hundreds of millions of years ago when the mainland began to separate. The effect of this fragmentation is also felt on weather patterns as it changes the physical characteristics of the land, its location and the location of the water bodies. This discontinuous terrain has altered the sea and the wind of the waves, affecting the weather. This fragmentation of the continents continues to this day as the continents rest on giant rocks called tectonic plates that are always in motion. All these factors cause climate change.

**Conclusion :**

Emissions from industries and the agricultural sector increase the greenhouse effect. Carbon dioxide is a major gas causing global warming. The amount of CO<sub>2</sub> increases with human activities such as burning fossil fuels.

This problem has also been increased by deforestation. If the rise in Earth's temperature is not checked immediately, everything will be spoiled. Glaciers are melting due to greenhouse gas emissions. The sea level is rising rapidly. We fall victim to earthquakes, tsunamis, terrible tornadoes, overcrowding, floods, cold waves, snowfall, and more.

We live on this planet and use its resources in such a way that in the future we may have to go to another planet. Due to climate change, people in poor hamlets and disadvantaged areas suffer the most. The earth provides all the comforts required by each person, but not because of human greed. Countries must implement policies for energy needs that balance energy, environment and developing economies. They should be convinced that they must protect and conserve the environment and build a better world for future generations.

**References:**

1. .Fulekar,M.H. .(2005) "Climate Change" A threat to Environment, Indian Journal of Environmental Protection.
2. Climate Change .The science of climate change : Assessment report of IPCC working group I (eds Houghton,J.T.)
3. .Agarwal, P.K.(2009). Global Climate change and Indian agriculture: Case studies from ICAR network project. Indian council of Agricultural Research.
4. .A regional impacts of climate change : An Assessment of Vulnerability, A special report of IPCC working group II (eds Watson,R.T.,Zinyoware.M.C.)
5. Users\ADMIN\Documents\Vulnerability to climate change and adaptation strategies.docx
6. Climate Change –Implications for India’s water resources-Lal M.
7. .University News.

## **Role of Environment Education in Sustainable Development**

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### **Abstract:**

The process of unplanned and rapid industrialization and overexploitation of natural resources has resulted in discriminate damage and degradation of environment. Realizing the need of restoration of natural ecosystem and control on pollution problems, many steps has been taken at the national and international levels. After through deliberation it has been widely accepted that to aware the human society about the environmental issues and to make perspective plans for mitigation of environmental problems the introduction of environmental education is an important tool through which the goals of sustainable development can be achieved easily. The present paper is an attempt to deal with the historical background and importance of environmental education in context of sustainable development.

**Key words:** Environment Education; Sustainable development, SDG.

### **Introduction:**

Entering the era of modern development with the process of industrialization, urbanization and application of modern technology in various fields; The emergence of environmental problems has become a major concern of human society. Environmental education is an indispensable tool in the fight against habitat degradation. It called for the launch of an international environmental education program (United Nations, 1972). Environmental education aims to create a population that is knowledgeable about the biophysical environment and its related problems, knows how to help solve these problems, and is motivated to work on their solutions. (Stapp et al. 1969). The topic of environmental education has been discussed at a number of national and international seminars, workshops and conferences (Sharma, 1996). Along with the application of modern environmentally friendly technologies to reduce the stress of human activities on the environment, to protect and conserve the global environment, environmental education plays an important role. However, it also plays an important role in the process of sustainable development. (Declaration of Tbilisi, 1977, RIO, 1992, Montreal, 1997). The main need is to create environmental awareness. It must permeate all ages, all walks of life, starting with the child. Environmental awareness needs to be enhanced in education in schools and colleges (NPE, 1986). Environmental education is key to the success of any comprehensive environmental strategy, identified to help establish a center of excellence in environmental education, plays an important role in setting the pace and the agenda for environmental education in the country (Kartikaya, 2000). In India, the Supreme Court in its rulings on written petitions (M.C. Mehta Vs Union of India, 1991; M.C. Mehta Vs Union of India, 2003) emphasized the urgent need for education environmental education. The Supreme Court Bench had issued an order on November 22, 1991 to all state governments, and to the State Education Boards, to make environmental education, a compulsory subject (India times, 2003). The Supreme Court inter alia, directed the NCERT and University Grants Commission and to take appropriate steps to prescribe a course on environment and to consider the feasibility of making environment a compulsory subject at the school and graduation level respectively. In pursuance of this, the concerned institutions have framed the syllabus and incorporated environment education as compulsory subject from IX<sup>th</sup> to XII<sup>th</sup> standards to the all faculties of graduate level. The term Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs (Brundtland, The Sustainable Development Goals (SDGs) are a collection of 17 global goals designed to be a blueprint to achieve a better and more sustainable future for all. The Sustainable Development Goals, set by the United Nations General Assembly in 2015 and intended to be achieved by 2030, are part of UN resolution 70/1, Agenda 2030.

### **Chief Goal of Environmental Education**

Goals of EE are to develop a world population that is aware of and concerned about, total environment and its associated problems, and commitment to work individual and collectively towards solution of current problems and the prevention of new ones (UNESCO, 1975). A number of new objectives and guiding principles for developing environmental education at all levels in both formal and nonformal level were formulated at the Tbilisi Conference (UNESCO, 1977).

### **Main Objectives of Environmental Education**

To understand the aim and importance of the environment education the some objectives were decided (Trivedy 2004). Participation-To provide individuals, groups and societies with opportunities to be actively involved in exercising their skills of environmental citizenship and be actively involved at all

levels in working towards sustainable development. Knowledge-To help individuals, groups and societies gain a variety of experiences in, and a basic understanding of, the knowledge and action competencies required for sustainable development Values-To help individuals, groups and societies acquire feelings of concern for issues of sustainability as well as a set of values upon which they can make judgments about appropriate ways of acting individually and with others to promote sustainable development Skills-To help individuals, groups and societies acquire the action competence or skills of environmental citizenship in order to be able to identify and anticipate environmental problems and work with others to resolve, minimize and prevent them Awareness-To create an overall understanding of the impacts and effects of behaviors and lifestyles on both the local and global environments, and on the shortterm and longterm. Conclusion:The goals of sustainable development can achieve through the inculcating the awareness regarding the environmental issues and their mitigation measures through environmental education via formal and non-formal methods.

### **References**

1. **Brundtland Commission (1987):** "Report of the World Commission on Environment and Development". United Nations.
2. **India times, New item 2003.** IST, TNN.
3. **Montreal Declaration, 1997:** *International Francophone Forum on Environmental Education in a Perspective of Sustainable Development.*
4. **M.C. Mehta Vs Union of India, 1991.** Case No. 860. Writ petition judgment by N.S. Hegade and B.P. Singh, on 18<sup>th</sup> December, SC, New Delhi.
5. **Rio-de Janeiro, 1992:** Environmental Education for Sustainable Societies and Global Responsibility, United Nations Conference on Environment and Development 1992, Rio
6. **Stockholm Declaration, 1972:** International Conference on the Human Environment, held in Stockholm.
7. **Tbilisi Declaration Document: 1977:** Intergovernmental Conference on Environmental Education, Georgia, 14-26 October.
8. **Thessaloniki Declaration Draft 1997:** International Conference on Environment and Society: Education and Public Awareness for Sustainability.
9. **Tiwari, M., Khulbe K., Tiwari A.:** Environmental Studies. I.K. International, New Delhi, (2007).
10. **Trivedi, P.R.:** Environmental Education. APH Pub. Corp., New Delhi. (2004).

## **In Creasing degradation Of Geo– Environment And Change In Land Suitability And Cropping Pattern Due To Soil Brick Industries: A Case Study Of Nakashipara Block, Nadia District.**

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**Abstract:** Brick is one of the most important part of any type of building construction. In recent year brick industry play a vital role to making a new India with metal house. Since Nadia's Nakashipara block is located on the NH 12(old no. 34) and also the Ranaghat – Lalgola branch railway line passes through this CD Block, so the pace of urbanization is high enough. And due to this the demand of bricks is very high. There is total 42 brick industry in Nakashipara Block. Unfortunately, the majority of brick fields are located on fertile agricultural land, and the process of extracting dirt from agricultural fields for the brick industry is frequently connected with high soil erosion, annihilation of grazing area, and destruction of mixed plant cover. Land degradation, extensive soil erosion and degradation of Geo – Environment (soil, air, water) have intensified for this brick industrial waste(broken bricks, coal ash smoke etc). So, in the last 10 years, various changes are being noticed in land suitability and cropping pattern in this region. Most of the farmers are interested in agro forestry through orchards (mango, banana, guava, litchi etc) using modern cropping pattern instead of traditional cropping pattern. The present study investigates how and to what extent the Geo – Environment is being affected for the brick industry and how land degradation is increasing. And also the search for the exact reason why the people of this study area have been forced to change cropping patterns for the brick industry. Furthermore this investigation shows the increasing degradation of land, change in land suitability and change in cropping pattern in last 20 years.

**Keywords:** brick industry, geo – environment degradation, land suitability, changing cropping pattern, land degradation.

**Introduction:** Agriculture not only produces food, but also raw materials for manufacturing businesses. It is the major source of livelihood and helps in accelerating economic growth of most of the developing countries. In the recent years land degradation is perceived as a major environmental threat evidenced from the latest estimates, which indicated that about 121 million ha area of our country is affected due to various kinds of land degradation(Majiet al.,2010). One of the most important reason for land degradation is brick industry in India. Estimated more than 1,40,000 brick industry produce more than 250 billion (1 billion = 100 Crore) bricks /year. About 15 million employees are associated with the brick industry, and about 35 million tons of coal is burned annually to make bricks in India(Wanjule et al 2015). World's largest brick producing country is China, which has 54% share. And India is the second largest brick producing country in the World, and India's share 17.97%. India's brick sector contributes 10% of GDP. Commonly fertile topsoil of agricultural land is dry up for making bricks. Suitable clay loam for brick making is Sand 20-45%, Clay 15-53% and Silt 27-40% (Roy, et al 2017). Average 3kilogram soil is needful to make a standard size brick(Hossain et al.2019). So, we can calculate the amount of land degradation in India from brick sector (250 billion x 3 kg= 250000000000kg or 250000000 metric tone). In the study area, there are total 50 brick field, total area of brick field 152.82 Acre(approximate) and total loss of soil 99750 Truck (approximate). So a huge amount of topsoil is being wasted every year. My investigation is the extent of land degradation and cause of soil erosion. And also to investigate the change of cropping pattern according to the suitability of the land.

**Study Area:** In West Bengal state Nakashipara block forms as an administrative division in Krishnanagar Sadar subdivision, which is currently a community development block of Nadia District. The study area is 33 away from Krishnanagar City. Coordinate of Nakashipara **23°32'N to 23°58'56'N and 88°16' E to 88°35'34' E**. The boundaries around the Nakashipara block can be determined by that area is to the north are Tehatta II and Kaliganj CD Blocks, Nabadwip and Purbasthali II CD Blocks of Bardhaman district across Bhagirathi river in the south side. East side boundary is Tehatta I and Chapra CD Block and to the west are Katwa II CD Block which is also in Bardhaman district across the Bhagirathi river. The Nakashipara block has left the feature of an underdeveloped rural area and is moving towards developed villages.

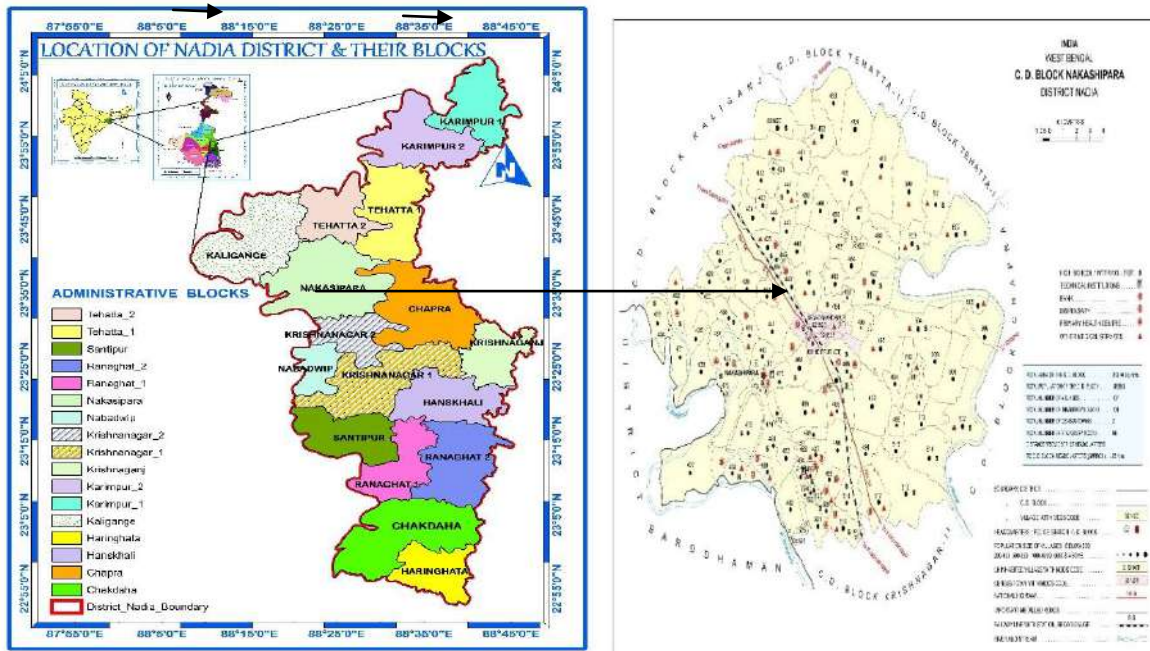


Figure:1, India West Bengal Nadia, Figure: 2, Nakashipara Block

**Objectives:**

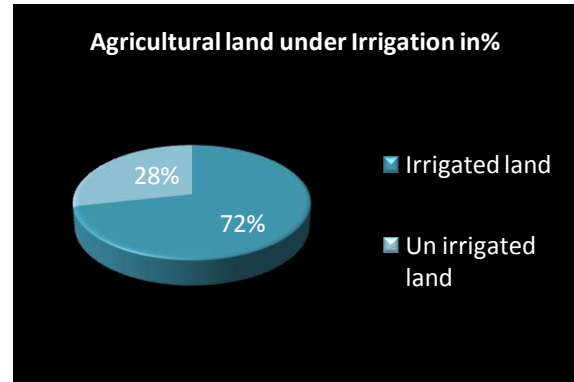
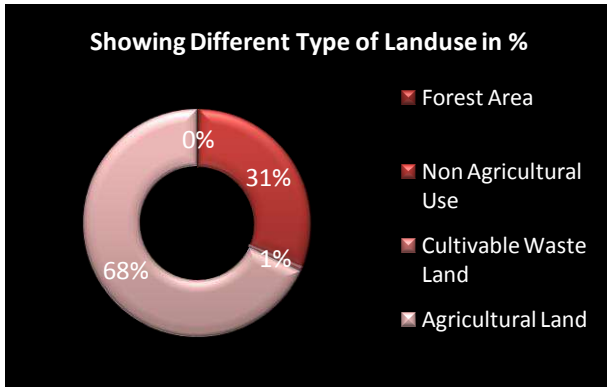
1. To explore the elements those influence the brick industry in the Nakashipara Block.
2. To find out the amount of land degradation in the study area.
3. To determine the change of crop pattern in the study area.
4. To create concluding remarks for improving the land suitability as well as new cropping pattern.

**Methodology:**

The article title as *“Increasing Degradation of Geo – Environment and Change in Land Suitability and Cropping Pattern due to Soil Brick Industries: A Study of Nakashipara Block, Nadia District.”* Has been based on primary and Secondary source of data. Primary information has been collected through interview with the managers, owners and workers of the brick field throughout near about 3 months (August, 2021 to October, 2021). 60 samples are also collected from farmers of different villages through intensive questionnaire survey. The method of data collection is based on field survey procedure using random sampling method. Secondary data has been accumulated from the BLRO, BDO and Panchayet offices and brick field association also. All the data have been calculated and analyzed by proper statistical technique and Mapping method with GIS technique. In addition to these, related books, journals, newspapers, reports of the Brick Association and various the Website has been consulted to make the research effective.

**Landuse Pattern:**

Total area of Nakashipara Block 35448.6 hectare. Out of this area, Forest Area 100.8 Hectare, Area under non agricultural use – 10974 hectare, Culturable Waste land – 239.8 hectare, Agricultural land(irrigated 17285hectare and un irrigated 6849hectare)24134 hectare.



**Figure: 3** -Land use area in percentage**Figure 4** – Agricultural area

**About Brick Field:** There are total 50 brick industry in the study area. Out of 50 brick field, 38 brick fields are running and 12 fields are closed now. Brick Industries have been gradually developing in various years since 1990. Percentage data and figures of brick kilns being developed in different years are given below.

Topics	Details (Value)
Total Brick Industry	50(Authorised, Unauthorised and Regularized)
Total area of all brick field	152.82 Acre(approximate)
Total use of Soil per Year	99750 Truck (approximate)
Total Use of Coal per Year	20501 ton (approximate)
Total Production of bricks per Year	870.2 lac (approximate)
Total amount of Soil lost per Year	870.2 lac x 3 kg = 2.6106 metric ton
Total Labour engaged in sixmonth season	34884 Person / Labour

Table : 1, Brick Industry in Nakashipara Block at a glance(Source: Field Survey, and BLRO Office.



Figure 5&6 : Brick Industry of Nakashipara Block

Year	% of Growth of Brick Industry
<1990	0
1990-1995	12
1995-2000	26
2000-2005	22

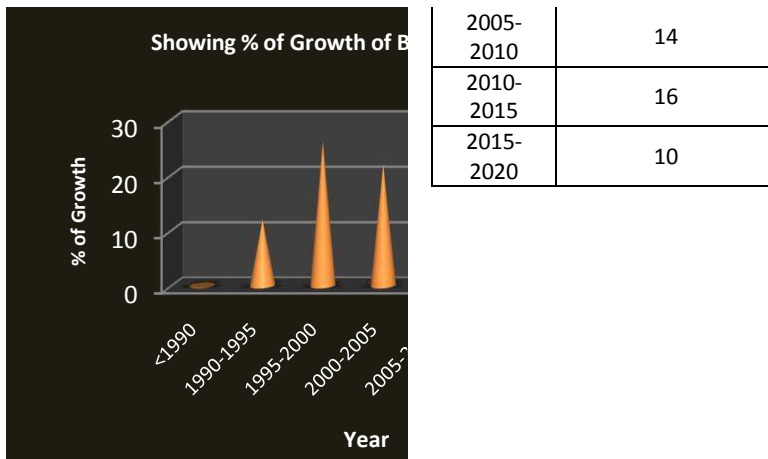


Figure:7 – Growth of Brick Industry in Nakashipara Block. Table: 2Source: Field Survey

In the study area the rate of development of the brick industry was the highest (26%) in between 1995-2000. And the lowest(10%) was in the year 2015-2020. Before 1990, there were no brick kilns in the area. And the following information and figures show the state of official recognition of brick kilns in that region. From the table no. 3 we can see that only 9 brick field is under Authorised and running but maximum are regularized running and that shows 36%

Status of Brick Industry	Status of Brick Industries with
Authorised Running	9
Authorised Closed	5
Regularized Running	18
Unauthorised Running	11
Unauthorised Closed	7

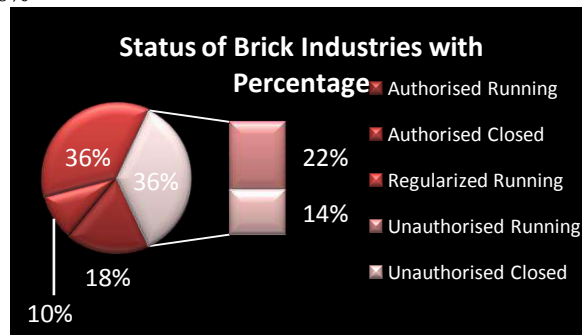


Table: 3Data Source: Field Survey & BLRO Office. Figure: 8Status of Brick Industry.

**Land Degradation and Effect On Geo-Environment:** Land degradation means the change or erosion of soil and decomposition in the physical and chemical properties of the soil by the combination of one or more functions of man and nature. Which destroys the normal essence of plant production. Various causes of land degradation can be noticed in the study area. such as, rapidly bank erosion by the Bhagirathi – Hooghlyriver in the south part of this block, flood, use of chemical fertiliser, deforestation and in the last 20 years, the rate of land degradation due to the impact of brick kiln is going to be the highest. From table no. 1 we can notice that there are total 50 brick industries in that area. And unfortunately that brick field areas (152.82 acre) are blocked for the agricultural purpose for a long time or it can be forever. Total production of bricks 870.2 lac, for this total waste of soil 2.6106 metric ton per year. And also collection of top soil of the land 99750 truck per year. So, a huge amount of soil is being destroyed every year. Beside this a huge amount of broken bricks and coal ash (use of coal amount 20501 ton per year) mixed with soil is ruining the quality of the soil. Even in the brick production areas and surrounding areas, a large number of permanent reservoirs have been created. Therefore, it can be said with certainty that the brick industry has posed a great challenge to Geo – Environment in the study area.



**Figure 9:PERMANENT WATER LOGGING FOR SOIL COLLECTION DUE TO FORMATION OF BRICK,  
BORGACHI VILLAGE  
& 10:LAND DEGRADATION**

**Changing Cropping Pattern:**

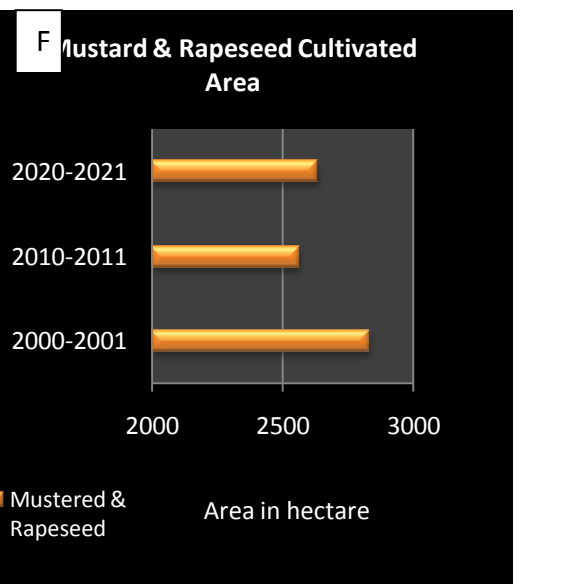
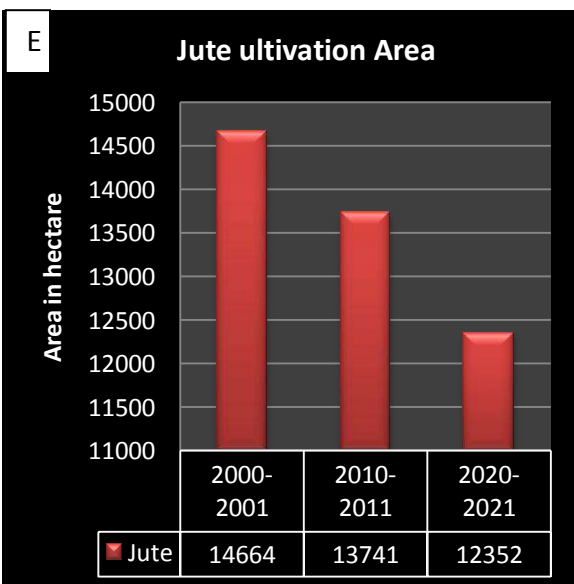
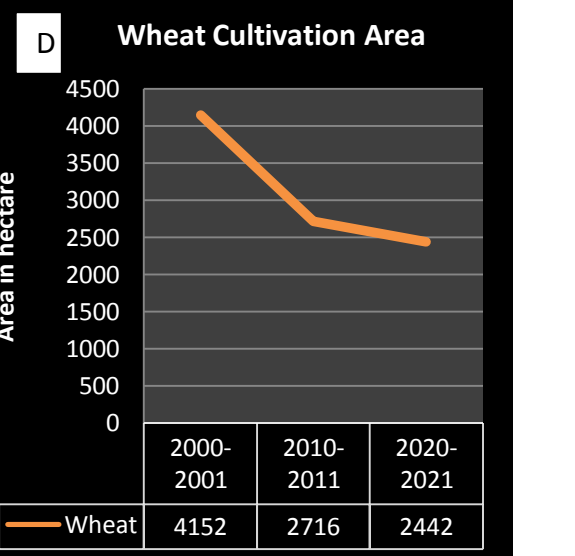
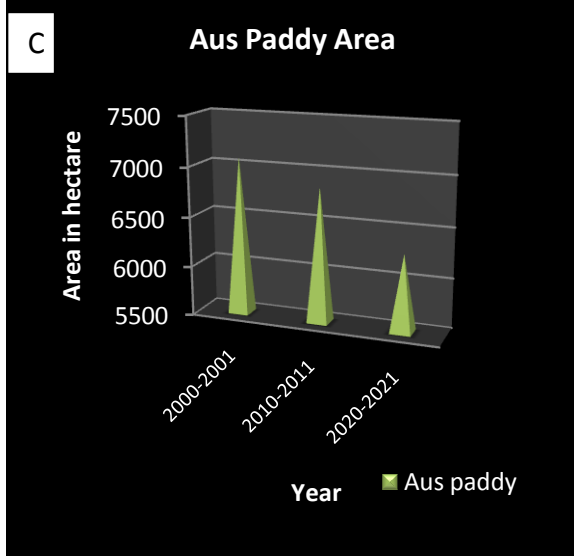
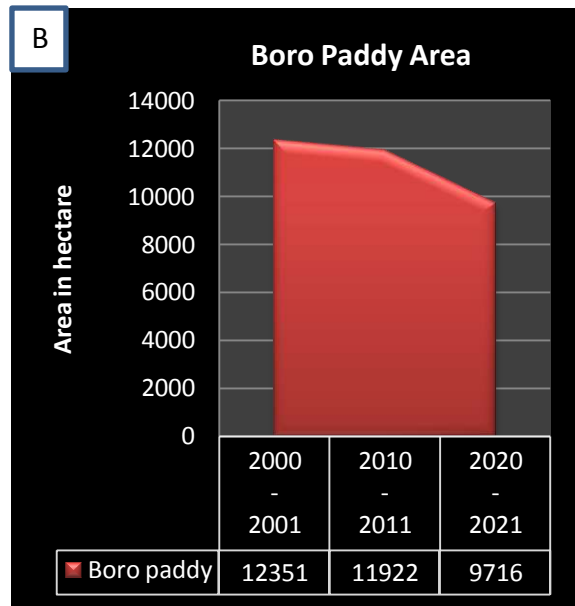
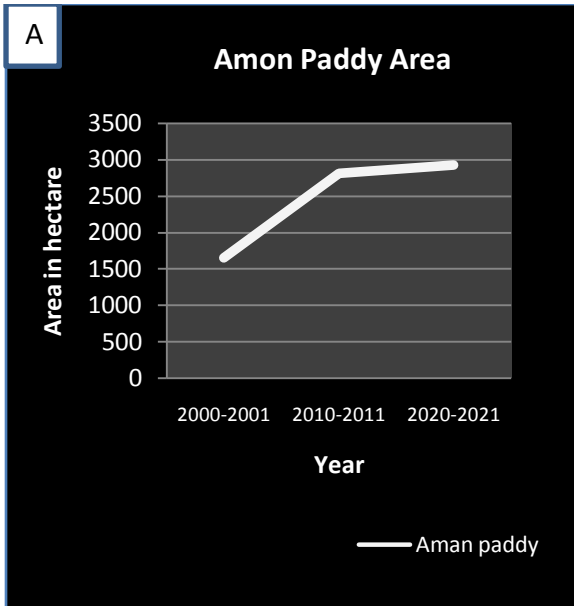
The cropping pattern largely depends on the quality of land. And different types of crops are produced in different seasons in the soil with the same quality. Notable cropping patterns are 1) Rice – Mustered oil seed – Vegetables, 2) Jute – Rice – Pulse, 3) Jute – Rice – Flowers, 4) Recent trend in permanent fruit garden and Green house for flower cultivation (Specifically Rajapur Village and adjacent region in The study area). Various kinds of crops are practiced here in this cropping pattern. The name of some important crops are mentioned in the chart.-

Foodgrains			Non Foodgrains				
Cereals		Pulses	Oil seed	Fibres	Spices	Vegetables and Fruits	
Rice	Wheat	Others	Musur, mung, khesari, Gram, Mashkalaletc	Rapeseed & Mustard, Linseed, Sesame(Til)	Jute	Dry Chillies, Ginger, Turmeric etc.	Potato, Brinjaletc and Banana, Guava, Mango, Litchi etc
Aus, Aman, Boro	Only winter season	Maize	-----	-----	-----	----	-----

**Decreasing area of traditional crop and increasing area of horticultural land area:** maximum agricultural land area is under the paddy cultivation. Most of the land is used for paddy cultivation in different seasons. Although the amount of land for jute and wheat cultivation is more, the amount of land for horticulture has been increasing continuously. The following table shows the land area increasing or decreasing.

Name of Crops	2000-2001	2010-2011	2020-2021
Amon paddy	1653	2813	2923
Boro paddy	12351	11922	9716
Aus paddy	7082	6847	6274
Wheat	4152	2716	2442
Jute	14664	13741	12352
Mustered & Rapeseed	2832	2564	2634
Horticulture (Permanent Fruits & Flowers area + Seasonal vegetables area)	4632	4698	5376

Table: 4 Source ADA Office(Nakashipara block)



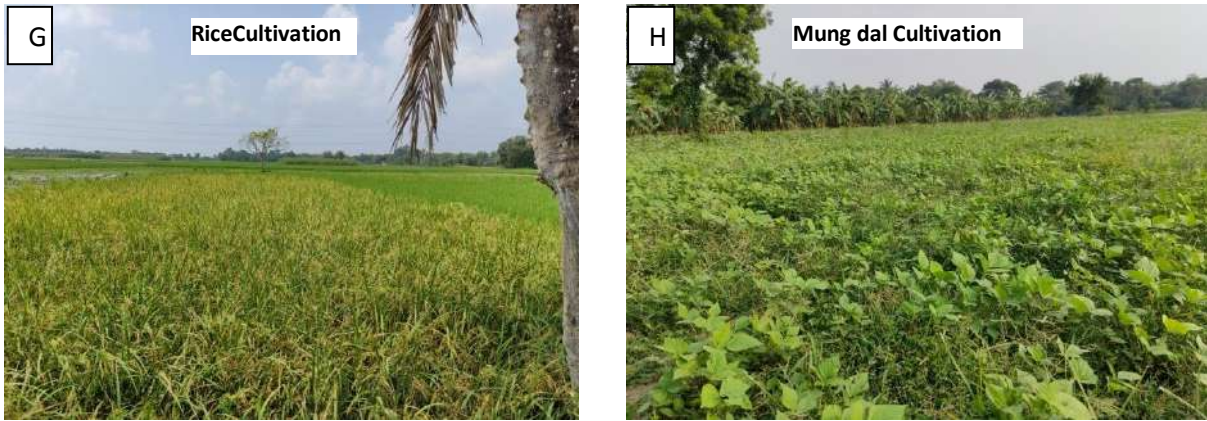


Figure 11- A) Amonpaddy area increase, Cultivation area decreased for B) Boro paddy C) Aus paddy, D) Wheat, E) Jute & F) Mustard – Rapeseed, G) Rice cultivation (bikrampur village), H) Mung dal cultivation(Dadupur village), G&H as Picture of Traditional Cropping Pattern:

**Horticulture:** The trend towards conventional farming practices in the region has declined somewhat and interest in horticulture has increased significantly. Many types of horticultural crops are produced in the study area. Some of the notable horticultural crops are, Marigold, tuberose, rose etc flowers, various types of seasonal vegetables and Greenhouse vegetables – flowers, and also many types of fruits as Mango, Guava, Jujube/Ziziphus, Banana, Litchi etc are practiced here. In the last ten years, the area under horticulture has increased significantly due to the growing interest in cultivating different types of flowers and fruits. A chart and diagram of the last ten years showing the growth of horticulture.

Year	2010-11	2011-12	2012-13	2013-14	2014-15	2019-20
Horticultural Area in Hectare	10450	10572	10622	10735	10783	12067

Table 5: Data Source: BDO Office, horticulture department, Nakashipara Block.

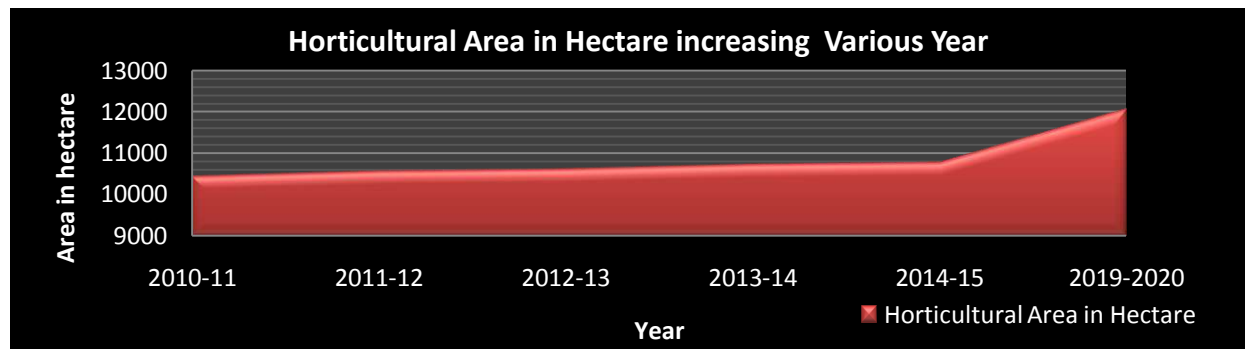


Figure 12: Increasing Area of Horticulture in Nakashipara Block

**New Cropping Pattern:**

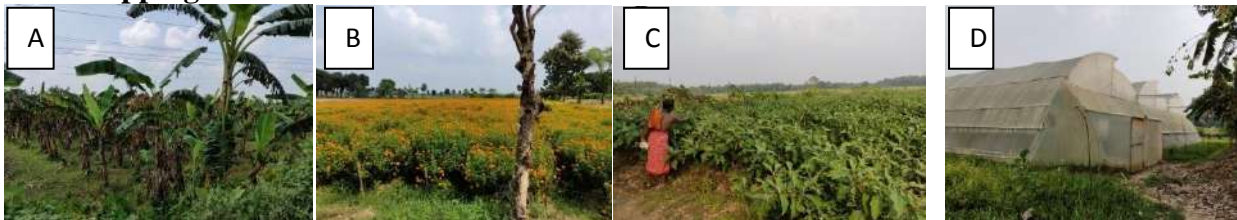




Figure 13: A) Banana Cultivation, B) Marigold Cultivation, C) Brinjal, D) Green House Flower Cultivation, E) Interculture. All the pictures are part of Horticulture, in Nakashipara Block.

**Result and Discussion:** Production can be increased by changing the method of farming keeping in view the time, land suitability and soil quality. At the same time it is possible to maintain the productive capacity of the land. Land degradation is high due to the fact that more brick kilns have been built in the area than usual. From Table no. 1 it is understood that about 99,750 trucks of topsoil are used for brick production every year. So the soil suitable for crop production is rapidly declining in every year. Table 2 shows that the highest rate of brick kiln development was between 1995-2005. It is also clear from Table no.3 that most of the brick fields are unauthorized. Figure 9 shows that a permanent reservoir has been created. And Figure 10 shows parts of broken bricks and piles of accumulated soil as the cause of landslides. It is also clear from Table No. 4 that although the area under Amon paddy production has increased slightly, the amount of land under the remaining conventional agricultural work has decreased considerably. And in the case of horticulture, more than half of the total cultivable land is being used with new cropping pattern and land suitability. Notable among horticulture are the variety of flowers and vegetables. And some fruits are also produced.

**Conclusion:** Analyzing all the above data and images, it can be clearly concluded that the rate of land erosion and degradation will gradually increase due to the formation of far more brick kilns than usual. If this same rate is maintained, fertile agricultural land will become barren land. So it is necessary to control the normal number of brick kilns as well as the amount of top soil collection. At the same time the cropping pattern should be changed according to the suitability of the land to maintain the crop yield of the soil as well as the amount of crop yield. In more than half of the villages in Nakashipara block, emphasis has been laid on horticulture by changing the farming system according to land suitability. But there are still many villages where people can't make proper use of land due to lack of proper agricultural education opportunities.

**Suggestions:** Every underdeveloped and developing country can take various steps for the betterment of rural and urban areas. It should be noted that, further changes in environmental tolerance can upset the balance of the environment. And people are not free from its influence. Therefore, to maintain the balance of the environment in the region and to maintain the quality and production of agricultural crops through the proper use of land, there are several issues that need to be addressed by the Government and the local public.

- 1) Illegally created and operated brick kilns in the study area need to stop.
- 2) The Govt. need to keep an observation on the fact that more brick kilns are not being built in a region than usual.
- 3) Owners of the brick industry need to be encouraged to focus on brick production using substitutes for soil.
- 4) The Department of Agriculture and Land Reforms needs to take necessary steps against land degradation. And to assist farmers in crop production by changing cropping patterns according to land suitability.
- 5) To make the farmers aware about the proper use of land through agricultural education from the Department of Agriculture and to inform about what crop production would be better in any soil.

#### References:

1. Kumar, S.K., Jakoji, S.C., Chinagodaba, S.B., Karne, K., Kumar, V.G., 2015 Role of Soil Brick Industry in the Degradation of Land and Environment-A Case Study of Millaram in Nizamabad,

Telangana State. *International Journal of Civil and Structural Engineering Research*, Vol. 3, pp 222-227.

2. Sherif, V., 2018, May. Evaluating pre-existing qualitative research data for secondary analysis. In *Forum: qualitative social research* (Vol. 19, No. 2, pp. 26-42). FreieUniversität Berlin.
3. Rahi, S., 2017. Research design and methods: A systematic review of research paradigms, sampling issues and instrument development. *International Journal of Economics & Management Sciences*, 6(2), pp.1-5.
4. Kumar, B., Dorri, M.A., Jaime, A. And da saliva, T. 2014. Assessment of land Suitability and the possibility and performance of a canola (*Brassica napus L*)-soyabean (*Glycine max L*) rotation in four basins of Golestan Province, Iran. *The Egyptian Journal of Remote Sensing and Space Science*.17:95-104.
5. Chakraborty, A.K., Saha, P(ed) 2000, Jana, M.M. Population Growth and its impact on Land and Environment in Environmental Studies for Undergraduate Degree Students (p43-49), Allied Publishers Limited, Calcutta.
6. District Census Handbook Nadia, Village And Town Directory, Directorate of Census Operations, West Bengal 2011, Series 20, Part XII-A,
7. Reshmidevi, T.V., Eldho, T.I. and Jana, R. 2009. A GIS-integrated fuzzy rule-based inference system for land suitability evolution in agricultural watersheds. *Agricultural System*. 101:101-109
8. Das, P 2004. Cropping pattern(Agricultural and Horticultural) in Different Zones, their Average Yields in comparison to National Average/Critical Gaps/Reasons Identified and Yield Potential. Status of Arm Mechanization in India 3:3-4.
9. Thapa, G., Kumar, A., Roy, D., Joshi, P.K.2017. Impact of Crop Diversification on Rural Poverty in Nepal. *Canadian Journal of Agricultural Economics* 66:379-413
10. Sibanda, M., Mugiyoy, H. and Chimonyo, V.G.P., 2021. Evaluation of land suitability methods with reference to neglected and underutilised crop species: A scoping review.
11. Boazar, M., Abdeshahi, A. and Yazdanpanah, M., 2020. Changing rice cropping patterns among farmers as a preventive policy to protect water resources. *Journal of Environmental Planning and Management*, 63(14), pp.2484-2500.
12. Aslam, M.,1983 Environmental Concerns in brick industry, *Brick and Tile News*, New Delhi, pp33-39
13. Khan, H. R., Rahman, K., AbdurRouf, A. J. M., Sattar, G. S., Oki, Y. And Adachi, T., Assessment of degradation of agricultural soil arising from brick burning i selected soil Profiles. *International Journal of Environment, Science and Technology*.; 2007,4,471-480.
14. Asgher, Md. S.. Land Degradation and Environmental Pollution: Impact of Brick Kilns, B. R. Publishing Corporation, Delhi,2004
15. Das, R.,2015, Cause and Consequence of Land Degradation in and around the Brick Kilns of Khejuri CD Blocks over Coastal Medinipur in West Bemgal, *International Journal of Innovative Research & Development*. Vlo 4, issue 2, pp185—194.
16. Hossain, M. A., Zahid, A. M., Arifunnahar, M. and Siddique, M.N.A.2019, Effect of brick kiln on arable land degradation, Environmental Pollution and consequences on livelihood of Bangladesh. *Journal of Science Technology & Environment Informatics*.06(02):474-488.
17. Wanjule, P. B., Chandanshiv, S.B., Aswale, S.,2015. Brick Making in India, *International Journal Of Marketing, Financial Service & Management Research*, Vol.4(11)pp. 11-16.
18. Roy, R., Islam, N.,2017. Problem of Water Logging through Soil Quarrying in Brick Kiln Industry: A Case Study of Tufanganj Block I Koch Bihar, West Bengal, *International Journal of Technology & Applied Scienc*. Vol. 9(2): 192-200.

## **Implications of Strategic Leadership - An Overview**

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**Abstract:** Strategic leadership is a leader's capability to imagine, plan, guide, and create the best out of the available resources they have to implement strategies properly and effectively. Strategic leaders get hitched with their strategic plan to their strategic management. They are always aware about their overall organizational goals. The most effective leaders are always investing in individual strengths also invest in their team strengths. A strategic leader thinks in different way, acts accordingly and influence strategically. The main outcome of strategic leadership is strategic efficiency. Another objective of strategic leadership is to develop an environment in which employees predict the organization's needs in respect of their own job. Strategic leaders encourage the employees in an organization to follow their instinct ideas. Leadership skills can be generating through proper organizational environment. Now days, each and every organization is concentrating on such organizational environment. Strong team spirit can create strong leadership skills. Hence, strategic leadership can enhance the individual performance in organization. This research work contributing through the certain objectives like to understand the strategic leadership skills, it also focuses on analysing the impact of strategic leadership on organization's overall performance. It also highlight on the contribution of leadership skills in individual performance. The strategic leadership is inculcating the leadership skills and qualities within overall organizational growth and development. Therefore, investment in leadership can strengthen organization's output. At last this research concludes that the collective efforts and commitment can lead organizations overall potential.

**Key words:** Strategic leadership, Organizational climate, Strategic thinking, Leadership skills, Overall performance and Strategic vision.

### **Introduction:**

The Strategic leadership refers to a manager's potential to express a strategic vision for the organization, or a part of the organization, and to motivate and induce others to acquire that vision. Strategic leadership can also be defined as utilizing effective strategies in the management. It is the potential to influence organizational members and to accomplish organizational objectives. Strategic leaders create the proper organizational structure and utilised available resources and direct strategic vision. Strategic leaders work in an uncertain environment and convert that uncertain environment in certain environment with team efforts. The strategic leadership requires the ability to visualise the vision of the organization. Around the globe, organizations are looking to improve their leadership style because their styles can contribute towards the organizational goals. Therefore, it is challenging to find the right leader for the organization. The leader should possess risk taking ability and proper decision making ability. Hence, the need of strategic leaders arises in every organization. Strategic leadership is the process of using thought provoking tactics to communicate a vision for an organization. Strategic leadership typically manages, motivates and convince employees to share that same vision. Therefore, strategic leadership provides the vision and direction for the growth and success of organization. A strategic leaders shape the vision and mission of organization. He also facilitates strategy formation and also implements the strategy for the growth of organization. These strategic leaders are needed to acquire the strategic competitiveness within organization.

The best leadership style ultimately depends on the organization, but strategic leadership can contribute to organization's overall effectiveness by following means:

1. Promote the visionary ideas for organizational growth.
2. Make calculated and effective decisions.
3. Strategic leader can moderate the risk and analyze the organizational overall potentiality.
4. Forward looking approach.
5. Encourage objective thinking that supports the overall vision.
6. Support unity and equality.
7. Build commitment and encourage collective efforts.
8. Ensure clarity around tasks and objectives.

In other words, strategic leaders have the proper balance and combination of leadership styles as per organizational requirement.

### **Objective of the study:**

1. To understand strategic leadership skills..
2. To analyze impact of strategic leadership on organization's overall performance.

3. To know the contribution of strategic leadership skills in individual performance.

**Research Methodology:**

This research paper is based on the secondary data. The secondary data was collected from various published sources like information of various departments, magazines, journals, newspapers, articles, research papers, websites, and educational videos on YouTube etc.

**Key skills required in Strategic Leadership:**

**1.Strategic thinking:**A strategic leader must first be a visionary and a strategic thinker. They think with the end in mind, and they only focus on necessary tasks. They should visualize the overall growth of organization through their visionary thinking.

**2. Proper Communication skills:**Being able to communicate the vision of where the organization should be in near future. Strategic leaders must have the social skills necessary to communicate their vision with the team accurately.

**3. Strategic planning:**Unique and strategic plan is required to accomplish the organizational goals. Therefore, the strategic leader must have strategic planning for acquiring such goals. Efficient and effective leaders keep themselves updated about what is happening within their organization.

**4. Measuring objectives and key results (OKRs):** Strategic leaders must be able to create a goal-setting framework that defines and assess their objectives and outcomes.

**5. Strategic agility:** Being able to turn the organization's long-term vision into daily objectives is an integral part of strategic leadership. Strategic leaders must have a wide perspective to be able to apply an overall vision.

**6. Awareness:** Strategic leaders understand how their actions and behavior impact their teams. They think before acting, have emotional intelligence. They possess Compassion by which Strategic leaders must understand the views and feelings of their subordinates, and make decisions after considering them.Strategic leaders must have a zeal for work that goes beyond money and power and also they should have an inclination to achieve goals with energy and determination.

**7. Trust and reliability:** You can count on strategic leaders. They go after their goals with passion and determination, and they stop at nothing until their vision turns into reality. Powerful and effective leaders demonstrate their loyalty to their vision by their words and actions.

**8. Execution:** Strategic leaders are experts at strategy implementation. They understand how to turn goals into action and action into outcome. They make the most out of their systems and resources. Judicious use of power- Strategic leaders makes a very wise use of their power. They must play the power game skillfully and try to develop consent for their ideas rather than forcing their ideas upon others. They must push their ideas gradually.

**9. Integrity:** Being grounded in integrity and compassion is an essential part of strategic leadership. Strategic leaders must be able to consider their team's ideas, feelings, and perspectives before making decisions.

**10. Effective Management:**Strategic leaders understand how to lead a team. They know how to allocate resources, delegate responsibilities, and empower their subordinates to make decisions on their behalf. Strategic leaders should create belongingness approach within employees with their effective management. They must utilize all available resources and accomplish organizational objectives.

**Impact of strategic leadership on organization's overall performance:** Leaders significantly affect an organization's overall performance, so doing a good job and inspiring others should be a big focus of every leadership strategy. This can be done a multitude of ways by following:

**Inculcates work culture:** The strategic leadership can enrich the employees with better value systems and can also help them to become visionary. The leader should become the role model of others and he preaches the importance of values within his subordinate. Ethical organization can earn goodwill in the society and this also contributes in employees' social status.

**2. Provide an open communication platform:** When anyone at any level has access to participate in Q&A sessions with senior leaders, answers can be given on the spot. This helps employees be heard, but it's also a good way to reinforce the company's goals and values. Strategic leaders motivate their subordinates to communicate innovative and creative ideas.

**3. Take meaningful action on feedback:** Asking for feedback is only as useful as the action that follows. Feedback tool is very important for organizational growth. A strategic leader takes corrective and necessary actions from the feedback suggested by their team.

**4.Empower employees:** A culture of autonomy allows for more problem solving and greater innovation. When employees are trusted to contribute (with accountability), they will do better than everyone's expectations.

**5. Remind workers that failing isn't fatal:** Failure is inevitable, no matter who you are. It just means that chances were taken and growth is occurring. Don't punish people for trying, but encourage them to learn from what went wrong and make improvements the next time around.

**6. Recognize a job well done:** Employees who are openly shown appreciation at work are happier and more productive. When they know and that their superiors take the time to express thanks, employees are more loyal to their team and the company as a whole. This creates lifelong commitment towards the organization.

**7. Clarity of vision:** When strategic leaders clearly communicate how tasks relate to overall goals, it's easier for team members to understand why their work is meaningful.

**Conclusion:**

This research study examines the implications of strategic leadership on organization's overall performance. This study concludes that strategic leadership contributes in organizational innovativeness and overall growth. Strategic leadership can invest in strengthening the employees for future prospects. It also makes them aware about their potential and commitment. Strategic leadership maintains organization as a visionary concern. Strategic leaders can create vision, express vision, passionately possess vision and persistently drive it to accomplishment.

**References:**

1. <https://www.betterup.com/blog/strategic-leadership>
  2. <https://www.managementstudyguide.com/strategic-leadership.htm>
  3. <https://www.sciencedirect.com/topics/social-sciences/strategic-leadership>
- The book named "Strengths based Leadership" by Don Clifton from Gallup, Tom Rath.

## **Work Life Balance Of Bank Employees: A Comparative Study Of Public And Private Sectorbanks In Haryana**

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**Abstract :** Work-life and personal life are two sides of the same coin. Increasing work burdens, globalization and industrial development have made it an issue with both the genders, all professionals, working across all levels and all businesses throughout the world. The banking industry is one that is fronting the force of the threat of work-life imbalance. Work limits are getting snugger and the individual's jobs are not only to contest with targets but also to give worthy productions. Due to this work burden, it becomes exceedingly difficult to maintain work-family life. Many a time, people, in the quest for reaching the top, work so hard, that they miss out on the real pleasures of life. While it is absolutely great to have a flourishing career, it is equally domineering to have a life of external work. This study is a specific study of Public and Private sector banks of Haryana. The study concluded that work-life balance has become a mission for professionals in banking industries and also that employees work better when they do make time for family and personal interests.

**Keywords:** Banking Industry, Gender Issues Stress, Work Pressures, Work-Life Balance

### **Introduction**

Work-life and personal life are interconnected and interdependent. Spending more time in the office, allocating with customers and the burdens of the job can delay and affect the personal life, sometimes making it difficult to even complete the domestic responsibilities. On the other hand, personal life can also be demanding if you have a kid or ageing parents, financial problems or even problems in the life of a dear relative. It can lead to skiving from work, creating pressure and a lack of awareness at work.

Many a time, successful people, in the quest for reaching the top, work so hard, that they miss out on the real will of life. While it is absolutely great to have a flourishing career, it is similarly domineering to have a life of external work. Work-personal life conflict occurs when the burden, commitments and responsibilities of work and family roles become mismatched. The obligation of one can force an individual to neglect the other.

There is no 'one size fits all' pattern of work-life balance practices. It is important for employers to offer practices that appeal to all employees. Employers may incur extra costs in assuming strategies to support work-life balance, including enlarged managerial capabilities. Such costs are however commonly balanced by the gains in achieving strategic objectives:

Increased tractability and customer service, for example, to cover for absences and holidays

Upstretched confidence, motivation, pledge and assignation

### **Work Life Balance**

Greenhaus, Collins and Shaw (2003) define work-life balance as the extent to which an individual is equally engaged in – and equally satisfied with – his or her work role and family role. Thus, employees who experience high work-life balance are those who exhibit similar investment of time and commitment, to work and non-work domains.

### **Review Of Literature**

Work-life balance brings greater effectiveness to all aspects of life. Employees work better when they do make time for family and personal interests. Thus the issue has become pertinent not only in India but has become a major issue of concern for all kinds of industries worldwide. A lot of work has been done by researchers in order to explore the ways to maintain the proportionate balance between work and life. Some of the research reviews are as follows-

Sindhuja, K., and S. Sekar Subramanian (2020) examined the effectiveness of the work-life Balance of bank employees and its impact on employee retention in the selected banks in Sivakasi, Virudhunagar district. The findings of the study reveal that 44 per cent of the respondents have a low level of work-life balance, 40 per cent of the respondents have a medium level of work-life balance, and only 16 per cent of the respondents perceived a high level of work-life balance. The study also identified that there is a significant difference between the work-life balance levels among the public sector and private bank employees.

R. S.V. Rama Swathi and A. K. Das Mohapatra (2017) "Work-Life Balance of Women Employees in Indian Service Industry: A Comparative Study between Public and Private Sector" The present study makes an attempt to compare the Work-life Balance of women employees in Indian Public and Private sector organizations. This study has been conducted on 29 different service sector organizations in India,

by using the primary data collected from 320 respondents based on their own developed questionnaire consisting of 15 questions based on facilitators of 66 Work-life Balance. The findings are based on analysis of the data through Descriptive Statistics and ANOVA. Organizations in order to sustain themselves in the present competitive situations need to attract talented employees by facilitating Work-life Balance policies. Work-life Balance policies have the potential to improve employee morale, job satisfaction and performance level. Both the Public and Private Service sectors should give flexibility to women employees to plan their office hours around their personal commitments, the option to work from home, and a friendly leave policy to help them juggle roles so as to maintain a proper Work-life Balance.

Charu Dutta and Jeet Singh (2015) have done research on "A comparative study of Job satisfaction of private and public banking sector of Delhi and Noida". The study was descriptive and analytical. The main objective of the study is to compare the satisfaction level of employees in PNB, SBI, Axis and ICICI Bank. A total of 60 respondents were selected equally from four organizations from both managerial and operational staff. Job satisfaction of Axis and ICICI Bank was found to be significantly lower than in PNB and SBI. Reasons were found to be responsible for the low job satisfaction level of employees of private sector banks. The two main important issues of Private Sector Banks are High Competition and Job security. Sincerity, commitment, loyalty, and dedication are not enough to secure a job. In the Private sector Bank's welfare policies are not clearly defined and executed whereas, in public sector banks, welfare policies like retirement, pensions, gratuity etc. are clearly defined and legally executed. Moreover, in Private Sector Banks Employee turnover is very high and job security is very low while comparing with Public sector Banks Employee.

Sugandha (2014) has done research on "An Exploratory Study of Work-Life Balance among Banking and Insurance Sector Employees". The study was confined to looking at the difference in Work-Life Balance among all banking and insurance sector employees in the region of Haryana, Chandigarh and Delhi in particular. Four Banks and four Insurance companies have been selected for research purposes in which two banks and two insurance companies are from the public sector and two banks and insurance 54 companies are from the private sector. A sample of 708 respondents has been taken in which 369 respondents are from the public sector and 338 respondents are from the private sector; 368 respondents are from the banking sector and 340 are from the insurance sector; 498 respondents are male and 210 respondents are female. Employees working in public companies perceive more work-life balance than employees working in private companies. Employees working in GIC perceive more work-life balance followed by employees in SBI Bank, PNB Bank, HDFC Bank, ICICI Lombard, SBI life insurance Co., Axis Bank and LIC.

Vijay Laxmi (2008) in her research on "working spouses fine with their work-life balance" explores that getting married is no more a reason for dissatisfaction in the work-life. Married working couples in India appear to manage the work-life tightrope well. The continued difficulties for women looking to re-enter the workforce after a child break and the high unwillingness to move cities to follow their spouses' careers are the challenges for women spouses in the Indian workplace. There is evidence that such programs are not a significant drain on company profitability. Since firms similar to those in this study can expect to realize gains in retention of employees and continued profit growth, it would benefit them to adopt certain types of work/life balance policies.

M Rajgopal (2007) in his research on "work to live, don't live to work: A cross-sectional study of the work-life balance of higher managers" finds that work-life balance is currently in vogue among governments, organizations as well as researchers. Managers in organizations all over the world are exposed to significant pressures in their jobs, which further influence the balance between their work and private lives, job satisfaction and overall well-being. The key findings in terms of the factors influencing higher managers are reported. They suggest that individuals are influenced by several aspects. The responsibility for personal work-life balance does not only lie on individuals themselves but the organizations and governments play an important role in treating this issue as well.

Arunima Ghosh (2006) in their research on "The Relationship between the Involvement of Work Innovations and Work-Family Balance" explored the relationships between the involvement of work innovation and work-family balance concepts (work-family conflict and work-family facilitation). This study revealed that the involvement of the "JIT (just-in time) system" and "six sigma" was positively associated with work-family conflict. Three management innovation activities, "total quality management (TQM)", "work team", and "pay-for-performance system" were negatively associated with work-family conflict. "work team" had a positive relationship with work-family facilitation.

Jane Sturges (2004) in her research on "Working to live or living to work? Work/life balance early in the career" reports the findings of research that explored relationships between work/life balance, work/non-

work conflict, hours worked and organisational commitment among a sample of graduates in the early years of their career. It concludes that, although graduates seek work/life balance, their concern for career success draws them into a situation where they work increasingly long hours and experience an increasingly unsatisfactory relationship between home and work.

### **Importance Of The Study**

Work-Life Balance is more than just a buzzword – it's for real. Employers who have responded to the changing social and business environment and built Work Life Balance policies into their culture have benefited tremendously. In India, fairly rapid strides have been made in introducing Work-Life Balance policies. Industry initiatives have been supported by Government legislation, trade union debate and industry association advocacy to ensure that Work-Life Balance policies are more pervasive and effective. However, there are still some fundamental issues that need to be addressed or myths that need to be shattered by both employees and employers.

### **Objectives Of The Study**

To find out the challenges associated with Managing the Professional life of the employees of the Banking sector.

To study the causes and consequences related to Work-life imbalance on the basis of gender, demographic structures, and level of hierarchy at the organizational level, growth patterns, Family and societal commitments.

To suggest and recommend strategies to integrate work into overall life issues effectively which may prove helpful to Banking Industry and its employees.

### **Research Methodology**

#### **Area of the Study**

The sample was taken from private and public sector Banks of Haryana, which includes CANARA Bank, Bank of Baroda and Union Bank of India among Public Sector Bank and Axis Bank, ICICI Bank and Kotak Mahindra Bank among Private Sector Bank.

#### **Data Collection Tools**

##### **Primary Data**

A set of questionnaires was developed to collect the responses from the employees of the banking sector to perceptualize the opportunities, scope and constraints and grey areas with regard to the comparative study of employees of private and public sector banks of Haryana State. Information on geographic, sociocultural and psychological perspectives of the study area has been collected for preparing this questionnaire.

The major dimensions which have been used to measure Work-Life Balance (WLB) are namely- gender bias, demographic structures of families of employees, level of hierarchy in the organisation, welfare policies of the organisation and family and societal commitments of the employees.

##### **Secondary Data**

For requisite facts on planning and policies of the government and another geographical and socio-cultural standpoint of the study area were collected from authentic resources such as books and journals, research papers, Project readings, unpublished reports of government departments and other reliable sources of information broadcast.

##### **Sampling Technique**

The Stratified Random Sampling Technique has been used in order to collect the primary data.

##### **Sample Size**

200 samples have been taken both from the private sector and public sector banks of Haryana state. The sample comprises a supervisory and subordinate staff of public sector banks and managerial and executive staff of private sector banks. Samples have been taken from the public and private sector banks with the specific study of CANARA Bank, Bank of Baroda and Union Bank of India among Public sector banks and ICICI bank, Axis Bank and Kotak Mahindra Bank among private sector banks.

##### **Data Analysis And Interpretation**

The qualitative and quantitative analysis of the work-Life balance of employees in the banking sector was done on the basis of interpretation derived from the specially framed questionnaire with the help of tabulation of data. Major findings of the study have been summarized in Table 1 below. The study polled 200 banking employees from the private and the public sector banks located in Haryana state. This included CANARA Bank, Bank of Baroda and Union Bank of India from the Public sector and ICICI bank, Axis Bank and Kotak Mahindra Bank amongst the Private sector banks.

**Table 1: Findings of the Study (Figures are in Percentage)**

Statements	PUBLIC		PRIVATE	
	Yes	No	Yes	No
1. Married and working couples appear to manage work-life better	47	53	59	41
2. Women employees feel that they can't pursue their career with the same velocity after marriage and child break	90	10	88	12
3. I feel happy at my workplace.	43	57	61	39
4. I feel an increase in the hierarchy level of an individual does have a positive impact on WLB	48	52	54	46
5. I feel stressed out most of the time because of my work pressure	67	33	72	28
6. Men equally share household and child-rearing responsibilities	38	62	46	54
7. I almost always feel the element of gender bias in my work as well as my family life	68	32	63	37
8. I feel I earn enough to take care of my spouse and children	56	44	63	37
9. After child break women employees find it difficult to join the workforce and maintain work-life balance	83	47	85	15
10. My organisation has time off facility for family engagements	30	70	41	59
11. I'm satisfied with the amount of time I spend with my family	66	34	47	53
12. Working in odd shifts/after work hours influences marital relationships	68	32	74	26
13. Careers in banking are compatible with WLB	59	41	53	47
14. My Organisation has parenting, family as well as child care programs to help balance my work life	63	37	64	36
15. Increase in age and societal commitments may have hindrance in maintaining one's WLB	77	23	75	25

Mixed kinds of responses drawn from the employees revealed that married and working couples appear to manage their work-life better. Amongst the public sector, about 47 % of the employees polled in favour whereas amongst the private sector 59 % polled in favour. Majority of the employees 90 % in the public sector and 88 % in the private sector realized that women employees cannot pursue their careers with the same velocity after marriage and child break. Only 44% of people in the public sector banks accepted that they do not feel happy in their workplace while 61% of private-sector employees responded favourably accepting that they feel happy at their workplace. Approximately 48 % of the public sector feel that increase in the hierarchy level of an individual does have a positive impact on the work-life balance while 54% of the private also feel so. However it is alarming that approx. 67 % of the public sector and 72 % of the private sector felt stressed out most of the time because of their work-related pressure. Hardly 38 % of the employees in the public sector & 46 % in the private sector could agree that men equally share household and child-rearing responsibilities. Despite liberalisation and globalization in the Indian banking industry the element of gender bias has been felt by almost 68 % in the public sector and 63 % in the private's sector. Approximately 56 % of public sector employees and 63 % employees of private sector feel that they can earn enough to take care of their spouse and children. The study reveals that as high as 83 % of the employees in the public sector and 85 % in the private sector found it difficult to maintain work-life balance after a child break. About 70% of public sector employees were dissatisfied with the policies/facilities regarding time off for family engagements whereas the private sector bank employees also followed the same trend with 59 % of their employees. There has been greater satisfaction amongst the public sector banks leading with 66 % with regard to the amount of time they were able to spend with their families as compared to employees in the private sector with just 47%. Working in odd shifts /after work hours influences marital relationships was accepted by 68% of employees in the public sector while it was leading with 74% in the private sector banks. Approximately 59 % of employees in the public sector and approximately 53 % of employees in the private sector feel that careers in banking are compatible with work-life balance. However the employees around 63 % from the public sector and 64 % from the private sector had an agreement that their organization exercised parenting-family as well as child care programs

to help balance their work-life. Increase in age and societal commitments may have hindrance in maintaining once the work-life balance was accepted by a majority of 77 % amongst public sector and 75 % amongst the private sector.

### **Suggestions And Recommendations**

1. The following suggestions can be given to the executives to manage the work-life balance:
2. Time management is one of the best solutions which can help to diminish the imbalance between the personal and the work-life of the employees.
3. Prioritizing the tasks and planning the activities can help to take out some free time which can be exploited for other purposes.
4. Taking some time out for hobbies and leisure activities, and spending time with loved ones can help to beat the stress.
5. Learn to say "no" if required.
6. Sharing the responsibilities will help to maintain work-life balance
7. Don't constrain for something which is practically impossible in order to avoid stress.

### **8.Utilizing The 'Flexible Working Hours' Option Of The Organizations To Get Some Free Time.**

#### **Conclusions**

Juggling between the responsibilities towards the families and expectations of the organization and constant struggle to maintain a balance of work can have serious effects on the life of an individual. Work and personal life conflict occur when the liability, obligations and household tasks of work and family roles become incompatible. Therefore, it is important for employees to maintain a healthy balance between work and their private lives. This will help them achieve their personal and professional goals as well as the organization they are working for. The study concluded that the work-life balance has become a quest for professionals in the banking industry both in the private and public sector of Haryana State and also that employee's work better when they do make time for family and personal interests.

#### **References**

1. Acker, J. (1990) 'Hierarchies, bodies, and jobs: a gendered theory of organisations', *Gender and Society*, 4 (2), 139-158.
2. Alvesson, M. (2004) *Knowledge Work and Knowledge-intensive Firms*, Oxford, Oxford University Press.
3. Baxter, J. (2002) 'Patterns of change and stability in the gender division of household labour in Australia', *Journal of Sociology*, 38 (4), 399-424.
4. Bittman, M. & Pixley, J. (1997) *The Double Life of the Family: Myth, Hope and Experience*, Sydney, Allen & Unwin.
5. Bryson, L. & Winter, I. (1999) *Social Change, Suburban Lives: An Australian Newtown 1960s to 1990s*, Sydney, Allen & Unwin and Australian Institute of
6. Buchbinder, D. (1998) *Performance Anxieties: Re-producing Masculinity*, Sydney, Allen & Unwin.
7. Charu Dutta and Jeet Singh (2015). A Comparative Study of Job Satisfaction of Private and Public Banking Sector of Delhi and Noida. *Asian Journal of Management Research*, 6(1), pp. 167-176.
8. Connell, R. W. (in press) 'Glass ceilings or gendered institutions? Mapping the gender regimes of public sector worksites', *Public Administration Review*.
9. Connell, R.W. & Wood, J. (2005) 'Globalization and business masculinities', *Men and Masculinities*, 7 (4), 347-364.
10. Connell, R.W. (2002) *Gender*, Cambridge, Polity Press.
11. Connell, R.W. (2005) 'Change among the gatekeepers: men, masculinities, and gender equality, in the global arena', *Signs* 30 (3), 1801-1825.
12. Dasgupta, R. (2000) 'Performing masculinities? The 'salaryman' at work and play', *Japanese Studies*, 20 (2), 189-200.
13. Davidoff, L. & Hall, C. (1987) *Family Fortunes: Men and Women of the English Middle Class, 1780-1850*, London, Hutchinson.
14. Dempsey, K. (1997) *Inequalities in Marriage: Australia and Beyond*, Melbourne, Oxford University Press.
15. Faludi, S. (1999) *Stuffed: The Betrayal of the Modern Man*, London, Chatto & Windus.
16. *Family Studies*.
17. Franzway, S. (2001) *Sexual Politics and Greedy Institutions: Union Women, Commitments and Conflicts in Public and in Private*, Sydney, Pluto Press.
18. *Gender Power, Leadership and Governance*, Ann Arbor, University of Michigan Press.

19. Gilding, M. (1991) *The Making and Breaking of the Australian Family*, Sydney, Allen & Unwin.
20. Marchand, M.H. & Runyan, A.S. (2000) *Gender and Global Restructuring: Sightings, Sites and Resistances*, London, Routledge.
21. *Masculinities*, vol. 1, Aldershot, Ashgate.
22. Meuser, M. (2003) 'Modernized masculinities? Continuities, challenges and changes in men's lives. 'In S. Ervo & T. Johansson (eds) *Among Men: Moulding*
23. Mies, M. (1986) *Patriarchy and Accumulation on a World Scale: Women in the International Division of Labour*, London, Zed Books.
24. Miller, P. (1998) *Transformations of Patriarchy in the West, 1500-1900*, Bloomington, Indiana University Press.
25. Newman, M. A. (1995) 'The gendered nature of Lowi's typology; or, who would guess you could find gender here?' In G. Duerst-Lahti and R. M. Kelly (eds)
26. Pocock, B. (2003) *The Work/Life Collision: What work is doing to Australians and what to do about it*. Sydney, Federation Press.
27. Pringle, R. (1988) *Secretaries Talk: Sexuality, Power and Work*, Sydney, Allen & Unwin.
28. Pusey, M. (1991) *Economic Rationalism in Canberra: A Nation-Building State Changes its Mind*,
29. Rama Swathi, R. S.V., & Das Mohapatra A. K. (2017). *Work-Life Balance of Women Employees in Indian Service Industry: A Comparative Study between Public and Private Sector*. *International Journal of Advanced Research (IJAR)* 5(4), 2127-2134.
30. Sindhuja, K., and S. Sekar Subramanian. "Impact of Work-Life Balance on Employee Retention- A Study on Banking Sector." *Shanlax International Journal of Management*, vol. 7, no. 3, 2020, pp. 78–81.
31. Sugandha (2014). *An Exploratory Study of Work-Life Balance among Banking and Insurance Sector Employees*. *International Journal of Research in IT & Management*, 4(1), pp.81-94.

## **Factors of Social Entrepreneurship**

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**Abstract:** Developing countries are not under developed, they are under managed” – Peter F. Drucker Unemployment and Poverty are the two major obstacles faced by our country. Being “Young India”, our country has achieved tremendous development in all sectors. Technological advancements helped out in this regard. Yet on the other side of the coin, it is difficult to provide the basic needs of marginalized group of population who lives below poverty line. Even though Entrepreneurship establishments help in to decrease unemployment, it couldn't be the permanent solution to address social issues. Social Entrepreneurs are more innovative and creative to find the solution to address the social issues. In this context, an attempt has made to understand the factors of Social Entrepreneurship, multi-dimensional model of Social Entrepreneurship. It is a concept paper based on descriptive case study analysis. The paper concluded with discussion on factors of Social Entrepreneurship.

**Key Words:** Wealth Creation, Social Entrepreneurship and Sustainable Development

### **Introduction:**

India is the sixth largest economy in the world. It is the second largest populated country in the world after China. Our Country consists of more youth population and popularly known as Youngistan throughout the world. No doubt, India has achieved tremendous progress and success in many sectors. Even the up gradation and techno savvy culture and environment has added boost to achieve the economic development. But fulfilling the basic needs and providing employment opportunities to the growing population itself is a big challenge for any Government. Unemployment and Poverty are two major problems faced in the development of the economy. Entrepreneurship is could be a suitable solution to the handle these problems. Business Entrepreneurs are most concerned with wealth creation. Whereas Social Entrepreneurs are most concerned with finding a innovative solution to address the social issues. Social Enterprises are social mission-driven organizations. They apply market based strategies to achieve a social purpose. Social Entrepreneurs are innovative, highly-motivated and Critical Thinkers (Suresh Seth, 2011). Developing country like India, need to be assisted with more number of Social Entrepreneurs to achieve Sustainable Development.

### **Research Methodology:**

#### **Objectives Of The Study:**

The present study aimed at the following Objectives:

1. To understand the bounded multi-dimensional model of Social Entrepreneurship.
2. To explore the factors and constraints of Social Entrepreneurship

**Methodology Of The Study:** The present study “Factors of Social Entrepreneurship” is a concept paper. It is descriptive in nature. The data consists of primary and secondary data sources. The primary information has been obtained from the personal interactions with Social Entrepreneurs (while pursuing Ph.D.). The secondary information is collected from various articles and research papers published in journals, magazines, Google search and web search etc.

### **Factors Of Social Entrepreneurship:**

Social Entrepreneurship is the process of pursuing innovative solutions to social problem (Dr. Brijesh, 2013). Social Entrepreneurs plays the role of change agent in the society. Their primary motive is to serve followed by earning profits. Usually they start with adoption of a mission and try to create and then sustain social value. Social Entrepreneur recognizes a social problem and uses entrepreneurial principles to organize, create and manage a venture to make social change (Dr. Brijesh, 2013).

Social Enterprises, like any other business firm is affected and constrained by environmental dynamics. In this regard Prabhu (1998) and Sullivan Mort et al. (2003) have identified the three factors of Innovativeness, Pro-activeness and Risk taking (from Covin & Slevin, 1986) as central to Social Entrepreneurship. The constraints faced by the Social enterprises were categorized into two. i.e. Static and Dynamic Constraints. Having Innovativeness, Pro-activeness and Risk taking as factors and facing Static and Dynamic Constraints Social enterprises need to work to achieve their Social Mission. Let us have a look at the factors or features central to a Social Enterprise, which forms a part of the Dynamic Environment faced by them:

**Innovativeness:** Resource procurement and sustainability are the two major challenges faced by the Social enterprises. In order to face competition and to sustain in the market the Social enterprises have to create the targeted Social Value through Innovativeness.

**Pro-activeness:** In order to face today's dynamic environment, every Social enterprise needs to be proactive. Social enterprise need to anticipate the changes before they exert an impact by implementing a new decision in the organization. They have to be prepared in advance to handle the situations arise due to environmental effects and to remain intact with their mission.

**Risk Management:** Social enterprises face risk in terms of operating, managing and funding. The primary goal of Social enterprise is not earning more profits. It turns as a constraint in terms of access to various sources of funds; short term as well as long term and also for monetary return on investments. Therefore every Social Enterprise need to forecast their revenue streams to do proper risk management before committing with financial resources.

**Sustainability:** Primary aim of Social enterprises is to sustain in the market rather than attaining growth. In order to sustain their model for social value creation in the market they need to face today's dynamic environmental constraints.

**Social Mission:** The primary objective of any Social enterprise is to achieve their Social Mission. Their entire transactions and operations revolve around their Social Mission or Vision to serve social welfare.

**Opportunity seeking/recognition:** Social Entrepreneur identifies the opportunities in the market which were ignored by the corporate enterprises. Social enterprises find opportunities where the Corporate Enterprises finds problems. They identify opportunity to create better social value for their current and potential clients.

A multidimensional Model of Social Entrepreneurship consists of dimensions and constrains described by Weerawardena, Jay and Mort (2006) presented in the following figure 1.

**Figure 1: A Multidimensional Model of Social Entrepreneurship**



**Fig. Bounded multidimensional model of social entrepreneurship.**

(Source: Weerawardena, Jay and Mort, Gillian Sullivan (2006): Investigating Social Entrepreneurship: A multidimensional model, *Journal of World Business* 41 (2006) pp. 21-35)

Figure 1 presents A Multi Dimensional Model of Social Entrepreneurship describing the Dimensions/Behaviours and Constraints of a Social enterprise. Innovativeness, Pro-activeness and Risk Management as dimensions and Static & Dynamic constraints consists of sustainability, social mission and environment. Dynamic constraints include the ever changing Environment in which the Social enterprise has to operate. As such financial resources are less in availability for the Social enterprises; they need to first ensure their survival, sustainability and then growth. Before taking a decision they have to think about their Social Mission. All the activities and strategies should act as a means to achieve their social mission. Today's environment is very dynamic for Social enterprises to operate due to continuous changing Government policies, scarcity of funds, ever changing social needs, competition from others, concentration towards social value creation etc. Thus Social Entrepreneurship can be viewed as a Multi Dimensional Model consisting of dimensions and constraints aimed to achieve Social Mission. This relationship stated as follows:

$$SVC = f(I, P, RM) \text{ subject to } S, SM, E$$

Where SVC = Social Value Creation; I: Innovativeness; P: Pro-activeness; RM: Risk Management; E: Environment; S: Sustainability; and SM: Social Mission.

### Case Study Analysis:

A multi dimensional model of Social Entrepreneurship consists of dimensions and constraints faced by a Social Enterprise; the researcher has made an attempt to study the dimensions and constraints of four Social Enterprises by using interview method while pursuing research work. The summary of the case studies as presented below:

**Table 1: Dimensions of Social Enterprises**

Social Enterprise	Innovativeness	Pro-activeness	Risk-management
Allika	The Weed- Water Hyacinth used to prepare beautiful handicrafts	Sustainable and fashionable weaving products	BVIC is overall whelmed by the success of Allika and strengthened it
Umeed	Simple, beautiful newspaper made handicrafts	Environmental friendly products and create future leaders and women entrepreneurs	BVIC by way of mentoring seed capital to thousands of under privileged women and achievements
Vijaya Sree Jute Designs	Manufacturing of eco-friendly handbags and other products	Manufacturing the products to satisfy needs of different customers to cover market scope	Surge Impact provides technical as well as funding support.
Naari Enterprise	Training and counseling to acquire skills to preparing jute bags, hand bags college bags etc.	Customer satisfaction is very important to enhance the sales. According to their changing tastes and requirements changes in products took placed.	Good communication and maintaining good relations with Government Officials and Bankers able to generate loans at lower rate of interest.

(Source: Compiled by the Researcher from Personal Interactions in the field visit, Ph.D. thesis and secondary sources of web: <https://www.umeed.in>, <https://yourstory.com>2017/10>, [www.bvic.in>start-ups](http://www.bvic.in>start-ups), <http://www.bitgiving.com>unltdhydall>, and [www.mycitykinks.in>neha-an-odia-social](http://www.mycitykinks.in>neha-an-odia-social))

**Table 2: Constraints of Social Enterprises**

Social Enterprise	Environment, Opportunity seeking / recognition	Sustainability	Social Mission
Allika	Reducing environment pollution, reducing health risks indirectly	Women skill development, employment and trained up women in creating products, increased income levels of rural women	Empowerment of women, create sustainable livelihood and eliminate water contaminant weed from water hyacinth
Umeed	Overall empowerment of women and environmental friendly products creation and skill development	Skill development to women, employment and financial stability	Skill development by giving training, values and mindsets and exposure to society and women empowerment
Vijaya Sree Jute Designs	Creating environment of equal opportunities to all workers to prove their ideas in preparing products.	People were getting aware of Eco-friendly products. More comfort and saving the Environment theme lead to sustainability.	Creation of Employment and enhancing the living standards of women of marginalized section of the society.
Naari Enterprise	Aimed to create self confidence among women to come forward to create their own entity in the society.	The products are eco- friendly and offered at reasonable low prices. Good Quality of products made University people and Government officials to place orders on regular basis.	Creation of Employment and enhancing the living standards of women of marginalized section of the society.

(Source: Compiled by the Researcher from Personal Interactions in the field visit, Ph.D. thesis and secondary sources of web: <https://www.umeed.in>, <https://yourstory.com>2017/10>, [www.bvic.in>start-ups](http://www.bvic.in>start-ups), <http://www.bitgiving.com>unltdhydall>, and [www.mycitykinks.in>neha-an-odia-social](http://www.mycitykinks.in>neha-an-odia-social))

Table 1 and 2 consists of case studies of four Social Enterprises i.e. Allika, Umeed, Vijaya Sree Jute Designs and Naari Enterprises. All these four Social Enterprises started up with an innovative idea to address a social problem. These social enterprises consists of three factors like innovativeness, pro-activeness and risk management and faces the constraints of sustainability, social mission an ever changing environment. They haven't stopped their efforts to serve the needy in the society.

**Summary, Conclusion And Suggestions:**

India, as a developing country has achieved tremendous development in many sectors due to the techno savvy advancements. Yet reaching to the below poverty line population to fulfill their minimum needs is still a challenge to the Government. Entrepreneurship Development could be a tool to overcome the unemployment and poverty issues. Business Entrepreneurs aim at wealth creation where as Social Entrepreneurs aim at Social Value Creation. Social Enterprises like Allika, Umeed, Vijaya Sree Jute Designs and Naari Enterprises started working with innovation, pro-activeness and risk-management. They too have combined the factors and faced the constraints like sustainability, social mission and environment. They found working relentlessly and serving the needy with a social mission. According to Bill Drayton, Everyone can be a 'Change Maker'. Social Entrepreneurs play the role of Change Agents in the Society. Social Entrepreneurs starts working from gross root level to create employment along with empowerment. Professor Mohammad Yunus founder of Grameen Bank won Nobel Peace Prize for his contributions as a Social Entrepreneur to eradicate poverty and to empower women in Bangladesh. Developing Country like India has a need to encourage Social Entrepreneurship to achieve Sustainable Development Goals in near future.

**References:**

1. Dr. Brijesh Sivathanu and Dr. Pravin V.Bhise (2013). Challenges for Social Entrepreneurship. *International Journal of Application or Innovation in Engineering and Management (IJAEM)* ISSN 2319-4847, pp.1-9.
2. Jay Weerawardena and Gillian Sullivan Mort (2006) "Investigating Social Entrepreneurship: A multidimensional model", *ELSEVIER, Journal of World Business* 41 (2006), pp. 21-35.
3. Jay Weerawardena and Gillian Sullivan Mort (2012) "Competitive Strategy in Socially Entrepreneurial Nonprofit Organizations: Innovation and Differentiation", *Journal of Public Policy & Marketing, Vol. 31(1)*, spring 2012, pp.91-101.
4. Mohammad Reza Noruzi, Jonathan H. Westover and Gholam Reza Rahimi (2010) "An Exploration of Social Entrepreneurship in the Entrepreneurship Era", *Asian Social Science, Vol. 6, No.6, June* 2010, pp.3-10.
5. Nidhi Sharma and Keshav Sharma "Understanding Social Entrepreneurship", *South Asian Journal of Multidisciplinary Studies (SAJMS)*, ISSN: 2349-7858: SJIF 2.246: Vol. 2, Issue 2.
6. Surinder Pal Singh (2007). Social Entrepreneurship: Conceptual Insights and Research Priorities, accessed on 13 July, 2015.
7. <https://www.umeed.in>, <https://yourstory.com>>2017/10, [www.bvic.in](http://www.bvic.in)>start-ups, <http://www.bitgiving.com>>unltdhydall, and [www.mycitykinks.in](http://www.mycitykinks.in)>neha-an-odia-social

## **Study Of Women Entrepreneurs Who Changed The Stereotype Thinking Of The Society**

**Dr. Anuja Prabhakar Mudholkar**

**Abstract** – “There is no chance of the welfare of the world unless the condition of women is improved, it is not possible for a bird to fly on only one wing” – **Swami Vivekananda**

Entrepreneurship has been attracting attention of administrators, policy makers, academicians as well as businessmen. The term is associated with self-employment, creation of new enterprises. It is an economic activity which is Women and Entrepreneurship. It is concerned with perception of new and attractive business opportunities, development of feasible business ideas, assumption of business risks for initiation and development of a new business venture for converting business ideas into products/services The main aim of this research paper is to change the stereotype thinking of society who always blame women cannot be a successful entrepreneur.

**Key words**– women entrepreneurs, successful women entrepreneur’s story, short story of some unknown women entrepreneurs

**Introduction**-Women entrepreneurship is the process where women Dream of a business enterprise, initiate it, organize factors of production, and manage the enterprise even in the face of risk and uncertainty. In a country like India where most of the women aren't encouraged to think big (especially in the rural parts of the nation), there are some who have soared higher than one would expect in a constrictive setup. With the consistent developments in the Indian start-up ecosystem, more and more women are chasing the entrepreneurial dream and flourishing in their ventures. This is empowering other Indian women who are still confined to the traditional home maker role to think for themselves. However, a recent report states that only two Indian cities have made it to the list of the 50 most favourable global places for women to work. India’s Silicon Valley, Bangalore, ranked 40th, while Delhi was at the 49th place. This survey was conducted by the tech giant Dell in partnership with the consultancy firm IHS Market. The ranking—based on inputs from Indian women entrepreneurs, policymakers, venture capitalists, media, and academicians—measures city’s ability to attract and support those women who want to grow their businesses. According to the National Sample Survey, only 14% of the businesses in India are run by women entrepreneurs. The global disparity is evident in a report which says nearly 126 million women have their own business across the globe while Indian women linger around the 8 million marks; a paradoxical statement given that India is the second most popular nation in the world.

**Literature Review** - Woman entrepreneur is self-employed and creates employment opportunities for others. She is actively involved in initiating, organizing and managing her enterprise and getting attractive returns out of these activities. In this manner, women entrepreneurs are the women who dream of a business enterprise, initiate it, organize the factors of production, run it and undertake risk and tackle uncertainty in managing it. Women entrepreneurs may be classified in different types.

Some women entrepreneurs are highly educated and professionally qualified. They are efficient and dynamic. They take initiative and they are interested in growth, expansion and diversification. There are some women entrepreneurs who may not be educated but they are equipped with some skills which are required for small enterprises. Some women entrepreneurs work specially for women from economically backward segment of the society. Affluent women entrepreneurs are those women entrepreneurs who hail from rich business families. Innovative entrepreneurs deal with business to challenge conventional assumptions about social position of women. Domestic workers are the women who see their business as secondary to their role as mothers or wives etc.

**“In order to awaken the people, it is the women who have to be awakened. Once she is on move, the family moves, the village moves, and the nation moves” – Pandit Jawaharlal Nehru**

The term **Empowerment** is widely used in the context of ‘development’ particularly with reference to development of women. To empower means to best of power. Empowerment of women implies creating conditions to motivate and facilitate women to undertake a task and to unleash their talent and potential to fulfil the objectives. Empowerment encompasses access to options, information, education and resources decision making power and authority; and control over one’s life. Women empowerment refers to empowering women to be independent by providing them access to various opportunities and freedom which were denied to them until yet due to their womanhood. It enhances their position and status in the power hierarchy in the society.

**Objective of the paper** –

1. To study the empowerment of women

2. To overview of successful women entrepreneurs who have changed the stereotype thinking of the society

### **Story of some Women Entrepreneurs who are successfully running their enterprise.**

#### **1. Suchi Mukherjee**

##### **Founder: Lime Road-**

Suchi Mukherjee is an Indian Women Entrepreneur who founded the online shopping site, Lime Road in 2012. Suchi Mukherjee is the Founder and CEO of Lime Road. Suchi came from a middle-class family of Haryana, India. She was a bright student in her school and college. She started her career at a very young age. She got married to her long-time boyfriend and the couple bear two children h er. This eventually shows that her husband and family support her in conquering the corporate world of business.

After getting off with 8 past jobs, she eventually thought of establishing her own start-up focusing on fashion and apparel for women. At present, Suchi is serving as the Founder and Chief Executive Officer (CEO) of the e-commerce site Lime Road

Suchi thought of establishing a woman-only shopping site after the birth of her second child. She once saw an advertisement of jewellery in a fashion magazine and she immediately wanted to have that piece. This is where she felt the need of the availability of such a market and the idea eventually culminated into the establishment of Lime Road. She aimed to transform the fashion industry on the digital platform by manufacturing products from the South East Asia more eccentric

She is **Member of Newham Associates from University of Cambridge in 2008. In 2011, Global Women's Forum voted her 1 among 15 "Rising Talent- global leaders under 40" via World Women's Forum**

#### **2. Falguni Nayar**

##### **Founder: Nykaa**

Falguni Nayar is the founder of Nykaa, India's beauty product retailer. After serving 20 years as a venture investor and merchant with Kotak Mahindra, she suddenly announced her departure to pursue her dream. Nykaa has over 850 brands along with robust content through videos, blogs, and dynamic social media engagement. Running an online business successfully, Nykaa has also introduced 35 physical stores

Falguni Nayar (born 19 February 1963) was born and raised in a Gujrati family in Mumbai, Maharashtra. an Indian Business Women and billionaire who is the founder and CEO of the beauty and lifestyle retail company Nykaa. Nayar is one of two self-made female, Indian billionaires. Soon after Nykaa went public Nayar became the wealthiest female Indian billionaire, with her net worth rising to the tune of \$6.5 billion, and entered the list of top 20 richest people of India.

#### **3. Gazal Alagh –**

##### **Founder – mama earth**

One of the leading Female Entrepreneur in India Ghazal Alagh has made her way into the top businesswomen of India. Her company Mama Earth is a leading skincare product company which provides Chemical & Toxin Free Natural & Safe Skincare Products Online and offline Mama Earth is also said to be The Only Toxin Free Brand with Made Safe Certified Products in India. While we know her as the Co-Founder of Mama Earth, born on 02 September 1988 in Gurgaon, Haryana, India, Ghazal did her Graduation in BCA (Information Technology) and post-graduation with the Punjab University.

Ghazal and Varun Alagh launched their joint venture mama earth officially in December 2016. Within the 5 years of the launch mama earth became the D2C sensation, and also one of the fastest-growing brands in India's FMCG sector.

Mama Earth is now one of India's fastest growing Beauty Brand, and is earning revenue and people's trust through their full organic products. **Mama earth** is an Indian company of **Health, Wellness & Fitness**. The company **headquarter is in Gurgaon, Haryana**. Mama earth products will take care of every parents & baby's well-being from head to toe with safe, toxin-free, international standard products which you can choose without having to think twice.

### **Some of the India's Unknown yet successful women entrepreneurs-**

#### **1. Pabiben Rabari, Kukadsar**

Pabiben Rabari, regarded as the first women artisan entrepreneur in India, can be called as a brand ambassador for the colourful district Kutch. She joined Rabari Women group and started crafting many unique designs of embroidery including Hari Jari and Pabi Jari. Currently, she employs around 60 women making 25 designs and is based out of Kukadsar.

## **2. Tamanna Sharma, Delhi**

Earthling First Pvt Ltd is a sustainable event and event waste management company started by Tamanna Sharma and is a venture of its own kind. A company tries to empower women and always has an equal ratio of men and women

## **3. Sobita Tamuli, Telana**

Sobita Tamuli from Assam's Telana village brought an entrepreneurial revolution wave by manufacturing and selling kehusaar (organic manure) and japes (traditional hats from Assam) without involving middlemen.

Seuji, a self-help group started by Sobita, made it possible for the farmers to access organic manure

## **4. Thinras Chorol, Ladakh**

Thinras Chorol founded Ladakhi Women's Travel Company in 2009 promoting ecotourism in Ladakh and encouraging mountaineering and traveling among women. This is Ladakh's first travel company owned and operated by women with over 30 working staff.

### **Some Interesting Statistics on Women Entrepreneurs in India.**

1. About 58% of the female entrepreneurs were in the age range of 20-30 when they started out.
2. Nearly 73% of them report revenue of approximately Rs 10 lakhs in a financial year.
3. Almost 57% of these women started out solo, i.e., without any other member.
4. About 35% of the women had a co-founder.

Roughly 71% of the Indian female entrepreneurs employ five people or less.

### **Conclusion –**

In a country like India where most of the women aren't encouraged to think big (especially in the rural parts of the nation), there are some who have soared higher than one would expect in a constrictive setup. These wonder women are inspiring other ladies to venture on the path of entrepreneurship through their success stories comprising personal struggles and challenges and also their struggle is changing the thinking of society. As a result, India is steadily rising up the ranks when it comes to a favourable start up environment coupled with some solid backing from the Indian government. Indians need to learn from these role models. Their ventures and initiatives are more than just a source of profit. The ladies covered in this post are some of the most successful female entrepreneurs in India and demonstrate the results of creativity and innovation. Gender is not a deterrent for achieving success.

## **Occurrence of Cypriniformes Fishes from Lower Terna Reservoir MakaniDist- Osmanabad, Maharashtra (India)**

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**Abstract:** Fish assemblage's are an important component of aquatic ecosystem. The present investigation is deals with the study of occurrence of Cypriniformes Fishes from Lower Terna Reservoir, MakaniDist- Osmanabad, Maharashtra. The study was conducted during the year January 2019 to December 2020 for the study. Only Cypriniformes fishes were collected and identified with the help of standard keys. The order Cypriniformes fishes was represented by 14 species of 09 genera which belongs to single family Cyprinidae. The puntius species were dominated in the study area.

**Keywords:** Cypriniformes Fishes, Lower Terna reservoir, Makani.

### **Introduction:**

Among the different ecosystems, fresh water ecosystem are richest and more diverse ecosystem on earth. 6% of all species and more than 10% of all animal species occurs in fresh water. Among vertebrates fishes are the fifth largest agricultural resource and are the richest source of protein to over billion of people.

Fishes evolved 300-350 million years ago. Fishes present in all types of water. The fresh water resources like Reservoirs, tanks, lakes, rivers, dams contains 20,000 fish species in the world and 2179 fresh water fish species in India.

The fishes are important components of ecosystem because; the human beings are used as a delicious and nutritious food from fishes. They are not only providing immense and valuable food for human being, but also produce several important product like cod-liver oil, soup from fins, covers of decorative articles from the skin of fishes, which are used by human being for various purposes. The fishes also enhance the beauty of the nature. The waste part of fishes like bones and scales useful as food for animals and manure for plants.

According to Pande and Shukla (2007), the total length of rivers in India is about 29000 Km. all these rivers, their tributaries, canals and Irrigation channels have an area of roughly 13000 Km. the workers like Kharat et' al (2012), Nagabhushna and Hosetti (2013), Galib et' al (2013), Chandrashekar (2014), Biswas and Panigrahi (2014) have contributed the study in the field of fish faunal diversity. Present investigation is an attempt to study the occurrence of cypriniformes fishes from Lower Terna Reservoir, Makani Dist. Osmanabad. Lower Terna Reservoir is constructed for irrigation, domestic use and fishery purpose.

### **Materials and Methods.**

The present investigation on occurrence of Cypriniformes Fishes from Lower Terna Reservoir is carried out from January 2019 to December 2020. The Reservoir is near 40 Km from Latur city and it is situated in Osmanabad district. It is located at 18.329265°N Latitude and 76.1203623°E Longitude. The dam is constructed on Terna river, Height is 15 meter, length 2651 meter. Dam volume is 186Km<sup>3</sup>, capacity 22910 Km<sup>3</sup> and surface area is 380 Km<sup>2</sup>.

The fishes were collected from local fishermen and brought to the laboratory and preserved in 4% formalin, cleaned with rectified spirit and preserved in 10% formalin. The collected specimens were identified by standard keys of day (1967), day F (1994) Talwar and Jhingran (1991) and Jhingran (2005).

### **Result and Discussion:**

During the period of investigation different varieties of fish species were observed, hence the Lower Terna Reservoir is rich in fish diversity. The details about Cypriniformes fishes diversity in Lower Terna Dam is shown in table No. 1.

**Table No. 1 – Cypriniformes fishes in Lower Terna Reservoir, Makani, Dist. Osmanabad.**

<b>Sr. No.</b>	<b>Name of Fish</b>	<b>Status</b>
1	PuntiusSophore	++
2	Puntius Curcuma	++
3	PuntiusTicto	++
4	Puntius Amphibious	++
5	PuntiusDorsalis	++
6	Catla- Catla	+++
7	Labeo-Rohita	+++

8	SalmostomaBacaila	+
9	BariliusBarna	+
10	CyprinusMola	++
11	CyprinusCarpio	+++
12	RasboraDanicomius	++
13	OsteobramaCotio	+
14	CirrhinusMrigala	++

**Abbreviations :**

++	-	Abundant
+++	-	Most Abundant
+	-	Less Abundant

In present study 14 species belonging to 09 different genera of single family from order Cypriniformes. The genus puntitus is dominant and shows 5 species. The work has been concluded with future strategies for development of fish fauna conservation of Lower Terna Reservoir.

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**References :**

- 1) **Biswas, B. C. and A. K. Panigrahi (2014)**–“*Abundance of Pisces and status of water of Mathabhanga-chumi River in Indo-Bangla Border region*”, Global J. Res. Ana 3(7): 281-283
- 2) **Chandrashekar B. S. (2014)** – “*Fishery co-operative societies in India: problems and prospects*”, Global J. Res. Ana. 3(7), 92-94
- 3) **Day F. S. (1878)** – “*The Fishes of India*”, William and sons ltd., London.
- 4) **Galib S. M., Abunaser A. B. M., Mohsin, N. Chaki and F. Hassan Fahad (2013)** – “*Fish diversity of the river chotoJamuna, Bangladesh: Present status and conservation needs*”, Int. J. Biodiversity and Cons. 5(6): 389-395
- 5) IUCN (2011). IUCN Red list of Threatened species version 2011.1 Downloaded from <www.ucnredlist.org>
- 6) **Jayabhaye, U. M. and L. D. Lahane (2013)** – “*Studies on Ichthyofaunal diversity of Pimpaldari Tank, Hingoli, Maharashtra, India*”, S. S. M. R. A. E. Jaipur 4 (43-44), 54-55.
- 7) **Jayaram K. C. (1981)** – “*The fresh water fishes of India, Pakistan, Bangladesh, Burma and Shrilanka*” A handbook zoology survey India, Calcutta i-xxii: 1-475.
- 8) **Jhingran V. G. (2005)** – “*Fish relation to water quality, Limnology in the Indian subcontinent*”, Ukaaz publications, Hyderabad, pp. 228-251.
- 9) **Jhingran V. G. (1991)** – “*Fish and fisheries of India*”.
- 10) **Kalbbande S. P. et’al (2008)** – “*Fish diversity of Rawanwadi lake of Bhandara district, Maharashtra, India*”, Abhinav 2(2): 30-33
- 11) **Kamble A. B. et’al (2012)** – “*Biodiversity of fish fauna at Mangi Reservoir, Dist- Solapur with respect to Physico-chemical Parameters*”, Life Science Bulletin, 9(1): 55-58
- 12) **Kharat S. S. et’al (2012)** – “*Freshwater fish fauna of Krishna river at Wai, Northern-Western Ghat, India*”, J. threatened Taxa 4(6), 2644-2652.
- 13) **Nagabhushana C. M., B. B. Hosetti (2013)** – “*Limnological profile for the sustained fish productionin Tungbhadra Reservoir, Hospet*”, Global J. Res. Ana 2(5) : 1-2
- 14) **Nelson J. S. (2006)** – “*Fishes of the world*”, 4<sup>th</sup> edition, John Wiley and sons, Inc. pp:601
- 15) **Pande, K. and Shukla J. P. (2007)**– “*Fish and fisheries*”, II edition, pp:328-329.
- 16) **Sakhare V. B. (2001)** – “*Ichthyofauna of Jawalgoan Reservoir, Maharashtra*”, fishing chimes 19(8), 45-47
- 17) **Sarwade J. P. and Y. K. Khillare (2010)** – “*Fish diversity of Ujani wetland, Maharashtra, India*”, Bioscanspl-essue 1: 173-179.
- 18) **Talwar P. K. and A. Jhingran (1991)** – “*Inland fishes of India and adjacent countries*” Oxford and IBH publishing co., New Delhi.

## **Impact Of Digital Banking On Indian Economy**

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**Introduction:** Financial sector plays an important role in development of country's economy. The financial support required by the economy to grow and develop has supported by strong and sustainable banking system. The banks in India have started computer-based technology in late 1980s, in order to improve the customer services, book-keeping and MIS reporting. In 1988, the Reserve Bank of India has set up a committee on computerization in banks headed by Dr. C. Rangarajan. Development in the area of digital technology has imperative and inevitable to the Indian banks to embrace new innovations and remarkable changes in banking sector. The information technology transformed replaced with modern ways of banking into digitalization. The objective of this paper is to study of modern technologies adopted by Indian banking sector and its impact on Indian economy. During the 2000s, Internet banking was approved by all banks in India. In 2007, the Reserve Bank of India introduced the payments and settlement system Act (PSS Act.) for multiple payment systems, make payment for multiple payment methods, such as RTGS, Immediate Payment System (IMPS), National Electronic Fund Transfer (NEFT), and National Electronic Clearing Service (NECS). In recent years, there has been a boom in mobile banking and many new services. These technologies are designed to make it easier for customers to carry out banking operations once they have access to the bank.

### **Objectives of the Study**

The objectives are to study the digital technology innovations in banking sector and to examine the impact of digital banking on Indian Economy.

### **Research Methodology**

The study is based on the secondary data and the data was collected from books, magazines, articles and websites.

### **Impact of Digital Banking on Indian Economy**

Information technology in the banking industry has led the banking industry to concentrate, collect and process information electronically. The Bank uses the latest technology to survive and grow in a market environment. In this way, banks can provide the necessary conditions for customers and offer the best solutions for their products or services.

Technology advances in the banking sector such as banking, electronic banking, mobile banking, telecommunications, ATMs and credit cards have led to improvements in payment and settlement systems.

The Indian government is strongly pushing for digital operations. (i) The United Payments Interface (UPI), launched by the National Corporation of India, allows transfers between two bank accounts via a smart phone. (ii) Unstructured Supplementary Service Data (USSD) developed by NPCI which operates through sim card. It is working with GSM communication technology and not necessarily using the internet. (iii) BHIM - Bharat Interface for Money launched by Government of India on 30th December, 2016. It is working with Aadhar based mobile payment system and linked to the customer's bank account.

Modern banking technology eliminates the effort by hand in all banking operations and focuses on automation. The most salient feature in technology is that the bank is more convenient and convenient for current business and operating customers. Internet banking services are available at all times. The whole bank process is transparent and corruption can be captured and automatically reduced. Better transparency can be achieved in financial transactions by providing a valid credit card to the bank for exchange of money. A systematic record of financial transactions facilitates and minimizes the transfer of cash. With more digital or internet transactions, the country can access less cash or cash less digital economy. Digital banking promotes financial inclusion through the introduction of banking services within the scope of financial services. Through digital transactions, a lot of money is put in and the government can use the means of economic development.

All Indian banks are eager to provide a fast, accurate and quality banking experience to its customers. Banks not only reduce the digital system, human error and save time, but also lead to transactions that reduce the cashless circulation of the counterfeit currency on the market. This poses a positive impact on our economy. After the announcement of demonetization, non-cash payments in October 2016, up 22% compared to October 2015, and digital payments were driven by the rapid expansion of the UPI platform has recorded 482 million transactions in October 2018 as against 0.2 million in November 2016. Also transactions with debit cards in sales increased by 105% in 2017 and the debit

card transaction increased 37.5% over the previous year. The Bank has benefited in many ways through the use of new technologies and resulting in significant spending cuts and revenue generation through various channels. The bank's operating costs are estimated at between Rs.70 and Rs.75 while it is around Rs.15 or Rs.16 on ATM, Rs.2 or less for online banking and Rs.1 or less for Mobile Banking. The number of subscriber base has also increased for convenience 'Anywhere Banking'. Digitization minimizes human error. It can access and analyze data at any time by providing a robust report system.

#### **Advantages of Digital Banking**

Taxes with less money in the home and more in the bank have little scope for hiding the income and avoiding taxes, thus increasing the number of taxpayers across the country.

Transparency and accountability are easy to track cash flows with every transaction being recorded with buyers, sellers and regulators, making the system more transparent and compatible. Over the long term, this has led to greater business and investment potential for the whole economy, and the currency in banks will mean more money flowing into high liquidity economies.

Reduced red-tapism and bureaucracy through non-cash transactions, electronic means tracking, electronic exchange tracking, and reporting on people cutting down corruption and increasing service time.

Digital banking has significantly reduced bank operating costs. This allows banks to charge fees down and provide higher interest rates for deposits. Low operating costs mean more profits for the bank.

People, especially in rural areas, benefit from banking services. Most of the rural population has joined the banking process with the development of digital banking. In addition, people can carry out their operations on the web.

There are technologies that are convenient for banks and customers to get great services just by getting into the system. These services include financial planning, budget preparation, and predictive tools, credit calculators, investment analysis and stock trading. The forum contains a simple program on the Bank's website. In addition, most banks offer opportunities for online tax forms and tax preparation

#### **Disadvantages of Digital Banking**

1. The cashless economy will increase theft of personal information via the internet, such as debit cards and credit cards, passwords, card numbers, and other sensitive information due to increased digital transactions.
2. Low internet facility, low internet speed, limited range of smart phones and internet, OTP, problems, are the obstacles to full digitalization.
3. In errors of the digital transactions, there is no mechanism for resolving the issues immediately.
4. In rural areas lack of internet connectivity and even misplaced telecommunications signals, people are not interested in digital operations.

**Findings:** Most of the population is computer illiterate and cannot use the digital banking services. The rural and poor people find difficulty to go for digitization, because the problems with computer viruses, server problems, power supply problems, ATM troubles, and fast and reliable internet connections not available in rural areas. The most dangerous threats are cybercrimes, cyber thefts, hacking, etc., which can damage the entire economy.

**Conclusion:** Digital banking is completely transparent and it fuels the growth of the economy as well. With the rise in online transactions, one can notice how people are becoming more inclined to use digital payment services instead of cash.

Digital payments can be taxed easily as they stay on record. The customer also gets better offers and deals and their offers get better over time as their service providers gain more data about customer's behaviors. The popularity of mobile banking and digital banking solutions is increasing rapidly. The current signs show that these solutions are going to become more popular in the future. As you can see the impact of digital banking services can be felt in the Indian economy. The approximately 30 to 35 percent population of the country are using digital banking services, and the remaining population is still learning banking services. The Government of India coming out with new initiatives to boost and motivate digital program and also should definitely take some measures like waive off the charges and taxes pertaining to digital transactions certain period and control of the cyber crimes, outline fraud, hacking by connectivity and data protection, then the transactions will aggressively grow and people will be addicted to digital transactions; there will be less demand for cash and it will lead to more deposits in the banking system. The funds accumulated the banks can be used for development, and it leads the country's economy.

#### **References**

1. Digital revolution in the Indian banking sector by Forbes India, Aug. 2017.
2. Dr. Uma B Pujar, Impact of Banking Technology on Indian economy in IJCMR, vol.3, issue 6, June-2017.

3. K. J. Reeshma, Influence of Technology on the performance of Indian banking sector-a review in JIBC, 2016.
4. S.Visalakshmi, Impact of disruptive technology on Indian banking sector in IJMET, vol.8, issue 9, Sept. 2017.
5. Kumar Nidhi, E-Banking in India: challenges and opportunities in IJSTM, vol.5, issue 8, August 2016.
6. T. Selvakumar, A study on role of e-banking in Indian economic growth, RTESHM, Feb. 2017.
7. Monthly Bulletins of RBI, 2016 & 2017.
8. [www.rbi.org.in](http://www.rbi.org.in)
9. [www.ibef.org](http://www.ibef.org)
10. [www.economictimes.indiatimes.com](http://www.economictimes.indiatimes.com)

## **Rural Entrepreneurship**

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**Abstract:** Rural Entrepreneurship is that entrepreneurship which ensures value addition to rural resources in rural areas engaging largely rural human resources. Rural entrepreneurship has arisen as a dynamic concept. It is generally defined as entrepreneurship emerging at village level which can take place in a variety of fields of attempt such as commercial, manufacturing, agriculture and acts as an effective factor for economic development. "Entrepreneurship development at village level which can take place in a variety of fields of enterprise such as business, industry, agriculture and acts as a powerful factor for economic development can be defined as Rural Entrepreneurship." "Rural entrepreneurship refers to the development of a new enterprise which pioneers new products and services, creates a new market for its offerings or uses advanced technology, in the rural area". In simple terms, the entrepreneurship which springs up in non-urban areas is termed as rural entrepreneurship. This leads to the establishment of industrial units in rural areas. As Industrial units started by rural entrepreneurs are providing much employment to men than machines there is a rising need for rural entrepreneurs. Because of additional employment occasions, it has high potential for income generation in rural areas. The following measures are to be applied for development of rural entrepreneurs. There should be a free and continuous supply of raw materials as raw materials generate the basic element of the industry. Continuous supply of raw materials guarantees a constant and smooth production process. Rural entrepreneurs face inadequacy of capital which is observed as the lifeblood of business. The establishment for sufficient capital will comfort development of rural entrepreneurs. Establishing Industrial and business infrastructure in rural areas, such as Road, Power, Water, Telecommunication, Banking services, Hotels etc.

**Key Words:** Entrepreneurship, Types of entrepreneur, Chronic Unemployment, Rural Marketing

### **Introduction:**

India is considered one of main economies among the developing international locations with a median GDP boom rate of round 7% for over final one decade. There was a very good financial development in the fields of records technology, infrastructure and services. The primary quarter (agriculture, forestry and fisheries) which accounts for over 68% of the population (830 million out of 1210 million, as per 2011 census) has however been lagging behind with an average annual increase of four% consistent with annum or much less. This is producing a lot of disparity between rural and concrete livelihoods. Diminishing returns from agriculture have placed the whole rural financial system beneath severe pressure. There is, hence an pressing need to accelerate the diversification of rural livelihoods so that rural groups have adequate method and possibilities which are feasible and sustainable. Rural entrepreneurship can cope with this trouble and generate self-employment thru pooling of network sources. The gap among rural and urban improvement is a major problem of developmental process followed after independence and to reap inclusive boom goal this hole need to be filled in an effective manner. The only solution to the hassle is to develop entrepreneurial activities inside the rural region. The monetary, social and educational reputation of rural India needs talent development for motivating rural humans to sign up for business sports in conjunction with their recurring agricultural sports not only to guide agricultural paintings however to generate extra income for higher livelihood. There are a number of possibilities for rural entrepreneurship in areas of harvesting/ post-harvesting and processing and fee-addition of agriculture/ horticulture / fisheries postharvest in rural regions. This course will educate and educate the scholars of postgraduate programme of management studies to perceive the capacity of rural entrepreneurship in Indian villages. It'll additionally help to broaden a mechanism/ framework to transform identified potential right into a commercially feasible enterprise idea. The path has additionally been designed with the goal that it'll without delay have interaction the agricultural human beings to establish enterprises within the rural quarter and as a result, it will forestall migration from rural regions to the city areas.

### **Objective of the study**

Following are the objective of the study.

1. To develop knowledge about rural entrepreneurship.
2. To develop entrepreneurial skills in the rural youth.
3. To explore and identify rural potential for a business idea;
4. To developing skills to convert the idea into a viable business concept.
5. To develop and implement a Rural Enterprise

**Research Methodology:** The present study is based on primary and secondary data. Survey method has been used for the research. Secondary information has been accumulated from exclusive, magazines, books and governments internet site of rural entrepreneurship. A survey technique focusing on various records of rural entrepreneurship changed into served to humans for their relevant views and opinion. On this consists of to be had published literatures, published literatures which includes books, journals, newspapers and applicable authorities websites. Such as books, journals, newspapers and relevant authorities website.

**Need for Rural Entrepreneurship:**

The reasons for the rural entrepreneurship are discussed as under:

1. **high potential of generating employment:** As the rural industries are labour-intensive, they have a tendency to have a excessive possibility of generating employment, which acts as a corrective degree to a number of troubles inflicting because of unemployment stemming within the rural areas.
2. **Remove Income disparities:** Rural industries have a relatively high capacity of producing earnings, which reduces the disparities amidst earnings earned with the aid of humans dwelling in city and rural areas.
3. **Balanced regional development:** Rural entrepreneurship stimulates the dissemination of economic activities in the village areas, which in the long run consequences in balanced regional development.
4. **Protect and promoted creative heritage:** It does not simply defend but also promotes the art, tradition and creativity, i.e. the varied heritage of that particular region.
5. **Reduces migration of the villagers:** While industries are installation in rural regions, it advances monetary improvement which reduces migration of the villagers to city areas.
6. **Reduce development of slums:** Curtails unequal increase within the city regions, decreases the development of slums, environment pollutants and many others.

When industries that are surroundings friendly are installed in rural regions, it effects in improvement without causing damage to nature and biodiversity

As we recognize that the development of entrepreneurship in rural regions is not as easy as in city areas. As there are a number of problems which wishes to be catered. Some of them are listed as below:

1. Paucity of budget
2. Loss of technical understanding
3. Loss of education and improvement
4. Non-availability of skilled labours
5. Danger element
6. Legal formalities
7. Loss of technical expertise    Loss of great manipulate
8. Lack of communiqué and marketplace insights
9. Lack of garage and transportation centers
10. Vintage and obsolete technology, machinery and device
11. Lack of promotional approach
12. Lack of infrastructural facilities
13. Terrible satisfactory requirements

Except the above demanding situations, one foremost problem encountered on the time of entrepreneurship development in rural regions is the lack of information and consciousness in people with regard to the significance of growing industries in the rural areas. Furthermore, the rural populace does not display plenty hobby in deciding on entrepreneur, as their profession. The rural populations generally move for employment due to a set and regular income, restrained working hours, no funding and much less degree of duty. This is because of the reputation given to the salaried human beings through society than to the self-hired ones. Similarly to this, rural people also do not have an awful lot understanding and focus approximately the entrepreneurial opportunities which are open to them. And they may be also no longer aware about the guide businesses, government schemes and programmes and all the essential facts which is needed for its commencement.

**Development of Rural Entrepreneurship**

1. Putting in an enterprise in rural areas with a view to develop entrepreneurship isn't always an easy mission. Certainly it encompasses a sequence of sports. There are certain measures endorsed for the improvement of entrepreneurship inside the rural regions, which can be discussed as under:
2. **Availability of Raw Material:** For the establishment of any industry, the provision of adequate raw material is a have to. Nevertheless, the non-availability of uncooked materials along with their expensiveness has weakened the increase of such industries. Through the years, it's been located that

rural industries that have a heavy uncooked fabric base produced inside the rural areas itself often preserve in the end. Hence the rural entrepreneurs need to be ensured of the proper deliver of raw material.

3. **Creation of Finance cells:** To start and operate an industry easily and uninterruptedly in rural regions, finance acts as a gasoline. Availability of finances on the time of want, at an affordable fee of interest, is the fundamental requirement, which ought to be fulfilled. For this cause banks and economic institutions can be opened, that could eliminate the obstacles induced due to the dearth of finance.
4. **Production cum marketing centers:** Production cum marketing centre need to be established with state-of-the-art technology and advanced infrastructural facilities in the areas where the rate of production and growth is high. It encourages export business as well as brings together the buyers and sellers, and eliminates intermediaries.
5. **Development of Entrepreneurial Attitude:** If the marketers lack flair and competency, it will make the economic unit unwell. So, the entrepreneurial attitude and skills want to be advanced the various could-be marketers by means of manner of education programmes which includes EDP – entrepreneurship improvement programme.
6. **Entrepreneurial Education:** To impart entrepreneurial abilities, mindset and acumen within the adolescents, entrepreneurial education needs to receive in colleges, colleges and universities. This could form and direct the young minds to work or make their career in that area.
7. **Awareness:** Essentially, non-availability of the facilities isn't a huge hassle; alternatively the massive problem is the non-attention of the centers available for the development of rural entrepreneurship. So, the steps must be taken to make the people aware about the facilities and assist provided to the entrepreneurs, to help them in establishing the industries in rural areas.
8. **Institutional Training:** Centers need to be made to offer institutional schooling to direct the marketers in the products and trades so that the resources of the location may be utilized in the excellent possible manner. Of the above-given measures, putting in place of advertising cooperatives is an effective way so that you can offer complete help, guidance, path and encouragement to the agricultural marketers for organizing the business. Those will assist the agricultural marketers to get the desired inputs at a reasonable charge, as well as they could sell their output at aggressive costs.

#### **Types of Rural Entrepreneurship**

1. **Agro-Based Enterprises:** As the call indicates, those corporations indulge within the direct promoting or processing of agriculture merchandise, as an example, sugar, dairy merchandise, fruit juice, spices, oils from oilseeds, jaggery etc.
2. **Forest-Based Industries:** Industries dealing within the deliver of wood or wooden merchandise, coir industry, beedi enterprise, honey making, bamboo merchandise, and so on. Are blanketed beneath the woodland-primarily based enterprise.
3. **Mineral Based Industries:** Cement enterprise, stone crushing, wall coating powders, and so on. Are blanketed in the mineral-primarily based enterprise.
4. **Textile Industry:** Industry wherein weaving, spinning, tie and dye, coloring and bleaching of textile are achieved is covered underneath this category.
5. **Handicrafts:** Craft or artistic objects manufactured from wood, bamboo, glass, jute, soil, and so forth. Are known as as handicrafts. Moreover, traditional ornamental objects, toys, antiques and many others. Also are covered right here.
6. **Engineering Services:** It could include gear and gadget used in agriculture inclusive of tractors, pumps, pipes and fittings, repairs, and so on.

**Conclusion:** Rural entrepreneurs act as an crucial determine inside the monetary growth of the u . S . A . , as they could help a rustic from growing to a advanced one. This can ensure employment to the rural population with the intention to no longer only eliminate poverty on a large scale and boom their popular of living however additionally lower the migration of terrible people searching for jobs to the urban areas. This will assist in balanced monetary development and take away income disparity.

#### **References:**

1. S.R Mehata.(1987), Rural Development: Concept and Methods, in S. Bhatnager's (ed.), Rural Development  
in India, Ess Publication, New Delhi, p. 29
2. in India, Ess Publication, New Delhi, p. 29
3. Gangopadhyay D., Mukhopadhyay A., & Pushpa S. (2008), Rural Development: A Strategy For Poverty Allevation in India.
4. Business Intelligence Journal- January, 2012 Vol.5 No.1
5. Ministry of Rural Development. Govt. of India. Available At, [Http://www.rural.nic.in](http://www.rural.nic.in)

6. Indian Economy-datta sundaram
7. Pratiyogita darpan- feb.2022
8. [www.nitiayog.gov.in](http://www.nitiayog.gov.in)
9. <http://msme.gov.in>
10. [www.google](http://www.google.com) search.com
11. The HinduSurvey of Indian Industries, 2008.
12. Ministry of Rural Development. Govt. of India. Available At, [Http://www.rural.nic.in](http://www.rural.nic.in)
13. NITI Aayog, Government of India. Available At . [www.niti](http://www.niti.gov.in). Gov.in

## **Legal Provisions for Disabled Persons**

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**Introduction:** Although there existed several legislative or policy measures that included certain provisions /benefits for physically handicapped or other disabled people. But before 1980, there was hardly any legislative or policy measures that deals with the persons with disabilities or their rights. In the year 1980, for the first time the policy makers thought about disabled in India in terms of equality. As a result, a number of disability specific legislations have come out.

**Objective of the Study:** To study various acts and policies legally related to disabled people.

**Analysis of the Study:**At present there are many legal provisions for persons with disabilities. Some important legal provisions are included following:

### **The Mental Health Act, 1987**

The colonial legislation of The Indian Lunacy Act, 1912 dealt with certain aspects of mental health. This was a law relating to treatment and care of mentally retarded and mentally ill persons. Thus, the Indian Lunacy Act, 1912 (ILA) was repealed and replaced with the enactment of the Mental Health Act, 1987 (MHA).

The Mental Health Act comes under the Ministry of Health and Family Welfare (MOHFW). It makes provisions to protect the rights of mentally ill persons and safeguard the interests of persons with mental illness such as safeguarding their property through guardians and appointment of managers. It does not talk about rehabilitation aspect for such people.

The Ministry of Health (MHA) has initiated a proposal to amend the MHA, in the background of the United Nation Convention Rights of Persons with Disabilities (UNCRPD). A paper on draft amendments has been prepared by the Center for Mental Health Law and Policy, Indian Law Society, Pune on behalf of Ministry, on 28<sup>th</sup> February, 2010.

The main objective of the act is:

1. To regulate admission to psychiatric hospital or psychiatric nursing homes to mentally ill-persons who do not have sufficient understanding to seek treatment on a voluntary basis and to protect the rights of such persons while being detained;
2. To protect society from the presence of mentally ill persons who have become or might become a danger or nuisance to others;
3. To protect citizens from being detained in psychiatric hospitals or psychiatric nursing homes without sufficient cause;
4. To regulate responsibility for maintenance charges of mentally ill persons who are admitted to psychiatric hospitals or psychiatric nursing homes;
5. To provide facilities for establishing guardianship or custody of mentally ill persons who are incapable of managing their own affairs;
6. To provide for the establishment of Central Authority and State Authorities for Mental Health Services;
7. To regulate the powers of the government for establishing, licensing and controlling psychiatric hospitals and psychiatric nursing homes for mentally ill persons;
8. To provide for legal aid to mentally ill persons at state expenses in certain cases.

### **The Rehabilitation Council of India Act, 1992**

The act is applicable throughout India. It was brought into force on 31<sup>st</sup> July, 1993. The act was passed to regulate the manpower development programmes in the field of education of persons with special needs. The main objectives are to regulate the training policies and programmes in the field of rehabilitation of people with disabilities, to standardize training courses for rehabilitation professionals, to recognize universities/institutions running degree/diploma/certificate courses in the field of rehabilitation of the disabled and recognize and equalize foreign degree/diploma/certificate courses. A committee of experts recommended certain changes in the act which have been approved by the Parliament through the amendment act in 2000. Some changes in definitions of the term “handicapped” and “mental retardation” was incorporated as a part of this amendment. These definitions have already been covered under section “Legal definitions of disability” above. This amendment also entrusted the Rehabilitation Council of India with the additional responsibilities of monitoring the training of professionals and personnel, and

promoting research in rehabilitation and special education.

### **The National Trust for Welfare for Persons with Autism, Cerebral Palsy, Mental Retardation and Multiple Disabilities Act, 1999**

The National Trust Act provides for the establishment of an institution for the welfare of people with autism, cerebral palsy, mental retardation and multiple disabilities. The act gives direction for the care and protection of persons with these disabilities in the event of death of their parents, procedures of appointment of guardians and trustees for persons in need of such protection and to provide need based services in times of crisis to the families of the disabled. The National Trust Act mandates the creation of a Local Level Committee (LLC) comprising district magistrate along with one representative from a registered organization and one person with a disability. The Local Level Committee is vested with the authority to decide upon applications for legal guardianship. It also provides procedures for appointment of legal guardianship. It also lays down the duties of the legal guardianship who has to furnish the periodic returns to the local level committee about the assets of the ward and their disposal in their hands. Similarly, the committee too is required to maintain inventory and annual accounts of the property/assets, claims and liabilities submitted by legal guardians to it.

The National Trust Board is established for overall supervision of the National Trust Act. The government has made an initial contribution of Rupees one billion to the trust fund. The interest earned is used in supporting mandated activities.

### **Rights of Persons With Disabilities, 2016**

The act replaces the Persons with Disabilities (Equal Opportunities, Protection of Rights and Full Participation) Act, 1995. The Parliament passed the "Rights of Persons with Disabilities (RPWD) Bill, 2016 on 16<sup>th</sup> December, 2016. In the bill, the disability has been based on an evolving and dynamic concept. It fulfills the obligations to the United National Convention on the Rights of Persons with Disabilities (UNCRPD), to which India is a signatory. At present, the types of disabilities have been increased from existing 7 to 21 and the central government will have the power to add more types of disabilities. The 21 disabilities are given below:

1. Blindness
2. Low-vision
3. Leprosy Cured Persons
4. Hearing Impairment (Deaf and hard of hearing)
5. Locomotors Disability
6. Dwarfism
7. Intellectual Disability
8. Mental Illness
9. Autism Spectrum Disorder
10. Cerebral Palsy
11. Muscular Dystrophy
12. Chronic Neurological Conditions
13. Specific Learning
14. Multiple Sclerosis
15. Speech and Language Disability
16. Thalassemia
17. Hemophilia
18. Sickle Cell Disease
19. Multiple Disabilities including deaf and blindness
20. Acid Attack Victim
21. Parkinson's Disease
- 22.

### **The other features of bill are as follows-**

1. The bill provides penalties/offences committed against persons with disabilities and also for violation of the new law provisions. Special courts will be designated in each district to handle cases concerning violation of rights of persons with disabilities.
2. Reservation in vacancies in government establishments has been increased from 3% to 4% for certain persons or class of persons with benchmark disability.
3. Every child with benchmark disability between the age group of six and eighteen years shall have the right to free education.

4. The act provides for grant of guardianship by district court under which there will be a joint decision-making between the guardian and the persons with disabilities.
5. Responsibilities have been cast upon the appropriate governments to take effective measures to ensure that the persons with disabilities enjoy their rights equally with others.
6. Additional benefits such as reservation in higher education, government jobs, reservation in allocation of land, poverty alleviation scheme etc have been provided for persons with benchmark disabilities and those with high support needs.
7. Broad based central and state advisory boards on disability are to be set up to serve as apex policy making bodies at the central and state level.
8. The office of chief commissioner and state commissioner for persons with disabilities has been strengthened by an advisory committee constituted under the act.
9. The creation of national and state fund to provide financial support to the persons with disabilities. The existing national fund and the trust fund for empowerment of persons with disabilities will be subsumed with the national fund.

#### **Indian Constitution**

1. The constitution of India under chapter III guarantees fundamental human right to all persons. The constitution of India does not specifically prescribe discrimination on the ground of “disability” but it does not contain non-discriminatory provisions that guarantee equality and equal opportunities for all citizens under Articles 14, 15 and 16.
2. Article 14 (Right to Equality)
3. The right of equality is enshrined in Article 14 of the constitution and recognizes that all persons are equal before law. Persons with disabilities are entitled to this guarantee not to be discriminated against in any manner and to be treated equally which includes the requirement for special treatment where required.
4. Article 15 (1) & (2) [Rights Against Discrimination]
5. Article 15 (1) enjoins on the government not to discriminate against any citizen of India (including disabled) on the ground of religion, race, caste, sex or place of birth.
6. Article 15(2) states that, no citizen (including the disabled) shall be subject to any disability, liability, restriction or condition on any of the above grounds in the matters of their access to shops, public restaurants, hotels and places of public entertainment or in the use of wells, tanks, bathing ghats, roads and places of public resort maintained wholly or partly out of government funds or dedicated to the use of the general public.
7. Article 16
8. Article 16 provides the guarantees to reservation and equal opportunity in public employment are made under the persons with disabilities act. The right to equality has been upheld for persons with disabilities not to be discriminated and to provide equal opportunities in recruitment to the civil services (NFB vs. UPSC) (1993) and Amita vs. Union of India (2005).
9. Article 21
10. Article 21 of the constitution guarantees the right to life to all persons (including disabled persons) which has been interpreted by the Supreme Court include the right to live with dignity, the right to livelihood and the right to education. Article 21A guarantees the right to free and compulsory education for all children between the ages of 6-14 years.
11. Directive Principles of State Policy (DPSP)
12. Chapter III of the constitution contains the directive principles of state policy. It aims for the state to comply with the principles under certain articles.
13. The directive principles of state policies provide in Article 38 that the state policy has to be directed to minimize inequalities, secure right to an adequate means of livelihood and also secure that the operation of legal system promotes justice.
14. Under Article 39A of the constitution provides that the state shall secure the operation of the legal system promotes justice, on the basis of equal opportunity and shall, in particular provide free legal aid, by suitable legislation or schemes or in any other way, to ensure that opportunities for securing justice are not denied to any citizen by reason of economic or other disabilities.
15. The Constitution of India under the directive principles of the state policy directs the state to make effective provision for security the right to work, the education and public assistance in case of unemployment, old age sickness, disablement and other cases of undeserved want. The laws relating to disabled come in the Seventh Schedule under the concurrent list. Article 41 also provides adequate justification by the government to enact a comprehensive law for the disabled in India.

### **National Education Policy, 2019**

1. The national education policy points out education of children with special needs (CWSN) under section 6.1. This section provides all important context about children with special needs and also specific additional policy initiatives to ensure that every children with special needs is provided meaningful and quality education. It includes the following points-
2. 6.8.1 Inclusion of Children with Special Needs in regular schools
3. This section provides education programmes will be continued for children with special needs. It will support their participation for the foundation stage to Grade 12.
4. 6.8.2 Financial Support for Children with Special Needs
5. This section provides financial support to schools for children with special needs. It also helps for the establishment of resource centers at village/block level where needed for learners with severe or multiple disabilities. Such centers would assist parents/guardians in part time or full time home schooling and to increase skills of such learners.
6. 6.8.3 Physical Access to Schools for Children with Special Needs
7. The physical facilities such as ramps handrails, disabled friendly toilets, suitable transportation, etc. for children with special needs to comfortably attend schools. The long term goal will be to make arrangement of funds so as to build facilities for children with special needs in all schools.
8. 6.8.4 Inclusion of Children with Special Needs
9. Assistive devices, appropriate technology based tools as well as adequate and language appropriate teaching learning materials will be made available to help children with special needs. The other components include functional and formal assessment, appropriate educational placement and preparation of Individualised Educational Plan (IEP).
10. 6.8.5 Provisions for home-based education- The main objective is to complete school education who are unable to go to schools due to severe disabilities.
11. 6.8.6 Availability of open schooling for hearing impairment students - NIOS will develop high quality modules to teach ISL, and to teach other basic subjects using ISL.
12. 6.8.7 Special educators and therapists with cross-disability training- It helps teachers in catering to the needs of all learners. Resource centers with special educators at school level will support children with special needs. It also helps to increase the skills of such students.
13. 6.8.8 Scholarships for differently abled students- At the secondary stage of education, scholarships will be offered for talented and meritorious differently abled students.

**Conclusions:** Disability is a complex social issue and it is increasingly become a major concern all over the world. The number of disabled people is increasing across the world due to various reasons. The phenomenon of disability requires a thorough analysis and understanding from different perspective including medical, social and capability approach. Government policy, legislative actions, schemes and provisions for the disabled give the impression of a state that is committed to human rights and equal opportunities. The existing laws, policies and the constitutional provision of substantive equality can prove to be effective for the rights of welfare of disabled people, if properly implemented. On the other hand, the fruits of the legislative provisions and other legal provisions are not percolating to persons with disabilities because of lack of awareness. The discrimination suffered by persons with disabilities has its roots in social prejudices. The policies and schemes of government are guided and implemented properly by medical model rather than human rights model.

### **References**

- 1) lawteacher.net/free-law-essays
- 2) devgan.in/ipc/section-98
- 3) indiacode.nic.in
- 4) 14.139.60.114:8080/jspui/bitstream
- 5) vikaspedia.in/education/parents-corner/guidines
- 6) cis-india.org/accessibility
- 7) taxguru.in/corporate-law/sailent-features-of-rights-of-persons-with-disabilities-bill-2016-passed-by-parliament.html
- 8) Dr. Rumi Ahmed, Rights of Persons with Disability in India: A Critical Legal Analysis, White Falcon Publishing, Chandigarh- 160047, 2015

## **Advancements in Higher Education in India: A New Academic Normal**

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**Abstract:** Introduction of Internet brought a lot of changes in education field. Covid-19 created a deep impact on almost everything and education especially. A new culture on online teaching-learning came forward with the idea of work from home. And introduction of New Education Policy-2020 brought a number of changes with it. As a result of all these things Indian education system is witnessing a number of advancements like transforming single faculty higher educational institutions into multi-disciplinary institutions, in education in general and higher education in particular. The University Grants Commission (UGC) has proposed to allow students who have completed a four-year undergraduate (UG) programme, including a research component with a cumulative grade point average of 7.5, to directly enrol in PhD programmes without having to first complete a master's degree. And students can persuade two-degree programs in the same academic year.

### **Introduction:**

With the introduction of the internet in our day-to-day life, the speed of learning along with the different methods of learning changed dramatically. Collecting data, converting that into information to gain certain knowledge was the past, going beyond knowledge and evolving new methods of self-supervised learning system is the future.

Local or global incidents have global impact, be it the World War I and II or COVID-19. The impact of World Wars is as such that the history of the world can be studied in pre- and post-World War. Similarly, once again the study of the world history can be made in two phases i.e. pre- and post-Covid-19. The world that was moving very fast stopped after one or two paddles of break. There was a paddle shift due to red signal and the world experienced unprecedented things. The world devised a number of novel ways to think and do to keep the world going. The biggest challenge before the world was to keep the world going on and that too by sitting at homes, which gave birth to a new feasible idea of 'work from home'. It was a hybrid version of the concepts like 'remote work', 'distance work' and 'telework', which further mutated into 'work from anywhere'. People began to look at everything from a very different angle, where safety of life was the priority and keeping the economy running was the necessity. All of a sudden, assemblies at schools and colleges were stooped, and the existing concept of distant learning came to help the education sector; and with the help of Internet and computers and, especially smart phones, the online mode of teaching-learning and examining the progress of the learners, helped, anyhow, to keep education system moving. Its advantages and disadvantages is different topic of study, but here we will consider, how this strange situation made us to adopt new changes and what kind of advancements the education sector has been experiencing.

### **NEP-2020:**

The two years 2019 and 2020 were full of discussions, suggestions and modifications in the New Education Policy-2020 (NEP-20). And the year 2021 is the beginning of thinking in the direction of implementing the policy. Essential changes are being made to implement the NEP-20. But still it will take some time to evolve an entirely new education system.

If the entire education system is advancing towards a new beginning, advancements in various disciplines are but natural.

### **New Approach of UGC:**

"The University Grants Commission (UGC) has proposed to allow students who have completed a four-year undergraduate (UG) programme, including a research component with a cumulative grade point average of 7.5, to directly enrol in PhD programmes without having to first complete a master's degree."

The new measure is a part of the Draft University Grants Commission (Minimum Standards and Procedures for Award of Ph.D. Degree) Regulations, 2022 released in the month of March, with the UGC seeking comments and feedback from the stakeholders by March 31. Feedbacks were taken from the stakeholders to improvise the draft. (ugc, 2022)

### Multiple entry and exit points;

It is important to note that the four-year degree will have multiple entry and exit points, as envisioned by the NEP 2020. Students those who complete one year will receive a certificate (requiring 40-44 credits plus a 10 credit skills enhancement course), two years will earn a diploma (88 credits plus the exit course) and three years will earn a bachelor's degree (120-132 credit hours). The four-year degree, including either an honours programme focussed on a specific subject, a rigorous research project, or a multidisciplinary programme, will require 160-176 credits. At present, a number of universities have accepted credit system, but it is not found in its spirit. With NEP2020, credit system will be implemented in true sense. Master's degrees could be earned in one or two-year programmes, depending on whether the student has completed a three or four-year bachelor's degree. Earlier the effect of bachelor's degree was not much in case of completing PG, but with the implementation of NEP-2020, how one completes degree matters to complete PG. Each credit is likely to involve 45 hours of work, mostly split between teaching in the classroom and practical work, although provisions have been made for internships, seminars, studio sessions, community service and other types of learning methods. (Bureau, 2022)

On 24 March, 2022 University Grants Commission issued a public notice and invited feedback on Draft guidelines for transforming higher educational institutions into multi-disciplinary institutions. (Jain, 2022)

The Draft begins with a quote from *Rigveda* "Aano bhadra krtavo yantu vishwatah" which means Let noble thoughts come from all directions. It shows the very intent of all inclusiveness and making things better with the contribution of many minds. The Draft is a part of a number of advancements in higher education in India as a part of implementation of New Education Policy -2020. "India currently has various stand-alone and domain-specific institutions and universities." And now the challenge is to transform these HEIs into multi-disciplinary institutions. The purpose behind this is that "Internationally, the culture of establishing and sustaining a multidisciplinary university is increasing fast, thereby maximizing productivity with enhanced focus towards research and development, innovation, and incubation." At present India has a number of affiliated colleges and by the end of 2035 all these colleges will be either "achieve the degree-awarding status by passing through different stages of autonomy or by completing the process of becoming part of the cluster to become a large multi-disciplinary HEI". Either converting into a degree awarding autonomous colleges or a constituent units of universities; these are the only two options before the present affiliated colleges.

The features of a Multidisciplinary HEI: Orientation about new opportunities, Mobility of credits between institutions, and Online and ODL mode of education. There will be collaboration between two institutions for the award of dual degree for example B. Sc. from one institution and MBA from other. A student will get B. Sc. M.B.A. degree in near future. Cluster of Colleges will serve this purpose far better.

For the smooth functioning of cluster colleges there shall be a Board of Directors as per the following composition:

For cluster of government colleges:

1	Highly reputed persons from government, academic, industry or public administration. (nominated by the State government)	Chairman
2	Commissioner or director of HE or his or her nominee	Director
3	Vice-Chancellor of the affiliating university or nominee	Director
4	Principals from the cluster of colleges (Two)	Director
5	Academicians as external experts, as nominated by the Board (Two)	Director
6	One expert from the Industry, as nominated by the Board	Director
7	One principal from the cluster of colleges, as nominated by the government	Director

### Note: Director Term: Five years

It is important to note the role of the State Government in case of cluster colleges. The Draft says, "State governments will continue to provide the same funds to government aided colleges as they had been doing before the cluster formation." And probably 2030 will be the deadline to convert all the single faculties into cluster colleges. And the role of the parent university will be to identify potentials of colleges and to encourage them by providing timely approval to their proposals and help to nominate representatives in various committees for the proper functioning of cluster colleges. (UGC, 2022)

### Summing Up:

The Draft of New Education Policy-2019 opened a number of doors for discussions. Education policy was discussed in the academia from a number of points of view. Suggestions, feedbacks were invited, new policy draft was introduced to implement. During all this academic upheaval Covid-19 brought a number of challenges along with it a number of new opportunities to look at the problems differently. As a result of it a number of advancements are found in Indian education system in the post covid-19 world or in the new normal.

**References:**

1. Bureau, T. H. (2022, 03 18). The Hindu. Retrieved 03 19, 2022, from [https://www-thehindu-com:https://www-thehindu-com.cdn.ampproject.org/v/s/www.thehindu.com/news/national/with-4-year-ug-research-degree-students-can-directly-enter-phd-ugc-draft/article65235074.ece/amp/?amp\\_gsa=1&amp\\_js\\_v=a9&usqp=mq331AQIKAGwASCAAgM%3D#amp\\_agsa\\_csa=49326498&amp\\_ct](https://www-thehindu-com:https://www-thehindu-com.cdn.ampproject.org/v/s/www.thehindu.com/news/national/with-4-year-ug-research-degree-students-can-directly-enter-phd-ugc-draft/article65235074.ece/amp/?amp_gsa=1&amp_js_v=a9&usqp=mq331AQIKAGwASCAAgM%3D#amp_agsa_csa=49326498&amp_ct)
2. Jain, R. (2022, 03 04). UGC. Retrieved 03 10, 2022, from [ugc.ac.in: 1418359\\_PUBLIC-NOTICE-MULTIDISCIPLINARY-INSTITUTIONS.pdf](http://ugc.ac.in:1418359_PUBLIC-NOTICE-MULTIDISCIPLINARY-INSTITUTIONS.pdf)
3. UGC. (2022, 03 04). Institutins Draft Guidelines for Transforming Higer..-UGC. Retrieved 03 15, 2022, from [https://www.ugc.ac.in>pdfnews: 4885262\\_Draft-Guidelines-for-Transforming-HEIs-multidisciplinary-Institutions.pdf](https://www.ugc.ac.in>pdfnews:4885262_Draft-Guidelines-for-Transforming-HEIs-multidisciplinary-Institutions.pdf)
4. ugc. (2022, 03 10). UGC. Retrieved 03 19, 2022, from [www.ugc.ac.in](http://www.ugc.ac.in)

## **Spatio-Temporal Changes in Cropping Pattern of Satara District (1991-92 to 2011-12)**

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**Abstract:** Cropping pattern means the proportion of an area under various crops at a point of time in a unit area or the pattern of crops for given piece of land. It indicates the yearly sequence and spatial arrangements of crops and follows in an area. The present paper analyzes the changing cropping pattern of Satara district. It shows the changing cropping pattern due the physical condition of study area. In the cropping pattern area under sugarcane crop is concentrated in karad tehsil of Satara district.

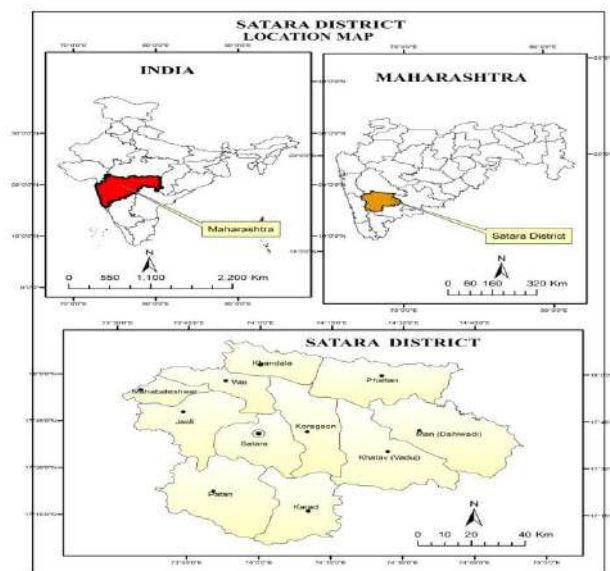
**Keywords:** Cropping pattern, Concentrated, Positive & Negative, sugarcane.

### **Introduction:**

The purpose of the present paper is to describe and analyse the general land use pattern in Satara district. Cropping pattern is 'the proportion of the area under various crops at a point of time' (Kanwar, 1972). It indicates how intensively the net sown area is being utilized for various crops. The cropping pattern depends on a number of inputs of which irrigation is an important one change in cropping pattern refers to change in proportion of area under different crops at two different times. Such changes are governed by ecological situation. However, socio-economic and technological factors also determine the choice the feasible crops by the farmers. In case of irrigated crops, the choices are directly governed by the specific purpose for which the irrigated crops are to be grown and these are also conditioned by the geographical factors and modified by the emergent, social and economic circumstances (Memoria, 1979). The ensuing section therefore, deals with the cropping pattern and changes there in for individual crops in particular and irrigated crops in general in the region. The area under study grows a variety of crops but they are generally classified as food and non-food crops.

### **Study Area:**

Satara district is renowned in the Maharashtra in many aspects. But the agriculture development in Satara district is not same. Rainfall distribution in Satara district is uneven west part of the district is heavy rainfall and eastern part scarcity in the rainfall. The district lies at the western limit of the Deccan table and in southern



Maharashtra. It is situated in the river basin of the Bhima and Krishna rivers but from the point of view of the peninsular, the entire land of the district belongs to the larger drainage system of the Krishna river. The district extends between  $17^{\circ} 5'$  to  $18^{\circ} 11'$  north latitudes and  $73^{\circ} 33'$  and  $74^{\circ} 54'$  east longitude (Fig. 1.). It is surrounded by Pune district to the north, Solapur district to the east. Sangli district to the south and Ratnagiri district to the west. It also has a small boundary of about 24 Kms. with Raigrah district in the north-west. Having 1058243

sq.km area, district is divided 11 tahsils and it support 280994 population. The region has a slight circular shape with east stretch of about 120 km. The region presents diversified physiography with hilly region dominated by leeward slopes of Western Ghats in west and alternative valleys and ridges culminating gradually into plateau in the east. The maximum temperature in hot season is 34<sup>o</sup> c to 37<sup>o</sup> c while the daily minimum temperature in cold season is between 12<sup>o</sup> c to 15<sup>o</sup> c. The soils vary from laterite patches in the west through deep medium black alluvias of the river in the center and poor gray soils in the east. The region receives rainfall mainly from southwest monsoon, ranging between 5000 mm to 200 mm. from west to east. The eastern part, which fairly falls in the rain shadow belt, experiences frequent drought condition.

**Objective:**

Present study aims to analyze the changes in cropping pattern in the study region for the period from 1991-92 to 2011-12.

**Material and Methods:**

The present study is based on secondary data. To analyze the changes in cropping pattern in the study region. Agricultural office, Satara Tahsils has been considered as an areal unit for the analysis. The volume of change (1991-92 to 2011-12) in the percentage for every enumeration unit (tahsil) is calculated for individual crops. These figures having positive and negative tendencies have been arranged separately in a descending order for each unit. Having thus marked the crops are leading increase and decrease, these are mapped in each tahsil.

**Results and Discussion:**

In general, food grain crops play a major role in the cropping pattern of study area. Their importance lies in the fact that they provide grain for human investigation and straw for livestock as their food. The land only under food grains can produce enough to support the dense population of the region. The area under study grows a variety of crops.

The proportion of area under variety of crops and their changes have been shown in Table 1. The major crops that are grown in the region under study may be grouped into two categories namely

**Food crops** – The food crops include the production of rice, wheat, Jawar, Bajara, Pulses, Sugarcane and other crops.

**Non-food crops** - The non-food crops include the production of different crops such as ground nuts, oil seeds, fruits and vegetables etc. The overall cropping pattern according to tahsil wise trends in 1991-92 to 2011-12 are under different food grains, non-food grain crops in Satara district, which have been shown in the table 1. The changes in agricultural pattern also depend upon the traditional habits of the people in a particular region.

**Food Crops:**

The census department has grouped entire crops under the two broad categories viz. food crops and non-food crops. Among the food crops, cereals, pulses, condiments and spices, sugarcane, fruit and vegetables are included.

**Rice:**

Rice is important crop in relatively restricted areas in the study region. It is sown in June and harvested in September according to variety of seeds. The crop requires hot and humid climate and rainfall above 1200 mm. Though, it is raised in different soils, clay and clay loam soils are more favorable.

Rice occupies 6.41 per cent of total cropped area (Table 1.). In 1991-92 it occupies 4.80 per cent, and 2001-02 it increased and 5.88 per cent area occupied.

The significant increase in area under rice crop has been found in south western part (Patan) in 1991-92. Above 24 per cent, high area observed in Patan tahsil (Fig.2). Moderate area observed (12 to 24 per cent) in Satara, Jaoli and Karad tahsil. The eastern part of district recorded low per cent of area under rice cultivation (Below 12 per cent) e.g. Koregaon, Khatav, Man, Phaltan, Wai and Khandala tahsil.

In Year 2011-12, position of rice cultivation is not changed and high per cent rice cultivation (above 24 per cent) recorded in Patan tahsil. Jaoli, Satara and Karad tahsil recorded moderate per cent rice cultivation. Low per cent rice cultivation recorded in eastern part of district (Fig 2).

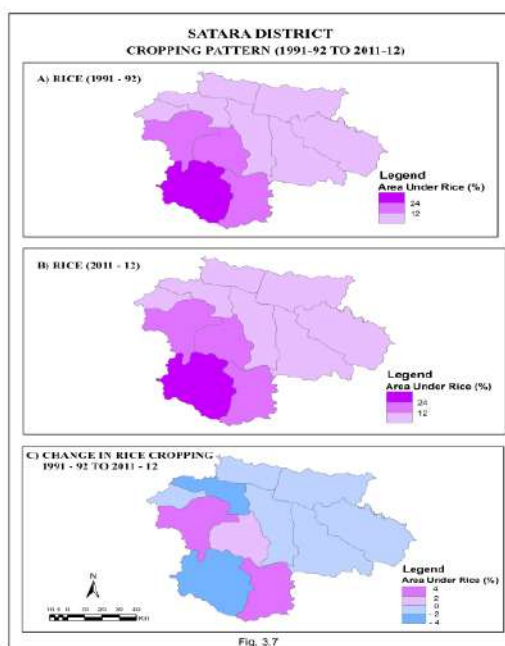
Both positive and negative changes in area under rice were found in the study region. Positive change observed in Jaoli and Karad (2 to 4 per cent), and Satara (below 2 per cent) (Fig. 2.). Due to high yielding varieties, irrigation facilities and attraction to the farmers, it has made rapid strides particularly in the irrigated tracts of the Krishna valley. Eastern part, Wai, Jaoli and Patan tahsil observed negative change in rice cultivation.

**Wheat** :Wheat is mainly a rabbi crop, requiring winter temperature between 10<sup>o</sup> c to 15<sup>o</sup> c. Rainless days with clear and bright sunshine during ripening and harvesting period are necessary to have better quality of grain. It can be grown in areas where rainfall is less than 500 mm with the help of irrigation.

**Table 1. Satara District:Area under Different crops 1991-92 to 2011-12**

Sr. No	Crops	1991-92		2001-02		2011-12		volume of change(%)	
		Area in hectares	% to the G.C.A.	Area in hectare	% in G.C.A.	Area in hectare	% to G.C.A.	1991-2001	2001-11
1	Rice	31398	4.80	42662	5.88	45417	6.41	1.08	0.53
2	Wheat	16048	2.46	32894	4.53	35304	4.98	2.07	0.45
3	Jowar	213498	32.67	250253	34.50	200108	28.23	1.83	- 6.27
4	Bajara	117219	17.94	99478	13.72	89903	12.68	- 4.22	- 1.04
5	Maize	1993	0.30	5509	0.76	13323	1.88	0.46	1.12
6	Other cereals	28073	4.29	18265	2.52	14147	1.99	- 1.77	- 0.53
7	Total cereals	408229	62.47	449061	61.91	98202	56.18	- 0.56	-5.73
8	Gram	11583	1.77	18560	2.56	22006	3.10	0.79	0.54
9	Other pulses	56120	8.59	66073	9.11	47478	6.70	0.52	- 2.41
10	Total Pulses	67703	10.36	84633	11.67	9484	9.80	1.31	- 1.87
11	Total food grains	475932	72.83	533694	73.58	67686	65.98	0.75	- 7.6
12	Sugarcane	42952	6.57	43607	6.01	43694	6.16	- 0.56	0.15
13	Condiments and spices	4260	0.65	3981	0.55	3358	0.47	- 0.1	-0.08
14	Fruits and Vegetables	16664	2.55	18815	2.59	42280	5.96	0.04	3.37
15	Total Food Crops	539808	82.60	600097	82.73	557018	78.58	0.13	- 4.15
16	Cotton	539	0.08	4949	0.68	3614	0.51	0.6	- 0.17
17	Groundnut	55036	8.42	49645	6.84	61220	8.64	- 1.58	1.8
18	Tobacco	14	0.002	-	-	-	-	0.00	-
19	Miscellaneous non food crops	58114	8.89	70696	9.75	86993	12.27	0.86	- 8.89
20	Total non food crops	113703	17.40	125290	17.27	151827	21.42	-0.13	4.15
	Gross cropped Area	653511	100	725387	100	708845	100		

Source :Socio-Economic Review of Satara District 1991-92 to 2011-12. Compiled by Researcher.



Wheat occupies 2.46 per cent area to the total cultivated areas in 1991-92. In the year 2001-02, it increase and occupied 4.53 per cent and the 2011-12, it slightly increased 4.98 per cent (Table 1.).

The positive change in area under wheat is recorded in Patan (10 to 20 per cent), Khandala, Koregaon, Satara and Karad (Below 10 per cent). And negative change recorded in Wai, Mahabaleshwar, Jaoli, Khatav and Man tahsil (below -10 per cent), Phaltan (below -20 per cent) (Fig 3).

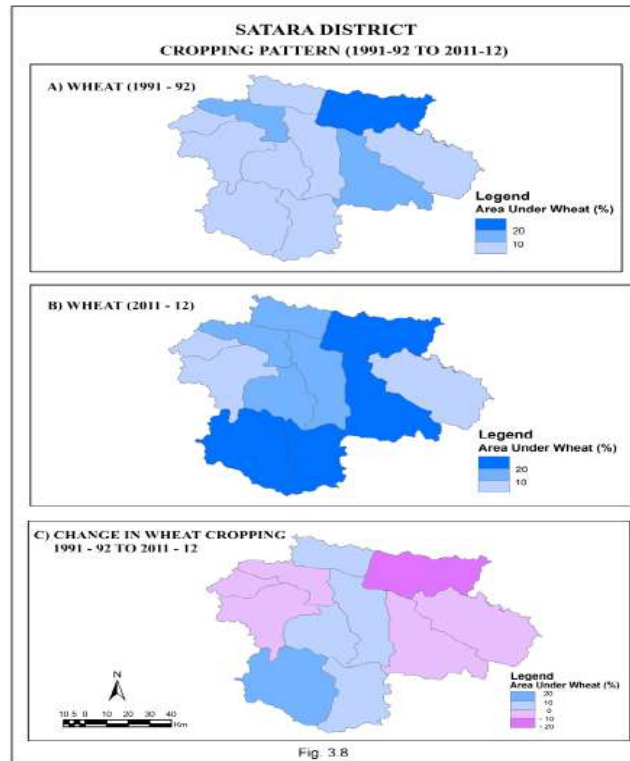


Fig. 3.8

#### **Jowar:**

Jowar a staple food and main fodder in the region, is generally grow in areas of low rainfall and yield better than other crops except bajara.

In 1991-92, Jowar shares 32.67 per cent (Table 1.). In 2011-12, it is decreased and shares about 28.23 per cent.

In 1991-92, eastern part of district, Phaltan, tahsil, highest Jowar cultivation (above 20 per cent) central part, Satara, Koregaon, Khatav tahsils recorded moderate (10 to 20 per cent) cultivated Jowar. Low per cent (below 10) recorded in Khandala, Wai, Jaoli, Mahabaleshwar, Patan, Karad and Man tahsil .

In the year 2011-12 Satara recorded highest per cent (above 14 per cent) under Jowar cultivation. Phaltan, Wai, Jaoli, Koregaon, Khatav, Karad and Patan tahsil recorded moderate (7 to 14 per cent). Where as (Below 7 per cent) low percent area under Jowar cultivation, recorded in Khandala, Mahabaleshwar and Man tahsil.

Positive changes shows by Karad and Patan, tahsils (above 5 per cent). Below 5 per cent positive change found in Wai, Jaoli, and Satara tahsils. Khandala, Khatav and Man tahsils recorded below -5 per cent. Whereas below -10 per cent area under jowar cultivation recorded in Phaltan and Koregaon tahsils, because land under other crops increased .

#### **Bajara:**

It is a drought resistance crop requiring less amount of rainfall ranging from 250 mm to 450 mm and red, shallow black and lighter soils. Bajara shares only 12.68 per cent area to total cultivated area in 2011-12 (Table 1.).

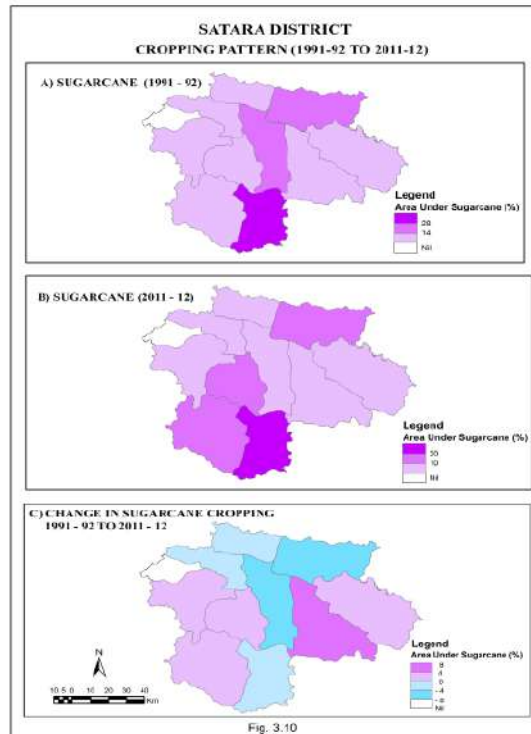
#### **Pulses:**

The pulses in the region are grown both in kharif and rabbi season. The region produces a variety of pulses. However, principal pulses grown are gram, undid (black gram), mug, tur (Pigen peas) etc. They are mainly practiced as a intercropping and are largely rain etc. It occupies 9.80 per cent to the total cultivated area in 2011-12 (Table 1.).

**Sugarcane:**

Upper Krishna Basin is known a ‘Sugar Bowl’ of Maharashtra since long, where in, Kolhapur, one of the leading and well known markets of jaggery in India is located (Jadhav, 1984). Sugarcane is leading cash crop of the study area and occupies an important place in the economy of the study area. It is a water loving tropical crop and therefore requires high temperature, maximum moisture and well developed irrigation facilities. It is grown well in area with heavy alluvial loam soils. Sugarcane occupies 6.16 per cent area to the total cultivated area in 2011-12. And 6.57 per cent in 1991-92 (Table 1.).

Sugarcane cropped area in 1991-92 is show in Fig.4. The tahsil of Karad recorded high per cent (above 28 per cent) area under sugarcane cultivation, due to developed irrigation facilities. 14 to 28 (Moderate) per cent area found in Phaltan and Koregaon tahsils. Khandala Wai, Jaoli, Satara, Man, Khatav and Patan tahsils recorded low per cent area under sugarcane cultivation.



In 2011-12, position changed and also Karad tahsil recorded high per cent (20 and above per cent) area under sugarcane cultivation (Fig 4.).The fertile soil, better irrigation facilities and agro climate conditions are responsible for concentration of cane cultivation in basin area of Krishna valley. Phaltan, Satara and Patan tahsils recorded moderate per cent (10 to 20 per cent). Where as low per cent (below 10 per cent) found in Khandala, Wai, Jaoli, Koregaon, Man and Khatav, due to less rain fall and less irrigation facilities. There is no land under sugarcane cultivation in Mahableshwar tahsil because unfavorable condition.

Fig 4. reveals the change in sugarcane cropping. There are positive change found in Khatav (4 to 8 per cent), Jaoli, Satara, Patan and Man tahsils (below 4 per cent). Where as negative change observed in Khandala, Wai, Karad (-below 4 per cent), and Phaltan and Koregaon (below -8 per cent) tahsils. It may be due to change in farmers’ attitude. They are performing other Cash crops like fruit garden, other crops. And some where land become saline and alkaline, due to over irrigation and some people selling upper layer of soil for brick making.

**Gram:**

Though gram is important for both livestock and human being as a nutritive. It is also constitutes important chain in rotational system of crops from the point of view of soil management. Gram, a rabbi crop, is generally a rained and rarely supplemental irrigation is needed. Temperature with 10<sup>0</sup>c during Rabi season with arid climate is favorable for its growths.Gram shares 3.10 per cent of the total area in 2011-12. In 1991-92, it occupied 1.77 per cent (Table 1).

### **Non Food Crops:**

In the foregoing analysis the food grain crops and non-food grain crops are considered. Now, in this category of land use only the oilseed is discussed. Apart from this, there are many crops under the category of non-food crops, which are equally important for the farmers, choice and interest have led farmers to nonfood crops.

### **Oil seeds:**

The oil seeds are very useful in many ways as they are used both for edible and industrial purposes and the edible oil seeds occupy most of the cultivated areas. Almost all the oilseeds are grown in kharif season, particularly on lighter type of soils. Oilseeds constitute an important group of cash crops. Oil seeds include groundnut, til, castor, Saflower, sunflower seeds, Alsi etc. which together shares 12.27 per cent of the total cultivated area in 2011-12.

### **Ground Nuts:**

Groundnut 'BHUIMUG' is a kharif crop. According to Indian census department it is included in non-food crop category. It can be grown on light sandy soil, red loam, alluvial loam and also black soil of good depth. Groundnut occupies 8.64 per cent area to total cultivated area in 2011-12. In 1991-92, it occupied 8.42 per cent (Table 1.).

### **Other non-food crops:**

Other non-food crops are minor oil seeds, condiments and spices, chilly, turmeric, onion and garlic. The proportion under other non food crops, the total gross cropped area. Thus, it is rather difficult to map, these especially because the area and such non-food minor crop is very insignificant in comparison to total cropped area of the district Satara. 21.42 per cent area occupied by non-food crops in 2011-12 (Table 1.).

The area under groundnut is observed more in study area. Area under groundnut in 1991-92. Above 20 per cent area recorded in Satara and Karad tahsils. Only Patan tahsil moderate area recorded (10 to 20 per cent). And low area observed in Khandala, Wai, Jaoli, Koregaon, Phaltan, Khatav and Man (below 10 per cent).

In the year 2011-12 position changed. Satara and Patan tahsils recorded high area (above 20 per cent) under groundnut cultivation. Satara tahsils recorded moderate per cent area (10 to 20) cultivation. And eastern part of district included Khandala, Phaltan, Wai, Koregaon, Khatav and Man tahsils recorded low per cent area (below 10 per cent) under groundnut cultivation.

### **CONCLUSION:**

A study of change in land use and cropping pattern reveals that irrigation has also played an important role in the distribution of the land use and cropping pattern of the study area. In general land use played important role in the agricultural development. In the study area forest covers only 13 per cent area, fallow land increased (9.34 in 2011-12 & 16.26 in 1991-92) and net sown area is decreased (50.49 in 2011-12, 27 & 38, in 1991-92). That is problematic condition for agriculture. Land not available for cultivation is 11.41 per cent. It is followed by other uncultivated land excluding fallow (11.62 per cent).

The cropping pattern scenario is dominated by in eastern Jowar and Bajara, central basin region sugarcane and western side rice. This can be well attributed to the development facilities. Other important crops grown are wheat, pulses, groundnut, ginger, strawberry, turmeric etc.

### **REFERENCES:**

1. Desai, R.G. (2006): Agricultural Economics models, problems and policy issues, Himalaya, Publishing House, Mumbai, P.11.
2. Jadhav, M.G. (1984): Sugarcane Cultivation: A Regional Survey, Himalaya publishing House, Bombay. P. 57.
3. Kanwar, J. S. (1972): Cropping pattern, scope and concept proceeding of the symposium on cropping pattern in India, Indian Council of Agricultural Research. PP. 11-38.
4. Memoria, C.B. (1979): Agricultural problems of India, Kitab Mahal, Alahabad, Delhi, P. 108.
5. More, K. S. (1995): Studies in Agricultural Land use, Himalaya publishing House, Bombay, P. 43.
6. Pawar, C. T. (1989): Impact of Irrigation: A Regional perspective Himalaya Publishing House, Bombay, P. 54, 68, 70.
7. Pawar, C. T. and Pujari, A. A. (2001): Lift irrigation and soil Degradation in North-eastern part of Kolhapur district, Maharashtra, The Indian Geographical Journal, Vol.76, No.1, P.51.
8. Shinde, S. B. (1987): Changing Land use pattern in Amanapur village (Sangli district), Readings in Irrigated farming, Vishwanil Publishing, Pune, P.204.
9. Singh, Jasbir (1974): An Agricultural Atlas of India: A Geographical Analysis, Vishal Publication, University campus, Kurukshatra, P.105, 139,245.

**Faculties Of English Poetry  
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**Abstract:** With a detailed consideration of the nature of poetry, the ordinary reader's reaction to a poem, the various poetical devices and the use of language, it is only appropriate that the student should be helped to acquaint himself with the different subjects tackled by the poets. It is not being claimed that the subjects dealt with in this article is inclusive. A modest claim should be that it deals with some of the major subjects in English poetry. Poetry makes a special use of language, but the common functions of language is communication. What the poetic language communicates; feelings, emotions or attitude of ideas, is the concern in the present article Auden has suggested three wishes of the creative artist to make something to perceive something either in the external world of sense or the internal world of feeling. And to transmit these perceptions to others. It is the representations of human in nature in poetry that is of utmost importance to a sympathetic readers. However, there may be divergent views about the status of language in the emotional linguistic link up called poetry. Dr. Johnson has made this point abundantly clear.

**Keywords:** Poetry, love, nature, religion, death, time frustration and loneliness.

### **Introduction**

#### **Love:**

Love being one of the tenderest feelings of human life has been a constant source of inspiration to the poets of all ages. This subject knows so limitations even in languages. Dr. Johnson may have considered love only as one of the passions, but in poetry it can be considered as the major subject and more so in English poetry. Different ages have used different conventions to express this feeling of love, yet the passion in itself has tended to express the vitality and involvement in human affairs in each age. Different attitudes are portrayed in love poetry and these attitudes gives rise to different kinds of reactions. The bantering mockery turns the lover's position from tragedy to

comedy and to be lovelorn, pale and mute becomes absurd instead of romantic. In success, the lover any transcend all barriers and ride like *Browning's* lover in *The Last Ride Together*. In jealousy, the lover may throttle her to death. He may even start crying in anguish on the changed attitude of the lady or may fret at the ever-changing moods of the lady. To wail, weep, vow and worry himself is the lot of those in love and the burden on poet's faculties for he is to capture such moods in his poetry.

It would be appropriate to evaluate attitudes to love as a subject and the different conventions eyed to express it on a time basis. The sixteenth and seventeenth centuries are the great ages of the love lyric. The sonnet was almost a craze, borrowed from the Italian literature. There were a set stock of expressions, hair like gold wires, lips of coral, cheeks of red and white roses. 'globy fronts' (which means foreheads) like marble, snowy breasts and the lovers all fry in the flames of their passion. But Shakespeare gives a jolt to such a set stock of phraseology of love.

With this, personal experience is filed with more and more of torment and dissatisfaction in love and exultation at success in love. With Edgar Allan Poe, love becomes a spiritual mystery evoked by a series of associative images and 'beauty' is hardly that of a physical woman at all. In 'To Helen', he is comparing the traditional Helen, the face that launched a thousand ships into a ten year war, with the vision of a woman whose beauty has even him peace and serenity of heart. Yeats in his series of Crazy Jane poems, is anti intellectual and anti clerical and combines universal, mystical wisdom with racy, sensual and primitive elements.

#### **Comment:**

Thus, with different periods and with different sensibilities the treatment of love in poetry has varied and given different facts of human condition and awareness. Yet the most poetic and not yet equalled expression in this area of human experience is that of Shakespeare.

#### **Nature:**

The treatment of nature in English poetry usually dates from the pastoral poetry wherein natural background leads to innocent, philosophic speculations and life devoid of any kind of corruption. This would tend to link Spenser and other poets with this tradition. The eighteenth century trimmed Nature in the form of a well kept garden with veering in its proper order. However, the result or the Romantic Revival as it is popularly known starts with the publication of the *Lyrical Ballads* by Wordsworth and

Coleridge in 1798.

The pastoral poetry spoke of vernal airs and blousing dawns, the bloomy spray, the swelling clusters of the vine, the sun's mild luster the genial gales and the sounding main, Thomas Nashe wrote about the joys of springs as "Spring, the Sweet spring is the year's pleasant king" whereas Shakespeare presents work in abundance. In his plays, '*songs and sonnets*'.

**Comments:**

Nature herself remains the same; it is the poet who finds reflections in her of his own varying moods and perceptions. It is his particular senses that respond to the sight, sound, touch, taste and perfume of natural objects; it is his heart that finds comfort or feels desolation, or exults in the natural forces of creation and destruction; it is his mind that contemplates her and through the thoughts and insights she arouses, leads him to penetrate further into the mysteries of his own being. It may even intensify his sense of fellowship with other men, a truth beautifully suggested in another poem of **Frost. The Tuft of Flowers.**

**Religion:**

Religion, or a faith in religion has always been the resuming point for a despaired man in life. Some hope that somebody would share the grief's and joys and even come to one's aid at times has always been the key point of religious belief in all nations. Being a tiny force in the huge cosmos, man is subject to a fate which is generally considered as irrational. However, the braver approach is that of the humanist fighting his way through all troubles. Both these view points have been the subjects for the poetic imaginations to deal with. Tennyson cried hard and still searched for a message in his famous *in Memoriam*. One may even go deep down and refer to lack of human deprivation or divine deprivation. Shelley, however, chooses to be happy in the triumph of his Prometheus.

**Death:**

Death has been yet another theme which has engaged the attention of the poets. Sometimes it has led to philosophic speculation (as in case of Tennyson's in Memoriam) while at others the poets have challenged its powers and reduced it to a longer sleep after which life begins with new vitality. However, physical life is always threatened with death, and it is in terms of the limited period of human life that a scale of values is evolved. Shakespeare wrote "If it is not now, yet it will come". Yeats considered death as but passing from one room to another. Cleopatra, at the time of her death in Shakespeare's play. Gives it a touch of magnificence by decking herself to meet her dead Antony. There may even be a reaction in horrors. There may be a state of non-pluss where the protagonist may not be able to talk of fear or hope. It may lead to an outburst of anger directed against the fellow beings if they were the ones who caused death.

**Comments:**

Death as a subject for poetic creation as tended to give rise to varying moods and the poets have created these moods for helping the reader to contemplate about the ultimate goals, and to some extent, limitations of life.

**Time:**

The passage of time brings to human vision the different stages even different facets of human life. The innocence of childhood, exuberance and vitality of youth, the commitment to certain values and sense of responsibility of manhood and the contented or worried life of old age followed by the inevitable death, are all creations in the circle of any attempt to transcend this barrier of time, to move in eternity, is the attempt of the brave, may he be a lover, a man in search of some ideal or a soul in search of the divine. Elizabeth Drew calls the tyranny of time as the 'foremost' in human life. "Poetry can be immortal, but man himself is doomed to a time world. Transience is the law of his being, as it is of the civilization he creates and even of the great globe itself."

**Comments:**

Associated with this is the idea that the possible enjoyment within the limits of available time should be had before it gets too late. Herrick expresses this feeling in his "Gather ye rosebuds while ye may and come, let go, while we are in our prime/And take the harmless folly of the time".

**Frustration and loneliness:**

Two more feelings which are closely interlinked have inspired the sensitive minds to versify. These are frustration and loneliness. Frustration may be caused by a failure to get certain ambitions achieved or the betrayal by some one whom one expects to stand by, where loneliness is caused by a sense of being alone, an inability to live with the circumstances and by being deserted by others. The cause of being lonely can

lie in a state of lack of a fruitful relationship with God or nature or other men and women or the Muse. Coleridge's Ode Dejection is an expression of the loss capacity for joy, the storage music of the soul. It is the union between the poet and the natural world that has been shattered and that has led to his feeling of loneliness. The passion of life has been dried up and the state of human life is that of despondence, not worth living. Same feeling world be found in Frost's Acquainted with the Night. What it causes is an estrangement from some source which adds to the vitality and vigour of human life. Devoid of vitality, human life seems to float on the surface without any basis. Meaninglessness becomes, thus the catchphrase of such a life.

**Conclusion:**

There has been a general controversy raised about Eliot himself regarding the enjoyment of poetry which expressed a certain view point with which the reader tends to differ. Eliot thought that such a situation tends to create a disturbance in the enjoyment of the poem. Milton's theology, for example, destroys any pleasure in Paradise. Lost or pope's deism spoils the Essay on Man. there is however, the other view which negates the importance of any intellectual interference. They suggest that there is ample room for the reader to be objective in the appreciation of such poetry. Eliot has suggested emotional sympathy as the guiding principle of poetic enjoyment without according any credence to intellectual assent.

**References:**

1. Goodman, W.R. (1995). *Practical Criticism*. Delhi: victor offset printers and publishers.
- Luthra, N. (1998). *History of English Language*, Ghaziabad: Garg publishing House.
2. Roberts G. and G. C. Thornley (1994). *An outline of English literature*, Calcutta: Orient Longman limited.
3. William, J. L. (1992). *English literature, Ludhiana*: Kalyam publishers.

## **Indian Administrative System in Modern Globalized Era**

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**Abstract:** Today globalization is not only an economic term but it is a way of life. The administrative system in the developing nations is still way behind from the administrative systems of the developed countries. The technological advancements, high literacy rate, minimum governance policies and high human development in the developed countries are the result of globalization. The undeveloped and developing countries are also affected by the globalization policy. Modern era is the era of technology and high speed communication. The technological changes have contributed in implementing effective administrative policies. The technology plays a vital role in changing this system and therefore the social loopholes like corruption, frauds and malpractices can be successfully avoided. The present article speaks about the impact of globalization on administrative systems of developing countries in general and on India in particular. The present article is an attempt to focus light upon the modern changes in technology and their overall impact on Indian administrative system.

**Keywords:** Globalization, developing countries, administration.

### **Introduction:**

The modern world is changing rapidly. Technology is also changing in a significant manner which has affected the administration, society and economy as a whole. The human civilization has adopted the government and administration system from ancient times to practice the barter system as well as staying together and its regulation. All these changes have speeded up since the adoption of globalization process. Today, we experience the changes in 5 years which we used to experience in 25 years. Of course, every country has to adopt itself with the changing conditions to stay in the process of development. India, being a traditional country takes a lot of time to accept the changes in its governance as well as the administrative structure.

Technological advancements are helping administrators to take quick and effective decisions. It is also helping in improving the efficiency of the administrators and employees. By using the various web portals and applications, Government is trying to reach out to the common people. Hon. Prime Minister of India, Narendra Modi has used Radio as well as television in an effective manner to communicate with common people as well as administrators, officers, scientists and policy makers on time to time. This digital revolution in administration has changed the methods of administration in Indian context. Though, there are many hurdles in effective management of administration with the help of technology, India has emerged as a promising country in use of technology in governance. Countries like America, China, Britain and Japan have implemented 100% use of technology in government and governance. Similarly, India may also be able to digitize the entire administrative system by the end of 2030. This will enable the administration to keep digital records for a longer period of time with more transparency and efficiency. The present article is focused on the impact of globalization over the administrative system in India.

### **Objectives of the study:-**

- 1) To study the lacunas in the Indian administrative system.
- 2) To compare the administrative structure of India with other selected developing countries.
- 3) To study the impact of globalization on Indian administrative system.
- 4) To suggest some remedies on the changes in Indian administrative structure.

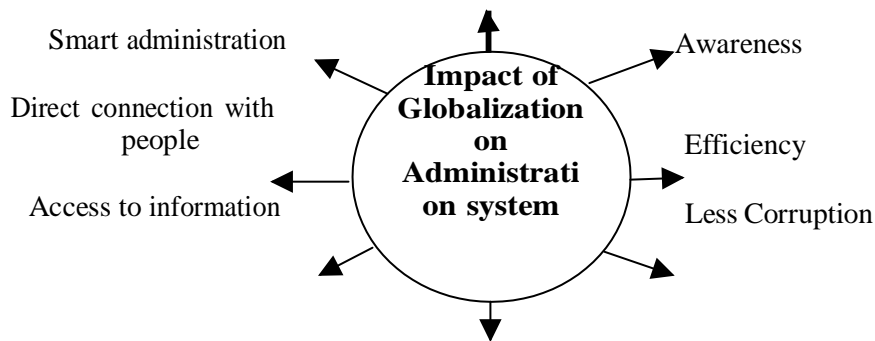
### **Methodology of research:**

The present article is based upon the secondary sources of data such as books, journals, periodicals etc. The descriptive method of research is adopted by the researcher for making analysis.

We can experience the British laws and regulations in our administration even after the 67 years of independence. The administrative affairs are affected by the 100 year old laws and regulations laid down by the British rule. It affects on the efficiency of the administration. People have to wait in queues for hours and hours for even nominal causes. It affects on the belief of the people in government and administration as a whole. This can lead towards a breakdown in the present situation of administration. All these things urge for an urgent reform in the Indian administrative structure. The administration system should be more people oriented which can rebuild the faith of people in it. It should change according to the changes of globalization.

Every society has its own identity. The modern society is connected by the media. This results into a situation where the society loses its identity with the influence of such connection. The sources of

information have evolved in the past few years which have made us feel 'global'. We are thinking likewise the western countries but still we are connected with our basic roots. India is geographically, culturally, economically and socially a different land in different regions. Therefore the laws and regulations which govern the Indian administrative system are too old to be ruled. The changing global perspectives are demanding for new, dynamic and more flexible laws and regulations. But at the same time the traditions, customs and cultures are not getting apart from our system. The modern era is of open dialogue where there is a need of transparency, belief and positive governance. Therefore we experience less administrative problems in the western countries but at the same time more complications in India. **Transparency**



The basic objective of administrative system is to facilitate saving people in a hassle free manner. The administration should look to provide necessary facilities in a very cost & time efficient manner. People compare our administrative system with the developed countries and then they realize that the governance and administration in India is less efficient and less people centered. In a real sense, the participation of people in the government and administration is different from the customers of corporate world. The services expected from the administration are to be fulfilled within proper time with no corruption and with fewer complications. Therefore there is a need for associating the common people with the administration in a direct manner.

Institutional structure is one of the easiest way of changing governance and administrative pattern of any country. Any govt. in the country or a state tries to adopt / experiment new and innovative practices but that experiment perishes with the govt. or that concerned administrator. Therefore there is a need of providing a constant mechanism of planning and implementation which will exist even after the govt. is changed. Creating a constant and sustainable system of smooth governance is known as the strong institutional structure. However, the institutional structure requires a concrete framework of people oriented laws and regulation. It gives strength to the administrative structure. Off course, public administration clearly defines the rights, duties and responsibilities of the people. Therefore we have witnessed a drastic change in the 2014 Loksabha elections in India, where Corruption, Black money, Lokpal Act and malpractices were the focused issues. The current ruling party, BJP focused its attention on good governance in their campaign. The same campaign was further practiced in other states of India like Maharashtra & Haryana which paid good dividend to the party. There is a considerable similarity between some of the states governance and administration in India. There are many lacunas in the administrative system as it is not people centric. The needs of the common people are neglected so that the people have lost the faith in the current administrative system. Many public works are awaiting their completion only because of political and administrative willingness. The government itself has created many obstacles in the system of administration and the common people. Eg. The question of local body tax and toll in Maharashtra state. In real sense, there is no unique solution for creating a people centric governance and administrative system in India. But to some extent, by decentralizing the administration and decision process, change can be made in the current situation. The 73<sup>rd</sup> and 74<sup>th</sup> amendment in the Indian constitution has provided some important rights to the urban as well as the rural institutions. There should be more and more change in the governance and administrative system so that effectiveness and transparency in work can be practiced in a real sense. The administration is made efficient and well managed with the help of technology in the urban areas. Technological advancement provides quick and reliable solutions on the common questions of the people. It also strengthens faith in the common people. Therefore there is a need of changing the traditional methods of administration and adopting the globalized methods of administration. The state and the nation should adopt the transparent and more reliable and advanced systems of administration.

### **Conclusion and summary:**

Globalization has made this world a global village. Today we are connected with each and every country in a very straight manner. The all economic, political, social and cultural changes around the world are demanding for the sustainable development of the human society. Therefore, it is the need of the hour to accept the global changes and provide safe, secure and hassle free services to the society. Afterall, human development is the ultimate goal of the human civilization. However, we can bring this development through advanced solutions for all governance and administrative problems are unavoidable and thus we have to accept the global phenomenon for the better society. People are willing for corruption less, transparent and reliable system of public administration. Though it is a bit tough torun such a system in a huge democracy like India but with the following suggestions we can at least bring harmony in the administrative structure of India.

- a) There is an urgent need to change the old laws and regulations in India.
- b) There is a need for maintaining transparency in the administrative structure from a common man to the highest person of the country.
- c) There is also a crucial need of changing the psychology of common people, government and administration by removing the obstacles of corruption.
- d) A constitutional framework is to be created for all the development plans and constitutional laws.
- e) Technology should be given due priority in changing the administrative system in developing countries.

### **References -**

1. Arora, Ramesh K. – Public Administration in India, Paragon International Publishers, New Delhi, 2011.
2. Gajanan, R.P. – Public Administration Today and Tomorrow, Crescent Publishing Corporation, New Delhi, 2010.
3. Sharma, Anoop – Public Administration, History and Research, Crescent Publishing New Delhi, 2009.
4. Laxmikant, M. – Public Administration, Tata, Mcgraw Hills series, New Delhi, 2010.
5. Shukla, S., Globalization and Indian Administration, Indian Journal of Public Administration – IIPA New Delhi.
6. Basu, D. D. – Introduction to the Constitutions of India, Administration in India, Pushpak Publication, New Delhi, 2011.
7. Bava, Norjahan – Public Administration in 21<sup>st</sup> century, Kanishka Publishers New Delhi, 2007
8. Arora, Ramesh K.,
9. Good Governance, Paragon International Publishers New Delhi, 2009.

## diversity And Bio Deterioration Of Fusarium Species On Different Varieties Of Jowar And Maize

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**Abstract;** Study of varietal variation for bearing capacity of *Fusarium* species were studied by using five seed varieties of jowar and maize were employed for plating on blotter and agar test method .The results are very remarkable .The maximum composition of *Fusarium* species were found on the seed varieties of jowar CSH-I and CSH-9. Among the maize varieties like Ganga -5 and Ganga Safed-2 which have maximum number of *Fusarium* species were observed and highly efficient for seed deterioration in jowar and maize.

**Key Words:** -Bio-deterioration,*Fusarium* species,Jowar,Maize .

### Introduction

Jowar and Maize are dietary staple food in many states of Central India and in countries of Central America. The first systematic work on seed health testing of Jowar has been made by Leukel and Marlin (1943) and reported the species of *Fusarium* are one of the dominant on seed mycoflora of Jowar crop which also studied by Panchal (1984). The association of seed borne *Fusarium* species from maize were carried out by Leonin (1932) and Butler (1947). The species of *Fusarium* are one of the highly pathogenic and toxified to the plants, animals and human being which were studied fragmentary in the literature. Considering the importance of the facts the present topic was selected for the investigation.

### Material and Method

The method is described by Neergaard (1973) has been adopted for the collection of seed samples accordingly. Seed samples were collected from field, store houses and market places .A composite sample was prepared by mixing the individual sample together and preserved in cloth bag at room temperature during the study.

### Detection of seed mycoflora

The procedure for blotter and agar plate methods were followed as describe by ISTA (1966), Neergaard 1973 and further confirmation of *Fusarium* species was done as per Woolen Waber and Reinking D.A ,(1935) ,Bilia (1955) ,Garden W. L, (1952,1954,1960) ,Ramnath P. Neergaard and Mathur 1970 ,Booth C, (1971).

### Blotter Plate Method (BPM)

A pair of white blotter papers of 8.5 cm diameter was jointly soaked in sterile distilled water, placed in pre sterilized corning petriplate of 10cm diameter .10 seeds per plate were placed at equal distance on moist blotters .100 seeds were tested for each treatment .The plate were incubated at 25 to 20 °C microscope for the determination of fusarial growth .The identification and further confirmation of *Fusarium* species was made by preparing the slides and observing under microscope.

### Agar plate method (APM)

In this method pre sterilized corning glass petriplates of 10 cm. diameter were poured with 25ml of autoclaved potato dextrose agar PDA medium. On cooling the medium 10 seed per plate were equispaced aseptically incubation condition and other details same as blotter plate method. In order to isolate only internal seed mycoflora seeds were pretreated 0.1 % Hg Cl<sub>2</sub> for one minute subsequently thoroughly washed twice with sterile distilled water and placed agar plate.

### Results and discussion

In order to understand varietal variation of bearing capacity *Fusarium* species from the seeds of different varieties of jowar and maize were utilized for plating to determine their percentage incidence. According to variety of the tested seeds. The results are summarized in the table .The maximum composition of *Fusarium* species were found on jowar seeds variety CSH-1, CSH-9 whereas variety of yellow jowar seed obtained only four species of *Fusarium* such as *F.equiseti*, *F.oxysporum*, *F.roseum*, *F.semitectum*. The tested seed varieties of jowar observed association of *Fusarium oxysporium* , while *F.poae* was noticed only in seed varieties CSH-5 and CSH-6, similarly the *F.avenaceum* did not respond their appearance on seed of CSH-1, CSH-6.

**Table 1:- Variation in the percentage incidence of *Fusarium* species on seed of different varieties of Jowar and maize**

(- = Nil)

Species of <i>Fusarium</i>	Jowar variety (in %)					Maize variety (in %)			
	CSH-1	CSH-5	CSH-6	CSH-9	Yellow	Ganga safed - 2	Ganga-4	Ganga-5	Gan ga Kisa n
<i>F.avenaceum</i>	10	-	10	-	-	-	10	-	-
<i>F.dimerum</i>	-	10	20	10	-	-	-	-	10
<i>F.equiseti</i>	20	10	-	10	20	-	10	-	20
<i>F.moniliforme</i>	30	20	20	30	-	10	30	-	20
<i>F.nivale</i>	-	-	-	10	-	-	-	10	-
<i>F.oxysporum</i>	50	20	10	30	20	20	20	30	10
<i>F.poa</i>	-	20	10	-	-	-	-	10	-
<i>F.roseum</i>	20	10	-	-	20	-	-	-	10
<i>F.semitectum</i>	20	-	10	20	20	20	-	10	-
<i>F.solani</i>	10	-	10	-	-	-	20	10	-

The among maize varieties Ganga-5 and Ganga safed-2 have associated maximum number of *Fusarium* species while the seed varieties Ganga-4 have to be noticed the association of *F.moniliforme*, *F.oxysporum* and *F.semitectum*. It is remarkable to note that the appearance of *F. equiseti*, *F-moniliforme*, *F-oxysporum*, *F. roseum*, were observed among these *F.moniliforme*, *F-oxysporum*, *F. semitectem*, *F. equiseti* proved their dominance.

**Change in the dry weight of seeds infected with different species *Fusarium* (initial dry weight 25 g)**

Eight species of *fusarium* utilized for infestation of seed varieties of the Maize and Jowar separately and incubated for period of the 15 days of the room temperature and the loss of dry weight of tested seed varieties were calculated by compare with the control and the results are given in the table no.2. It is clear from the data the species of *F.equiseti*, *F.oxysporum*, *F.roseum* and *F. udum* which are found to be capable to reduce the dry weight of the both tested seeds. Among the tested *Fusarium* species *F. moniliforme*, *F. oxysporum* found to be more efficient to cause loss in seed weight. In case of Maize followed by *F. moniliforme*, while this was due to *F.equiseti* in case of Jowar as well as Maize.

**Table2. Change in the dry wait of seeds infested with different species *Fusarium* (initial dry weight 25 g)**

Species of <i>Fusarium</i>	% of dry weight of seeds	
	Jowar	Maize
<i>F.dimerum</i>	21.7	23.0
<i>F.equiseti</i>	18.7	19.6
<i>F.moniliforme</i>	17.5	18.5
<i>F.oxysporum</i>	18.0	18.1
<i>F.roseum</i>	20.1	20.2
<i>F.semitectum</i>	10.3	19.2
<i>F.saloni</i>	20.0	22.4
<i>F.udum</i>	21.5	21.5
<i>Control</i>	22.3	24.1

**Change in the Ash content of seeds due to species of *Fusarium***

It is noticed from the result are given in table no.3 which were estimated change in ash content of different varieties of Maize and Jowar and result were remarkable *F.equiseti* and *F.moniloforme* responsible to cause loss in ash content in case of the Jowar followed by Maize. The species of *F. moniloformi* and *F.dimerum* also caused decrease in ash content of Maize and Jowar. It is interesting to note that *F.udum*

play their vital role in decreasing the ash content in the Maize contrary increasing in ash content in Jowar.

**Table 3. Change in the Ash content of seeds due to species of *Fusarium***

Species of <i>Fusarium</i>	% of ash content in seeds	
	Jowar	Maize
<i>F.dimerum</i>	0.14	0.10
<i>F.equiseti</i>	0.7	0.8
<i>F.moniliforme</i>	0.12	1.1
<i>F.oxysporum</i>	1.1	0.6
<i>F.roseum</i>	1.3	1.2
<i>F.semitectum</i>	0.10	0.9
<i>F.saloni</i>	0.8	0.7
<i>F.udum</i>	1.4	0.7
<i>Control</i>	0.9	0.8

#### Change in protein content of seeds due to species of *Fusarium*

The eight species of *Fusarium* were inoculate with the seed varieties of Jowar and Maize separately and estimated protein content and the results are given in table no.4. It is clear from the results among the eight *Fusarium* species *F.oxysporum* proved to be maximum loss in protein content of Jowar and Maize followed by *F.moniliformi*. In case of Maize and Jowar *F.semitectum* also responsible to cause loss in protein content. Similar trend was also observed in case of other tested seed varieties. Whereas the maximum loss of protein from the seeds of Jowar and Maize was due to *F.oxysporum*.

**Table 4: Change in protein content of seeds due to species of *Fusarium***

Species of <i>Fusarium</i>	% of protein content in seeds	
	Jowar	Maize
<i>F.dimerum</i>	14.2	14.1
<i>F.equiseti</i>	12.9	13.0
<i>F.moniliforme</i>	11.6	11.1
<i>F.oxysporum</i>	10.5	10.9
<i>F.roseum</i>	13.0	13.4
<i>F.semitectum</i>	12.1	12.5
<i>F.saloni</i>	13.0	13.5
<i>F.udum</i>	13.7	13.5
<i>Control</i>	16.9	17.2

#### Change in fat content of seeds due to species of *Fusarium*

It is clear from the results summarized in table no.5 the degradation of the fat content was estimated by utilizing the eight species of *Fusarium* which were isolated from seeds varieties of Jowar and Maize. However *F.moniliforme*, *F.oxysporum* and *F.semitectum* proved to be highly efficient for degradation of fat content in seed varieties of Maize and Jowar. It is remarkable and note that *F.oxysporum* and *F.moniliformi* are highly responsible to loss in fat content in Maize and Jowar.

**Table 5. Change in fat content of seeds due to species of *Fusarium***

Species of <i>Fusarium</i>	% of fat content in seeds	
	Jowar	Maize
<i>F.dimerum</i>	4.1	1.5
<i>F.equiseti</i>	3.1	1.0
<i>F.moniliforme</i>	2.5	0.8
<i>F.oxysporum</i>	2.6	0.7
<i>F.roseum</i>	3.9	1.7
<i>F.semitectum</i>	2.9	1.1
<i>F.saloni</i>	4.0	1.3
<i>F.udum</i>	4.5	1.6
<i>Control</i>	5.1	2.1

### Change in starch content of seeds due to species of *Fusarium*

In order to know estimation of the starch content by utilized eight species of *Fusarium* grown on seed varieties of the Jowar and Maize and the results mention in the table no.6. It is clear from the data given by the results *F.moniliforme* and *F.oxysporum* caused maximum loss in starch content in seed varieties of Jowar and Maize followed by *F.solani*. The *F.semitectum* play their role in degradation of the starch in case of the tested seed varieties of the Jowar and Maize. It is significantly note that *F.moniliforme* proved to be highly efficient to utilize starch content of Maize and Jowar seed varieties.

**Table 6. Change in starch content of seeds due to species of *Fusarium***

Species of <i>Fusarium</i>	% of starch content in seeds	
	Jowar	Maize
<i>F.dimerum</i>	42.1	41.8
<i>F.equiseti</i>	41.5	40.6
<i>F.moniliforme</i>	31.5	33.1
<i>F.oxysporum</i>	34.11	32.5
<i>F.roseum</i>	43.1	41.4
<i>F.semitectum</i>	41.1	39.4
<i>F.saloni</i>	40.2	40.8
<i>F.udum</i>	42.0	39.5
<i>Control</i>	44.5	44.0

### References

1. **Bilia** (1955). *Fusarium*-Biological sistematika Neak, V. Kraniskoi, pp.320.
2. **Booth C** (1971). The Genus of New survey common wealth Mycological Institute, pp. 237.
3. **Butler F C** (1947). Ear, Cob and grain rots of maize. Agric. Gaz. NSW. pp.144-151.
4. **Gorden W L** (1952). The occurrence of *Fusarium* species in Canada II prevalence and taxonomy of *Fusarium* species in cereals, seed can J. Bot. 30:209-251.
5. **Gorden W L** (1954). The occurrence of *Fusarium* and prevalence of *Fusarium* species in the soil of cereals plots. Can. J. Bot. 32:622-629.
6. **Gorden W L** (1960). The taxonomy and habitats of *Fusarium* species from tropical and temperate region. Can. J. Bot. 38:643-658.
7. **Leonian L.H.** (1932). The pathogenicity and the variability of *Fusarium moniliforme* from corn. West Virginia, Agri. Expt. Sta. Bull. 248, 16.
8. **Leukel R.W., J.H. Marlin** (1943). Seed rot and seedling blight of sorghum. Tech. Bull. U.S. Dept. Agric. 839:26.
9. **Neergaard P.** (1973). Detection of seed borne pathogen by culture test. Seed Sci and Tech. 1:217-254.
10. **Panchal V.H** (1984). Studies on seed borne fungi from Sorghum, thesis submitted to Dr. Babasaheb Ambedkar Marathwada University, Aurangabad.
11. **Ram Nath P Neergaard and Mathur** (1970) Identification of *Fusarium* species on seed as they occur on blotter test. Proc. Int. Seed Test. Ass. 35:121-144.
12. **Wollen Weber H.W. and Reinking O.A.** (1936). Die *Fusarium* ihre Beschreibung.
13. Schadwirkung and Bekämpfung fung. Berlin, Pul Pry, pp.335.

## **Management Of The Post- Harvest Fungi By Fruit Extracts Of Wrightia Tinctoria**

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**Abstract:** Bio-pesticides and their use in the management of plant diseases has become recent trend in agriculture to be given alternate traditional plant disease management which is termed as Biological control. Management of various pathogenic micro-organisms by using the different extracts of Botanicals has been attempted and the results are found effective. Botanicals highly potential, economical, safe, biodegradable and eco-friendly for management of fungi. The concentration of the extracts, such as 0.0625, 0.125, 0.25, 0.5, 1.0 and 2.0 mg/ well of the methanol, petroleum ether and ethyl acetate fruit extract of *W.tinctoria* were utilized to evaluate the minimum inhibitory concentration (MIC) against four pathogenic fungi. The results are very much positive to maximum inhibition of tested fungi. The MIC value is varied according the fungi for that standard drug were used as Amphotericin. Fruit extract of *W.tinctoria* have been attempted against the species of *Neurospora*, *Aspergillus*, *Fusarium* and *Cladosporium* for determine minimum inhibitory concentration by using different solvents system has benefited for management of tested fungi.

**Key words;** Post harvest Pathogens, *Wrightia tinctoria*.

### **Introduction**

Fungicides are widely used for management of pathogens. In this scenario increasing demand to develop, eco-friendly, bio-based, bio-control agents. It need to be focused for systemic management of fungi significantly and thereby improving the health of food grains. The Botanical constitute a promising alternative to hazards fungicides in the field of integrated disease management. In vitro activity of different concentration of Botanicals were screened for their antifungal ability against species of *Fusarium*, *Aspegillus*, *Cladosporium* and the results were observed complete inhibition in mycelia growth of the tested fungi which were isolated from common food grains. Isolation of fungal pathogens as per (ISTA 1966), Neergard 1977, Agarwal 1981, and identification was made with the help of different keys and as per literature by Dodge 1928, Wollen et al. 1935, Bessey 1950, Joseph Gilman 1960, Ramnath et al. 1970, Booth 1971, Gerlach et al. 1982, Dube 1990, Mukadam 1997, Keith et al. 2002 and Mukdam et al. 2006.

### **Materials and Methods**

**Antifungal activity:** The agar diffusion method was used to evaluate the antifungal activity. Fungi which were cultured overnight at 28 °C for 72 hrs. In potato dextrose broth (PDB) used as inoculum. A final inoculum, using 100 ml suspension containing 10<sup>4</sup> spore/ml of fungus spread on potato dextrose agar (PDA) medium, respectively.

Wells of 6 mm diameter were prepared in the solid agar and Amphotericin 25, 50, 100, 400, 800 mg/well was used as positive controls. The test samples (0.0625, 0.125, 0.25, 0.5, 1.0, 2.0 mg/well) were applied and plates were at 28 °C for 72 hours for fungal incubation for a visible growth. The antifungal activity has been expressed as diameter in mm of inhibition zone and measured by using standard scale. Triplicate set were taken for each test.

### **Determination of Minimum Inhibitory Concentration (MIC)**

Minimum inhibitory concentration (MIC) values were studied against fungi, which were determined as sensitive to the extracts in agar diffusion assay. Agar wells 6 mm diameter were filled with solution containing 0.0625, 0.125, 0.25, 0.5, 1.0, 2.0 mg/well of test extract. Minimum inhibitory concentration was defined as the lowest concentration of extracts that inhibited visible fungal growth on agar.

**Results and Discussion:** In order to investigate the antifungal activity of fruit extracts of *Wrightia tinctoria* R.Br which were utilized against four pathogenic fungi for their management. The fungi such as *Neurospora crassa*, *cladosporium oxysporum*, *Aspergillus flavus* and *Aspergillus niger* were employed. Antifungal activity and MIC values (mg/well) of fruit extract of *W. tinctoria* R. Br. against different pathogenic fungi which were isolated from common food grain.

### **Antifungal activity and MIC values mg/well of fruit extracts of W. tinctoria R. Br. against A. flavus**

The fruit extracts of *Wrightia tinctoria* R.Br were used against *Aspergillus flavus* for their growth management. The methanol, petroleum ether and ethyl acetate extracts with their concentrations 0.0625 to 2 mg/well were used for the observation and calculation of antifungal activity and MIC. The results are very beneficial to the control of tested fungi which were summarized in the table 1. As per the results the

maximum inhibition zone was observed in presence of petroleum ether and ethyl acetate extracts of *Wrightiaincinctoria R.Br* at the concentration of 2 mg/well. The minimum inhibitory concentration (MIC) was determined against *Aspergillusflavus* in presence of all the tested extracts of fruit of *Wrightiaincinctoria R.Br* and minimum inhibition was found in ethyl acetate extracts at the concentration of 0.25mg/well.

**Table No.1. Antifungal activity and MIC values mg/well of fruit extracts of *W. tinctoria R. Br.* against *A. flavus***

Sl. No.	Compounds Name	Concentration of Compound						
		0.0625 mg	0.125 mg	0.25 mg	0.5 mg	1 mg	2 mg	MIC mg
1	Methanol extract of <i>Wrightiaincinctoria R.Br</i>	0	0	0	0	0.1	0.3	1
2	Petroleum ether extract of <i>Wrightiaincinctoria R.Br</i>	0	0	0	0	0.1	0.6	1
3	Ethyl acetate extract of <i>Wrightiaincinctoria R.Br</i>	0	0	0.1	0.3	0.5	0.6	0.25
4	Standard drug (Amphotericin)	25 µg	50 µg	100 µg	200 µg	400 µg	800 µg	MIC µg
5	Readings	0	0	0	0	0.7	1	400

Antifungal activity and MIC values mg/well of fruit extracts of *W. tinctoria R. Br.* against *Cladosporiumoxysporum*

The fruit extracts *Wrightiaincinctoria R.Br* were used against *Cladosporiumoxysporum* for inhibition of their growth. The methanol, petroleum ether and ethyl acetate extracts with their concentrations 0.0625 to 2mg/well were employed for the determination and observation of antifungal and MIC

The results, the maximum zone of inhibition was exhibit in the presence of methanol extracts followed by ethyl acetate and petroleum ether fruit extracts of *W. tinctoria R. Br.* at the concentration of 2 mf/well. Table No.2, data of the results given in table No.2. The MIC was recorded against *C. oxysporium* in the presence of the fruit of *W. tinctoria R. Br.* and minimum inhibition was found in methanol and ethyl acetate extracts at the concentration of 1 mg/well

**.Table No.2: Antifungal activity and MIC values mg/well of fruit extracts of *W. tinctoria R. Br.* against *Cladosporium Oxysporum***

Sr. NO	Compounds Name	Concentration of compound						
		0.0625mg	0.125mg	0.25mg	0.5mg	1 mg	2 mg	MIC mg
1	Methanol extract of <i>W. tinctoria R. Br.</i>	0	0	0	0	0.3	0.5	1
2	Petroleum ether extract of <i>W. tinctoria R. Br.</i>	0	0	0	0	0	0.3	2
3	Ethyl acetate extract of <i>W. tinctoria R. Br.</i>	0	0	0	0	0.1	0.4	1
4	Standard drug Amphotericin)	25 µg	50 µg	100 µg	200 µg	400 µg	800 µg	MIC µg
5	Readings	0	0.2	0.7	0.9	1.3	1.5	50

Antifungal activity and MIC values (mg/well) of fruit extracts of *Wrightiaincinctoria R.Br* against *Neurosporacrassa*

The different concentration of fruit extracts of *Wrightiaincinctoria R.Br* were used against *Neurosporacrassa* for determination of their inhibition of growth. The methanol, petroleum ether and ethyl acetate extract with their concentrations 0.0625 to 2 mg/well were used for the observation and determination of antifungal and (MIC)

The results were summarized in the table 3. The results the maximum inhibition zone was exhibited in presence of ethyl acetate fruit extract of *Wrightiaincinctoria R.Br* followed by petroleum ether extracts at the concentration of 2 mg/well. It is interesting to note that the, methanol extracts did not shown any zone of inhibition up to 2 mg/well concentration. The (MIC) was recorded against *Neurosporacrassa* in presence of all the tested extracts of fruit of *Wrightiaincinctoria R.Br* and minimum inhibition was found only in ethyl acetate extracts at the concentration of 1mg/well.

**Table 3: Antifungal activity and MIC values (mg/well) of fruit extracts of *Wrightiatinctoria R.Br* against *Neurosporacrassa***

Sl. No.	Compounds Name	Concentration of Compound						MIC mg
		0.0625 mg	0.125 mg	0.25 mg	0.5 mg	1 mg	2 mg	
1	Methanol extract of <i>Wrightiatinctoria R.Br</i>	0	0	0	0	0	0	>2
2	Petroleum ether extract of <i>Wrightiatinctoria R.Br</i>	0	0	0	0	0	0.3	2
3	Ethyl acetate extract of <i>Wrightiatinctoria R.Br</i>	0	0	0	0	0.1	0.4	1
4	<b>Standard drug (Amphotericin)</b>	<b>25 µg</b>	<b>50 µg</b>	<b>100 µg</b>	<b>200 µg</b>	<b>400 µg</b>	<b>800 µg</b>	<b>MIC µg</b>
5	<b>Readings</b>	0	0	0	0	0.7	0.9	400

Antifungal activity and MIC values (mg/well) of fruit extracts of *Wrightiatinctoria R.Br* against *Aspergillusniger*

The fruit extracts of *Wrightiatinctoria R.Br* were used against *Aspergillusniger* for their growth inhibition. The tested extracts such as methanol, petroleum ether and ethyl acetate extracts with their concentrations 0.0625 to 2 mg/well were utilised for the observation and variation of antifungal activity and MIC. The results are very remarkable to the control of tested fungi which the results were summarized in the table 4. The maximum inhibition zone was exhibited in presence of ethyl acetate extract followed by methanol and petroleum ether extracts of *Wrightiatinctoria R.Br* at the concentration of 2 mg/well.

The MIC was calculated against *Aspergillusniger* in presence of the tested extracts of fruit of *Wrightiatinctoria R.Br* and minimum inhibition was found in methanol extracts at the concentration of 1mg/well. It is also noted that, the petroleum ether and ethyl acetate extract did not exhibit zone of inhibition up to 2 mg/well concentration.

**Table 4: Antifungal activity and MIC values (mg/well) of fruit extracts of *Wrightiatinctoria R.Br* against *Aspergillusniger***

Sl. No.	Compounds Name	Concentration of Compound						MIC mg
		0.0625 mg	0.125 mg	0.25 mg	0.5 mg	1 mg	2 mg	
1	Methanol extract of <i>Wrightiatinctoria R.Br</i>	0	0	0	0	0.1	0.3	1
2	Petroleum ether extract of <i>Wrightiatinctoria R.Br</i>	0	0	0	0	0	0.2	2
3	Ethyl acetate extract of <i>Wrightiatinctoria R.Br</i>	0	0	0	0	0	0.5	2
4	<b>Standard drug (Amphotericin)</b>	<b>25 µg</b>	<b>50 µg</b>	<b>100 µg</b>	<b>200 µg</b>	<b>400 µg</b>	<b>800 µg</b>	<b>MIC µg</b>
5	<b>Readings</b>	0	0	0.2	0.3	0.5	0.7	100

### Bibliography

1. Agarwal, V.K.(1981).Seed borne fungi and viruses of some important crops. Research Bulletin,G.B. Plant University of Agriculture and Technology, Pantnagar (Nanital) U.P.Res.Bull 108:85-97.
2. Bessey, E.A. (1950).Morphology and Taxonomy of Fungi. The Blakistan Co, Philadelphia (reprint 1971). A.HafnerPub.Co.New York.
3. Booth, C. (1971). The genus of *Fusarium* New survey,Commonwealth mycological Institute Kew, survey, United Kingdom: 237.
4. Dodge C.W. (1928) .Morphology and Taxonomy of fungi McGraw Hill, New York. Indian subcontinent Edition. Maheshwari J.K. 359-362.
5. Dube H.C (1990). An introduction to Fungi, Vikas Publishing House, New Delhi.-1-605.
6. Gerlach, W. and Nirenberg, H. (1982). The genus *Fusarium* a Pictoral Atlas.Mitt.Biol.Bund.Land-forest: 209-406.
7. ISTA,(1966). International rule for seed testing. Prof. Inst. seed test. Assoc.31: 1-152.
8. Joseph, C. Gilman (1960). A Manual of soil fungi, The Iowa State College, Press.

9. **Keith, Scifert**(2002). Fuskey (*Fusarium* inter key).
10. **Mukadam, D.S (1997)**. The illustrated kingdom of fungi, AkshargangaPrakashan, Aurangabad. (M.S) 1-110.
11. **Mukadam, D.S, Ashok M. Chavan, M.S Patil and Anjali R.Patil (2006)**. The illustrated fungi, Saraswati Printing press, Aurangabad (M.S) Indian.
12. **Ramnath, P. Neergaard and Mathur(1970)**. Identification of *Fusarium* species on seed as they occur in Blotter test, proc. Inst. Seed test asst.35:121-144.
13. **Neergard,P. (1977). Seed Pathology, Vol. 1. John. Wiley and Sons, New York.**
14. **Wollen, Weber, H. W. and Reinking, O.A (1935)**. Die.*Fusarium*ihreBeschreibung. Schadwirkung and Be Camp fang, Berlin, Paul Pary, PP.335.

## **Enumeration Of Micro-Flora On The Library Books**

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**Abstract :**Books are integral part of our life, an indispensable source of education and entertainment. Large collections of books are stored and preserved for decades and centuries in libraries. Books are mainly printed on paper which is made up of lignocellulose materials. Many bacteria and fungi can degrade this lignocellulose material. These microorganisms are carried to books during reading and storage process. Some resilient microbial species can colonize on the book pages if environmental conditions are suitable and they form the book microflora. Hence an attempt has been made to enumerate the microflora of some randomly selected books. In this study we found 3 species of bacteria Actinomycete and 4 fungal species.

**KeyWords:** Library books, Micro flora, Enumeration, Fungal Species, Bacteria, Actinomycete

### **1. Introduction**

Reading is a process involving recognition and understanding the words and their comprehension to make sense and interpretation of written symbols or letters. Aina et al. (2011). Reading of books has been made feasible by the libraries which are very cheap source or even free source of obtaining desired books. There are countless benefits of libraries, they not only are the best and safe repositories of the books but are the information resources to support the communities. Libraries are also a good place for gathering of like-minded people (Lankes 2012). Although there are more advanced electronic resources available for reading books, paper bound hard copies of books are the integral part of our reading life. Preservation of the books and paper records in libraries is a crucial task as paper can be deteriorated due to various reasons such as quality of paper, physical handling i.e. physical deterioration (T.D Jarrel, J.M. Hankins (1936). Deterioration of books and papers has been the serious problems for libraries since decades, exact life of paper coming from the press can not be predicted and control measures cannot be estimated, furthermore serious attention has not been given to identify the agents responsible for deterioration (Barrow WJ, Sproull RC 1959). Causes of library material deterioration may be physical, Natural such as temperature, humidity, dust, airborne pollutants, moulds, pests, which may gradually increase and cause more deterioration which is even irreversible, there are two forms of deterioration, one is physical deterioration caused by physical handling and environmental factors such as light, air temperature, humidity, dust etc. other type of deterioration is biological deterioration also called as biodeterioration caused by, Insects, mites and microorganisms such as bacteria and fungi (Zainab Usman Mahmood ; Hauwa Muhammed Mari 2013). Paper provides an excellent source of substrate for microorganisms. Cellulosic material used in manufacturing of paper serves as an organic carbon source for many bacteria and fungi, these microorganisms can colonize on the surface of paper and produce pigments and acids leading to deterioration of the paper (F. Pinzari and B. Gutarowska. 2021). In the present study we attempt to enumerate such microorganisms forming microflora of books in the library.

### **2. Materials and Methods**

#### **2.1 Materials: Sample (Books for study), Sterile cotton swabs, Nutrient agar, Potato**

#### **dextrose agar, sterile Petri plates**

#### **Nutrient agar for isolation of bacteria :**

Composition per liter : Peptone 10g, Sodium chloride 5 g , Beef extract 3 g , Distilled water 1000 ml, pH 6.8, Agar agar 2 %

#### **Potato dextrose agar for isolation of fungi :**

Composition per liter:

Potato (peeled) 200.0 g, Dextrose 20.0 g , Agar 15.0 g , Distilled water 1000 ml. pH Self adjusted to 6.5, Gram's Staining kit, Lactophenol cotton blue, Sterile saline (0.85% NaCl)

### **2.2. Methods :**

**2.2.1 Sample Collection:** For enumeration of microflora, two books each from 10 racks were randomly selected i.e. total 20 books were selected and picked up. Sterile cotton swabs were rubbed on inner side and edges of deteriorated pages and immediately diffed in to sterile saline and the swab tube was closed immediately. These samples were brought to the laboratory and stored in the refrigerator till further procedure next day.

#### **2.2.2 Preparation of media**

Nutrient agar and potato dextrose agar were prepared according to the given standard composition and

procedure Both the media were sterilized at 121<sup>0</sup>C for 15 minutes (Deshmukh A.M.2007).mean while sterile Petri plates were labelled according to media and book numbers. After sterilization was completed media was poured into the respective sterile Petriplates under strictly aseptic conditions. Plates were allowed to cool and solidify. Swab sample suspensions collected from library books were spread on 10 PDA plates and 10 Nutrient agar plates. Plates were incubated at 30<sup>0</sup>C for 72 hours. After 72 hours colony

SN	characters	Isolate 1	Isolate 2	Isolate 3	Isolate 4
1	Size	5 to1.5 mm	10 to 17 mm	12 mm	Full plate touching the lid
2	Shape	Round	round	round	Filiform
3	Colour	gray	black	Bluish green	White to buff
4	Surface	filiform	filiform	filiform	filiform
5	Margin	Fuzzy	Fuzzy	Fuzzy	Fuzzy
6	Elevation	Raised	Raised	Flat	Flat
	Consistency	Butyrous	Butyrous	Butyrous	Buterous

characters on nutrient agar plates as well as Potato dextrose agar plates were noted down. Gram's Staining and motility of bacteria was performed while lactphenol cotton blue staining of fungi was done(Deshmukh A.M.2007).

### 3. Observations

#### 3.1. Morphological Characteristics of Bacterial Isolates

**Table 3.1.1. Colony characters of the Bacterial isolates from books randomly picked from 10 different book racks.**

SN	characters	Isolate 1	Isolate 2	Isolate 3
1	Size	3mm	2mm	2mm
2	Shape	Circular	Circular	Circular
3	Colour	Off white	Yellow	White
4	Surface	Rough	Smooth	Rough
5	Margin	Irregular	Irregular	Wavy
6	Elevation	Raised	Raised	Flat
7	Opacity	Opaque	Opaque	Opaque
8	Consistency	Buterous	Buterous	Buterous
9	Gram's nature	Gram +	Gram +	Gram +
10	Motility	Nonmotile	Nonmotile	Nonmotile

NB: Gram + = Gram positive

- Colony Characters on nutrient agar incubated at 30<sup>0</sup> C for 72 hours

#### 3.2.Morphological Characters of Fungal Isolates

**Table 3.2.1 Colony characters of the Fungal isolates from books randomly picked from 10 different book racks.**

Note:Colony Characters were noted after the growth on Potato dextrose agar after Incubation of 72 hours at 30<sup>0</sup>C

**Table 3.2.2 Microscopic Characters of Fungal Isolates.**

Isolate No	Microscopic observation
1	Globos sporangia with columella oval to round branched unbranched Sporangiohores
2	Hyaline conidiophores with chain of conidia arranged in basipetal succession
3	Subgolbos conidia arranged in chains on bottle shaped conidiophores forming broomlike structure
4	Slender curved conidia on unbranched loosely branched conidiophores called phialides

### 4. Results and discussion

- From colony characters and Grams staining 3 bacterial isolates appear to be the Actinomycetes Species(Table 2.1.1)
- Four fungal Isolates 1,2,4 and 3 belong to *Mucor*, *Aspergillus*, *Penicillium* and *Fusarium species* respectively (table 2.2.1amd 2.2.2).

We randomly picked up 2 books each from 10 racks and attempted to isolate bacteria and fungi on nutrient agar and potato dextrose agar respectively. We got similar colonies on most of the media plates so we

consolidated the results on the basis of similarity of the phenotypic characters. We obtained 3 bacterial isolates and 4 fungal isolate as shown in the observation table and photographs. *Actinomycetes* are bacterial species many of which can degrade lignocellulose material (Nita Saini,<sup>1</sup> Neeraj K. Aggarwal, Et al' 2015) which is the main component of book paper so they can be responsible for biodeteriorations of books. We found 4 different fungal species comprising book microflora which were Identified as *Mucor Species*(ArdeshirZiaee, Mohammadali Zia,, Et al, 2016), *Aspergillus Species*(BetilOzhak-Baysan \*,Ana Alastruey-Izquierdo,Etal,2010). *Penicillium species*(Suhaid A. Bandh , Azra N. Kamili ET al,2011) and *Fusarium species*(Wolfgang Garlech ,Helgard Nirenberg Et al,1982).

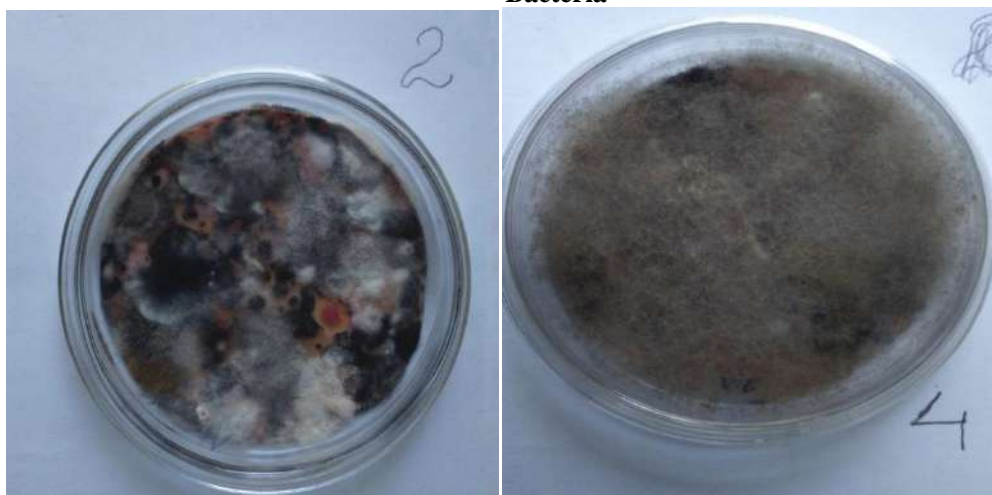
**Conclusion:**

Hence from 20 books selected for study we could enumerate 3 actinomycetes species and 4 fungal Species.

**Photographs.**



**Bacteria**



**Fungi**

**References:**

1. .Ardeshir Ziaee,1 Mohammadali Zia,2, Mansour Bayat,1 and Jamal HashemiArdeshir Ziaee,1 Mohammadali Zia,2,\* Mansour Bayat,1 and Jamal Hashemi, 'Molecular Identification of Mucorand LichtheimiaSpecies in Pure Cultures of Zygomycetes'.Jundishapur J Microbiol. 2016 April; 9(4):e35237.doi: 10.5812/jjm.35237.
2. .Aina, Adebowale J. &Okusaga, Tajudeen O. &Taiwo, Adebowale&Ogundipe, Titilayo C.
3. (2011). The Role of Library in Promoting Reading Habits Among Nigerians.Journal of
4. Research in Education and Society, 2, 1, 168.
5. Barrow WJ, SproullRC(1959). Permanence in book papers; investigation of deterioration in modern apers suggests a practical basis for remedy.Science.;129(3356):1075-84. doi: 10.1126/science.129.3356.1075. PMID: 13646639.
6. .BetilOzhak-Baysan Ana Alastruey-Izquierdo ',RabinSaba DilaraOgunc,Gozde Ongut , AysenTimuragaoglu GokhanArslan , Manuel Cuenca-Estrella& Juan Luis Rodriguez-Tudela(2010), 'Aspergillusalliaceusand Aspergillusflavus co-infection in an acute myeloid leukemia patient.Medical Mycology November 2010, 48, 995–999.

7. .Deshmukh A.M. (2007).Handbook of Media Stains and Reagents in:Microbiology, Oxford Book Company: 65, 68, 73,127.
8. F. Pinzari and B. Gutarowska.( 2021).‘ Extreme Colonizers and Rapid Profiteers: The Challenging World of Microorganisms That Attack Paper and Parchment’.In: Microorganisms in the Deterioration and Preservation of Cultural Heritage; Edith Joseph (Ed). Springer ISBN 978-3-030-69410-4 ISBN 978-3-030-69411-1 (eBook) <https://doi.org/10.1007/978-3-030-69411-1>: 79-116
9. Nita Saini,1 Neeraj K. Aggarwal,1 Anuja Sharma,1 and Anita Yadav2(2015). ‘Actinomycetes: A Source of LignocellulolyticEnzymes’EnzymeResearch,Volume 2015 |Article ID 279381 | <https://doi.org/10.1155/2015/279381>.
10. R David Lankes(2012).’ Communities: Expect a Platform’ In: Expect more: demanding Better Libraries for Today’s complex World.: 75-83. R,DavidLankes publisher, <http://davidLankes.org>.
11. Suhaib A. Bandhl Azra N. Kamili1 and Bashir A. Ganai (2011). ‘Identification of somePenicilliumspecies by traditionalapproach of morphological observation and cult.African Journal of Microbiology Research Vol. 5(21), pp. 3493-3496, 9 October, 2011, <http://www.academicjournals.org/AJMR> .DOI: 10.5897/AJMR11.677 .ISSN 1996-0808 ©2011 Academic Journals.
12. T.D Jarrel, J.M. Hankins(1936). ‘DETERIORATION OF BOOK AND RECORD PAPERS’.
13. Technical Bulletin No. 541, U. S. Dpt.Of Agriculture.<http://naldc.nal.usda.gov:1-2>
14. Wolfgang Garlech ,Helgard Nirenberg Et al(1982). ‘The Genus Fusarium’ In: The Genus fusarium - A pictorial Atlas.: 8 -12. Commissionsverlag Paul Parey,Berlin and Hamburg, Lindenstrabe 44-47,D-1000,Berlin 61, ISSN 0067-5849, ISBN 3-489-20900-1
15. ZainabUsmanMahmood1 ;HauwaMuhammed Mari(2013).’ Deterioration of Library Resources and its Causes: Theoretical Review, International Journal of Basic and Applied Science, Vol 01, No. 04, : 73-778.

## **Study of Improvement in Behavior of College Students Through Sahaja Yoga Meditation**

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**Abstract** –Meditation is a key practice which has become an essential factor. It can produce structural changes in your brain like enhancing attention, perception, and focus. Person who practices Sahajayoga meditation can not only experience relief from stress and anxiety but also from all physical ailments. In the student's phase, unnecessary stress, emotional setbacks, tension, anxiety can be easily handled by Sahajayoga meditation. A dedicated credit based compulsory course is designed to teach students meditation alongwith the detailed structure of subtle system and simple treatments to deal with the physical, mental, emotional ailments. Around 100 samples Were taken, and course was conducted with some practical approach and findings on daily basis. The students were told to practice meditation on daily basis and record their results. 80% results were showing improvement in daily routine, reduction in physical ailments, reduction in stress, improvement in thought process and sound sleep, are to name the few. Indeed, meditation can make life better.

**Keywords:** Sahajayoga, Students, Yoga, Meditation

**INTRODUCTION:** Meditation and Yoga which forms an ancient technique in India, has gained popularity in western world also. The current scenario of pandemic Covid 19 faced by whole world has shown human beings that meditation and yoga along with traditional use of herbs can give better immunity. Long back Patanjali in Ashtang Yoga has defined 8 limbs of Yoga as yama (abstinences), niyama (observances), asana (yoga postures), pranayama (breath control), pratyahara (withdrawal of the senses), dharana (concentration), dhyana (meditation) and samadhi (absorption). [16] Samadhi forming the highest and the deepest state which was believed to be difficulty most part asking for tremendous dedication, detachment and capable of consuming whole life of individual. In 21<sup>st</sup> century, due to time limits and people believing in fast results, spirituality has also grown into new aspects, with fast and speedy results. Perspective of looking at the spirituality has change in due course of time and now people not only want quick results but also all over benefits in less time.

**Sahaja Yoga Meditation :** Sahajayoga Meditation is such a unique technique introduced by H H Shree Mataji Nirmala Devi Srivastava in 1970 wherein kundalini awakening, and self-realization takes place in simple steps. SAHAJA means 'BORN WITH YOU' or 'SPONTANEOUS' and YOGA means 'UNION WITH THE DIVINE'. Sahajayoga is simple way of meditation which integrally works on physical, mental, emotional, and spiritual wellbeing of an individual giving overall benefits related to social, financial, cultural wellbeing. It works on the subtle system also called as chakras (energy centers) and helps an individual to be in the balance state all the time.

**About the Founder :** Shree Mataji herself was a scholar of medical science as well as a person of the divine internal energy. As a result of the spiritual inner consciousness of Shri Mataji, she studied the development of human consciousness and evolution of humans. As a result of her deep practice, penance and foresight, she conveyed the knowledge of source and transmission of the internal and spiritual energy to the masses. Shree Mataji studied the effects of this divine energy on the various aspects of human life, including in the field of education. Regarding education, Shree Mataji evolved a very simple theory that the best learning can only be achieved by teaching with stress free mind, energy and strong will. Let us know what Sahaj yoga is and how does the awakening and circulation of our inner energy work out. We must say, since this is a living process, we can experience it practically. The power of God or the power of nature evolved us from the status of Amoeba and brought us to the level of human beings. One may say that it's a work of the divine and the other may say it's a work of nature. Fact remains that, human being is one of the best compositions because the best powers of the creator can be seen only in the creation called a human being. Sahaja Yoga is not only a process of meditation, but it creates an inner revolution capable of bringing about the transformation of human beings into spiritual beings who gradually manifest sublime qualities of unselfish love, compassion, generosity, and detachment. Such person lives in a progressively profound state of bliss and inner peace. It is a living process and a gradual transformation of our consciousness, not a mere process, mental projection, or a concept. As the seed sprouts, then grows from a small shoot into a mighty tree, Sahaja Yoga grows both individually and collectively in an entirely natural way. Sahaja Yoga is a spiritual movement of global proportions. People from more than 150 countries

around the world, from all age groups and diverse religious and social backgrounds, are united by their experience of the same inner joy and peace.[20] Sahaja Yoga involves the awakening of a subtle spiritual energy known as the Kundalini which lies dormant in the sacrum bone at the base of the spine in three-and-a-half coils. Sacrum is derived from the Greek word for “sacred.” The gentle awakening of this Kundalini energy and the inner journey of self-discovery is known as Self Realization or Yoga. Those who have received Realization are known as “realized souls” or *dweejaha* in Sanskrit, meaning “twice born.”[20]

**There are many benefits of practicing Sahajayoga Meditation –**

1. Self-realisation
2. Protection from illness
3. Improved sleeping pattern
4. Spiritual awakening
5. Subtle system (chakras) cleaning
6. Positive impact on daily work
7. Helps in emotional wellbeing and self-improvement
8. Ability to stay calm and non-reactive
9. Improved concentration, attention, and focus
10. Long term and sustained resilience
11. Ability to focus energy on holistic healing
12. Increased sense of high purpose in life and spirituality
13. Increased skills for career advancement and professional success

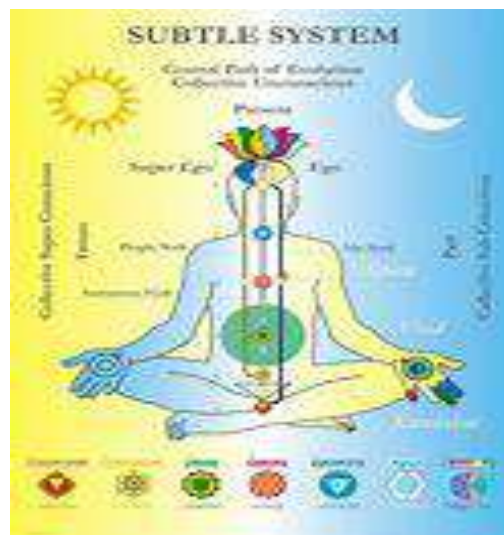


Fig 1: Subtle System

**Methodology:** World peace can be only achieved when it starts from individual basis. It is the concept of peace, happiness, and wellbeing among all the human beings. The opening sentence of the preamble of the Constitution of UNESCO states correctly “Since war begins in the minds of men, it is in the minds of men that the defense of Peace must be constructed”. So, to start with peace, the individual men to be taken as target.[17] As it will start with individual being, it will grow and change the society into an ideal society as stated in Indian Mythology as Ram rajya. Wherein, the society is at complete peace and enjoying the bliss with very less or no conflicts at all with in complete harmony with each other. So, if the individual is captured in the learning phase of their life; that is in school and college days then it will work to its maximum level. As rightly quoted by Mahatma Gandhi - **“If we are to teach real peace in the world, we shall have to begin with children”**. Taking this concept further and making it into reality, Hon Prof Dr. Vishwanath D Karad Sir and Hon Sri Rahul Karad Sir launched Peace studies courses in Dr Vishwanath Karad MIT World Peace University, Pune. Along with the traditional syllabus, a unique curriculum was launched under World Peace Subjects. These credit-based course subjects consist of curriculum based on various topics related to ancient wisdom taught and nurtured into Indians by our great tradition and heritage. All subjects are compulsory subjects throughout all Schools along with exams to test the knowledge of students.

One such curriculum designed is based on Sahajayoga Meditation. Some of the key points to be taught in

this curriculum are –

1. Detailed structure of energy centers
2. Clearance of subtle system (chakras)
3. Balancing - how to balance oneself
4. Left side and right side clearing
5. Putting yourself into bandhan
6. Icepack treatment
7. Footsoak treatment
8. Introspection
9. Liver diet
10. Effect of music on meditation

Along with meditation, practical experiences and feelings on individual basis are noted and the results received from these observations are then formulated to show the benefits on the individual basis to the students on their overall being. The students who were facing some physical or mental ailments then ailments specific treatments are suggested, and observations are noted down. As per individual state, different chakras and mantras and some simple techniques are advised to the students so that they can treat their own ailments may be physical, mental, emotional and/or spiritual. We cannot become immune to illness, but we can use our meditation to make us stronger and able to avoid the kind of problems which are essential in today's hectic, stressful lifestyle.

**Implementation of Subject :** A credit-based course was developed with meditation and practical sessions for meditation and treatments taken as prime inputs for curriculum. The course structure includes meditation process, balancing of left and right side, details of all energy center and their qualities, deficiency and diseases associated with imbalances in energy center, liver diet, daily treatments to be followed and effect of music on meditation. All the details of curriculum are conducted during lectures.

**Observations :** Every lecture consists of short meditation sessions along with theory and practical session. All the students from Third Year of polytechnic from streams like computer, civil, mechanical, electronics has taken up with course as a compulsory subject. Around 100 students were taught about the theory of the subtle system through presentations and then practical approach about meditation carried out during every lecture. Some excel sheets giving feedback and self-analysis were filled by all students during lectures. These data consist of self-journey through activities like self-assessment, appointment with self, lifestyle pattern and selfless act.

1. Self-assessment - Herein through self-assessment survey on chronic problems faced by students, treatments for the problems, subtle system affected is done. The students are individually guided for the specific problems they are facing. Then every individual is suggested to meditate every day along with some specific treatments as per the requirement.
2. Appointment with Self - Students are advised to keep the track for the daily meditation being carried out and the difference plus improvement they can find it in themselves.
3. Lifestyle pattern – In this, students are advised to keep a track for the daily self-pattern of sleep, food intake and information consumption. The record of the self-lifestyle pattern was the assessed by students themselves.
4. Selfless Act – In the students were advised to contribute to the society and share their own experiences about the act they are doing selflessly.

Assessment	Criteria	Activity	Maximum Score	Score
End Term Examination	Self Journey	Self Assessment	5	5
		Appointment With Self	5	5
		Total Score	10	10
Assessment	Criteria	Activity	Maximum Score	Score
End Term Examination	Self Discipline	Lifestyle Pattern	10	9
		Selfless Acts	5	5
		Video on self course	5	5
		Total Score	20	19

Fig 2: Assessment sheet filled by students

**Results :** The conclusions of the above survey showed that the students become aware about the self-activities, self-awareness and self-indulgence. Maximum students felt that they were not aware about their own goodness and indulgences. All the students had to mark themselves as per the pointers allotted to each act. Depending upon these the conclusion was made. Students secured 80% and above marks in the total act they had performed. This clearly indicates that the students were able to find difference between themselves with lots of positivity after doing meditation on regular basis. This helped with increase in their concentration, positive approach, balanced lifestyle pattern, good and sound sleep, healthy food intake and positive behavioral pattern. Routine meditation helped them to know about their own disorders and limitations apart from chronic problems. Regular meditation helped students to overcome many of their chronic problems and made them aware about their own wellbeing. Students learnt about subtle system and techniques where they can clear their imbalances easily at home on daily basis. Knowledge of self was the biggest achievement that these students were able to imbibe in themselves. In another research, 40 sample were taken from the student of Engineering, similar feedback is available. The students were allowed to meditate with simple steps and then sitting silently with introspection. All the students gave feedback of feeling cool vibrations on the palms and top of the head. All students felt inner silence and peace and bliss. They were able to observe almost no thoughts and felt complete inner silence. These experiences clearly show that continuous meditation practice leads to build up in overall personality along with inner peace and bliss.

**Conclusion:** Due to Sahajayoga meditation and self-mobilized inner strength, the students were able to make unprecedented changes in their personality. Today, the former students who have emerged from these institutes have become reputed professionals in their respective fields as well as the divine messengers of Sahajayoga in their own countries.

#### **References**

1. Epigenetic Changes Associated With Two Different Conceptualisations of Meditation- A Randomised Trial Rohan Rapyal BSc, MPharm
2. Effect of Sahaja Yoga Meditation on Quality of Life, Anxiety, and Blood Pressure Control Sheng-Chia Chung, PhD,1 Maria M. Brooks, PhD,2 Madhur Rai, MD,3 Judith L. Balk, MD, MPH,4 and Sandeep Rai, MD, THE JOURNAL OF ALTERNATIVE AND COMPLEMENTARY MEDICINE Volume 18, Number 6, 2012, pp. 589–596
3. A Study to Evaluate the Effect of Sahaja Yoga Meditation on General Health, Emotional Wellness and Behavior Pattern on College Students, Nisha Rathor , Priyanka Kulshreshtha, Govindnarayan Mundra, Ram Krishna Tiwari, Sanchita Singh, Pallavi Shah, Shaileshkumar, Scholars Journal of Applied Medical Sciences, Sch J App Med Sci ISSN 2347-954X (Print) | ISSN 2320-6691 (Online)
4. Effect of Sahaja Yoga Meditation on the Nutritional Assessment of University Students, Rajeev Choudhary, 2013
5. A Study to Evaluate the Effect of Sahaja Yoga Meditation on General Health, Emotional Wellness and Behavior Pattern on College Students, N. Rathor, P. Kulshreshtha, 25 March 2020
6. Sahaja Yoga for Management of Stress & Life Style Diseases, Sandeep Rai, Madhur Rai, Yashoda Kattimani, Vishesh Agarwal, Chapter 235, Beyond Medicine
7. Meta modern era- <https://www.youtube.com/watch?v=zAvffim4p6g&t=6s>
8. How music work on chakras-
9. [https://www.youtube.com/watch?v=1Y5znywwtVI&list=PL\\_vUUIIFSygiDnhh23rkJmi-xkpe8rUQM&index=28&t=0s](https://www.youtube.com/watch?v=1Y5znywwtVI&list=PL_vUUIIFSygiDnhh23rkJmi-xkpe8rUQM&index=28&t=0s)
10. [Benefits | dcsahajayoga.org \(dcsahajayoga.org\)](https://www.dcsahajayoga.org)
11. <https://www.freemeditation.com/sahaja-yoga>
12. [www.sahajayoga.net](http://www.sahajayoga.net)

## **A Study Of Factor Affecting Job Satisfaction Employees In A Public Sector Banks**

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**Abstract:** Banking sector in India is growing rapidly and banks also facing tough competition in this global era, in this situation well motivated and diversified human employees are the asset for the organization and may become a key to success because this is a service industry. But it will be possible only if the employees of the organisation satisfied with their job and Job satisfaction is a topic of wide interest to both people who work in organization and people who study them. It is the most frequently studied variable in organizational behavior research, and also a central variable in both research and theory of organizational phenomena ranging from job design to supervision specter, 1997. Job satisfaction can defined as extent of positive fillings or attitudes that individuals have towards their jobs when a person says that he really likes his job dignity. Job satisfaction is important techniques used to motivate the employees to work harder. It are often said that 'A happy employees is a productive employee. This paper in investigates the level of job satisfaction of these two banks i.e. Bank of Maharashtra, bank of India in Nanded city identifying the satisfaction level of employees, various factors influencing satisfaction of employees

### **Statement of Problem:-**

Banking sector in India is growing rapidly and banks also facing tough competition in this global era, in this situation well motivated and diversified human employees are the asset for the organization and may become a key to success because this is a service industry. But it will be possible only if the employees of the organization satisfied with their job. Now there exists a stiff competition among banks in attracting customer. Drawing of customers from competitor bank requires provision of better services in the bank. Unless the better services are provided in the bank the customers will not remain there. Instead they will switch over to the other bank. Hence in retaining the existing customer and drawing new customers towards the bank the role of employees working in banks become more vital than ever before.

### **Significance of the study:-**

Present study focuses on factor affecting job satisfaction employees in a selected public sector banks, employees play vital role in any organization, success or failure of any organisation is always depends on its human resources, especially in service sector the role of employee play important role for the growth and success of the organisation, so well motivated staff is a key factor for the success of organisation specially in banking sector employees are the representatives of banks who interact with the customer, if employees will be well motivated and satisfied then they will provide better services to their customer and bank can achieve their goals in this era.

### **Objectives of the study:-**

Keeping the above theoretical views in mind, the following objectives have been formulated, more specifically, these are as follows:

- 1) To study level of job satisfaction or dissatisfaction among employees on public sector bank employees in selected public sector banks
- 2 To analyse Employees job satisfaction regarding salary, incentive, monetary benefits, compensation received or other financial rewards on private bank employees in selected private banks.

### **Hypothesis of the study:-**

Based on the above objectives of the study the following hypothesis have been framed to test them primary data collected from the public sector bank employees in Nanded District, these are as follows:

- 1) Selected public bank employees are not satisfied with their level of job.
- 2) Selected public bank employees are not satisfied with their salary

### **Research Methodology**

Research is a systematic method of finding solution to problem. It is essentially an investigation a recording and an analysis of evidence for the purpose of gaining knowledge. The methodology adopted to conduct a research plays a key role and forms the base for whole study. Research methodology navigates the researcher in the entire process of research in the right direction.

### **Data collection**

Data collection is the process of gathering and measuring information on variables of interest, in an established systematic fashion that enables one to answer stated research questions, test hypothesis, and evaluate outcomes. The data collection components of research is common to all fields of study including physical and social sciences, humanities, business, etc. while methods vary by discipline, the emphasis on ensuring accurate and honest collection remains the same. The goal for all data collection is to capture quality evidence that then translates to rich data analysis and allows the building of a convincing and credible answer to question that have been passed regardless of the field of study preference for defining data (quantitative, qualitative), accurate data collection is essential to maintaining the integrity of research. Both the selection of appropriate data collection instrument (existing, modified, or newly developed) and clearly delineated instructions for their correct use reduce the likelihood of errors occurring.

#### **Primary Data:-**

1. Observation of employees:
2. Survey.
3. Questionnaires.
4. Interview:

#### **Secondary Data:-**

1. Articles published on employee's job satisfaction.
2. Newspaper and books.
3. Dissertation, thesis, journals
4. Conference proceedings.

#### **Sample Design:**

Nanded is the District of Maharashtra state and comes under the Marathwada Region which comprises sixteen talukas. For the purpose of the present research study, the researcher selected all the branches of major public banks in Nanded district and chosen as a sample all (100%) employees of these selected banks on the basis of census survey method. Census survey method is a least time consuming of all sampling technique the sampling units are accessible, easy to measure and cooperative. The researcher personally contacted 100 employees of selected different

#### **Analysis & Interpretation Of Data**

##### **Level of job satisfaction**

Job satisfaction is the level of contentment a person feels regarding his or her job. This feeling is mainly based on an individual's perception of satisfaction. Job satisfaction can be influenced by a employees ability to complete required tasks, the level of communication in an organization, and the way management treats employees.

There are often two different level of job satisfaction one is affective job satisfaction and another is cognitive job satisfaction. Affective job satisfaction is a employees emotinal feeling toward the job as a whole. Congative job satisfaction is how satisfied a employee feels concerning an aspect of his or her job, such as pay ,hours, or benefits.

**Table no 1 Level of job satisfaction**

<b>Level of job satisfaction</b>	<b>Frequency (N)</b>	<b>Percentage</b>
Low	40	61.53
Medium	16	24.61
High	9	13.84
Total	65	100

**Graph No51 Level of job satisfaction**



The above table no 1 and graph shows that 61.53 percent employees level of job satisfaction is low, in 24.61 percent employees, employee level of job satisfaction is medium, in 13.84 percent employees, employee level of job satisfaction is high, it indicate that the Employees level of job satisfaction is low satisfied.

**Salary fair for work:** There is a conflict among the behavioural scientists over whether money is a motivator or not. Although there are divergent views but two things can be said for sure in this regard:

- a) Money is not the biggest motivator.
- b) Money

Salary is a form of periodic payment from an employer to an employee, which may be specified in an employment contract. It is contrasted with piece wages, where each job, hour or other unit is paid separately, rather than on a periodic basis. From the point of a view of running a business, salary can also be viewed as the cost of acquiring human resources for running operations, and is then termed personnel expense or salary expense. In accounting, salaries are recorded in payroll accounts..

**Table no 2**

Opinion of employees	Frequency of respondent (N)	Percentage
Yes	25	38.46
No	40	61.53
<b>Total</b>	<b>5</b>	<b>100</b>

Sources:-Data Collected through survey

**Graph no 2 Salary fair as per work of employees**

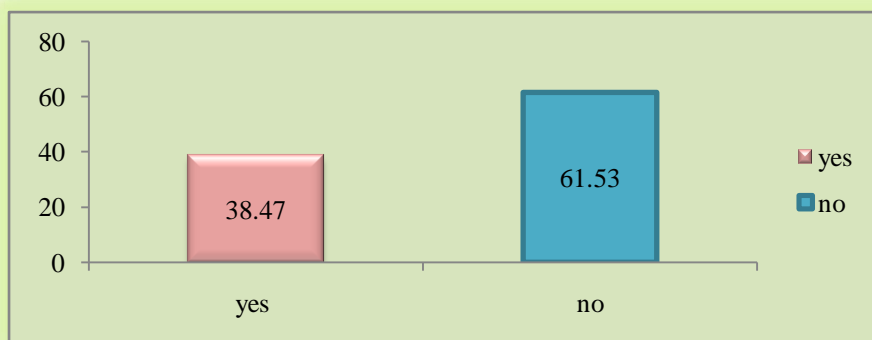


Table No 2 and Graph no 5.2.6 reflects that out of the total number of respondent Employees under a study, 61.53 percent were Employees opinion about salary fair as per work of employees is No. And 38.47 percent were employees opinion about salary fair as per work of employees is yes. It indicates that the more number of employees are not agreeing for salary is fair for as per employees work.

**Testing of Hypothesis:**

**1) Selected Private bank employees are not satisfied with their level of job satisfaction job**

Here,  $H_0$  = Selected Private bank employees are not satisfied with their job  
 $H_1$  = Selected Private bank employees are satisfied with their job

**Table- 5.2.24 Calculation of Chi-square Values of employee's satisfaction**

<i>d.f.</i>	at 5% level of significance the table value	$x^2$
8	15.51	8.88

*Source: Calculated by researcher with the help of primary data*

It is found that, the calculated value of chi-square ( $x^2$ ) is 8.88, whereas for 8 degree of freedom at 5% level of significance the table value is 15.51. Since, the calculated value of  $x^2$  is less than the table value. Therefore, null hypothesis is accepted.

Hence, the present hypothesis i.e. Selected Private bank employees are not satisfied with their job is **accepted**.

**I) Selected Private bank employees are not satisfied with their salary, Incentives and other benefits.**

Here,  $H_0$  = Selected Private bank employees are not satisfied with their salary,  
 Incentives and other benefits.

$H_1$  = Selected Private bank employees are satisfied with their salary,  
 Incentives and other benefits.

**Table- 5.2.25**

**Calculation of Chi-square Values of salary, incentives & other benefits**

<i>d.f.</i>	at 5% level of significance the table value	$x^2$
2	5.99	4.59

*Source: Calculated by researcher with the help of primary data*

It is found that, the calculated value of chi-square ( $x^2$ ) is 4.59, whereas for 2 degree of freedom at 5% level of significance the table value is 5.99. Since, the calculated value of  $x^2$  is less than the table value. Therefore, null hypothesis is failed to reject

Hence, the present hypothesis i.e. Selected Private bank employees are not satisfied with their salary, Incentives and other benefits is **accepted**.

**Findings:-**

1( respondent employees 140 (56%) employees said that their level of job satisfaction is low, 80 (32%) employees said that their level of job satisfaction is medium and only 30 (12%) employees said that their level of job satisfaction is high, so, it indicates that the majority i.e. 140 (56%) employee's level of job satisfaction is low and only 30 (12%) employee's level of job satisfaction is high.

2) It is found that as per table No. 5.2.8 and graph No 5.2.8 out of the 250 respondent employees under the study, 71.6 percent of employees had opinion about job security as unsecure and 28.4 percent were employee's opinion about job security as secure. It indicates that the majority i.e. 71.6% of employees are not satisfied about their job security in selected five private banks in Nanded district.

**Conclusions**

Thus, it can be concluded that there is a lot which can be done and needs to be done by the banks, to improve the employee's level of job satisfaction, which they want. The study indicated that the 28.4% of the interviewed employees were of opinion that their job is secure or job security is high, 32% said they were satisfied with the salary which they get for their work, 44% said they have flexibility in working hours, 24% of the employees said they are having different opportunities in their work which provide them with a chance to showcase their talent and get rewards, 60% of the employees were satisfied with the space available for lunch and breaks, 38.46% of them were happy with the surrounding environment, only 45.2% were satisfied with the benefits offered to them by the bank. The study clearly shows that only small numbers of employees working in the selected banks were satisfied with their jobs or it clearly shows that larger number of employees is not happy with the facilities provided to them by the banks. It provides an insight that there is a lot of space for improvement of this conditions provided by the bank.

**Reference**

1. Sinha, D., “**Job Satisfaction in Office and Manual Workers**”, Indian Journal of Social Work, D.F., 1958, Vol. 19, pp. 39-46.
2. Roy, D.F., “**Job Satisfaction and Informal Interaction**”, Human Organisation, 1960, Vol. 18, pp. 158-168.
3. Porter, L.W., “**A Study of Perceived Need Satisfaction in Bottom and Middle Management Job**”, Journal of Applied Psychology , 1961, Vol. 45, Issue No. 1, pp. 1-1

## **Title –Assessing The Impact Of The Mode Of Learning On Wellbeing Of College Students: A Students' Perspective.**

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**Abstract:** Spread of covid - 19 has led to significant changes in higher education system. Students have experienced both online and offline mode of learning extensively in last two years. Present study is designed to understand perspective of students from Vasai – Virar area about effective mode of education for their subjective wellbeing. The data of total 666 college students was analysed for the present study. The subjective wellbeing of college students was analysed on three dimensions - Emotional wellbeing, Psychological wellbeing, Social wellbeing on the basis of self-report. Chi square test was applied to know students' preference for Online, Offline and Blended mode of learning for enhancing their subjective wellbeing. Findings of the study supports that dimensions of wellbeing (Emotional wellbeing, Psychological wellbeing, Social wellbeing) and mode of learning (Online, Offline, Blended mode) are dependent and students gave strong preference for offline mode of learning for all three dimensions of wellbeing. Also, Gender and mode of learning are associated and female students prefer offline learning strongly for their wellbeing compared to male students.

**Keywords:** – Online education, Offline education, Wellbeing, Gender.

### **Introduction**

Spread of Covid – 19 has led to devastating effects on functioning of the society in last two years. Education system in India was not exception to that. In lockdown period, educational institutions in India were closed for indefinite time for protecting students from covid – 19 infection, but education is a basic need of today's time that can't be obstructed for longer period of time. Colleges in India have come up with innovative ways to reach to their students and to provide them education in this pandemic situation. Though the Online mode of teaching and learning was pre-existing; it became a common mode of learning in pandemic period. Lectures through videoconferencing, recorded lecture, Learning Management Systems were used by higher educational institutes to provide effective education to their students. Despite of all the adversities of situation, students and teachers adapted to online mode of teaching and learning to the greater extent; however, it is essential to understand how this change in mode of education has affected the psychological health and wellbeing of students.

During the pandemic situation, students went through various issues like adapting with new methods of education, learning new technology, uncertainties about examination pattern, getting access of online content. Students in rural and tribal area suffered from various issues related to access and network connectivity. Students having financial difficulties could not have access to smartphone or any other device required for online education. Besides that, some students faced the direct exposure of trauma like getting infected with covid – 19, loss of loved ones, financial crisis, migration, loss of contact with friends, etc. It created severe stress in students. Fear of covid – 19 is found to be very high in Indian students along with depression and anxiety. (Chaudhary et. al. 2021) As college students were more concerned about loss of academic year, uncertainty about career and disrupted job market, they were more vulnerable for mental health issues such as increased levels of stress, loneliness, over-thinking, anxiety, depressive thoughts, sleep disruptions, difficulty in concentration, anger outburst, etc. (Jacob et. al. 2021).

Despite of facing so many adversities and challenges, many college students cope up with online education. They adapted with technology and online teaching – learning methods. It provided the way for distant learning in pandemic situation. Being a fundamental necessity, it was must to continue higher education even in pandemic situation and online education made it possible. As the life began to return to normal functioning, colleges have started offline education step by step. Since, students have experienced both mode of learning in last two years, it is essential to understand students' preference for online and offline learning for their psychological wellbeing.

In the book 'Handbook of Positive Psychology' authored by Snyder and Lopez mental health is defined as a syndrome of symptoms of wellbeing. According to the model given by Keyes (1998), there are three dimensions of wellbeing – Emotional wellbeing, Psychological wellbeing and Social wellbeing. Emotional wellbeing is prominently related to happiness, satisfaction and positive affect. Psychological wellbeing is related to self-acceptance, personal growth, autonomy, and purpose in life. Social wellbeing incorporates social acceptance, social contribution and social coherence. In Lockdown period college students suffered from various mental health issues. It is the responsibility of educational authorities,

government and society as a whole to take some positive steps for enhancing wellbeing of students.

Online education helped students to engage themselves in constructive work and relieved them from ruminative thoughts of covid infections and other issues. At the same time, it presented challenges for students. It led to loss of face-to-face contact with peers, problem of getting instant feedback, obstruction of non-verbal communication, difficulty in clear and smooth interaction with teacher, lack of concentration, boredom, lack of practical experience and the most important is lack of human touch. Thus, the question is whether the online mode facilitates or jeopardises psychological wellbeing of students. Present study is designed to understand perspective of students from Vasai – Virar area about effective mode of education for their subjective wellbeing. Since online and offline learning both have their own advantages and disadvantages, it is essential to take pole of student's opinion and preference.

**Objective of study: -**

1. To understand college students' perspective about effectivity of mode of learning (Online / Offline / Blended mode) in enhancing their subjective wellbeing.
2. To help educational institutions to plan out effective teaching – learning methods to promote wellbeing of college students.

**Statement of Problem: -**

To compare effectivity of “online”, “offline” and “blended” mode of learning in enhancing subjective wellbeing of college students.

**Hypothesis: -**

**Null Hypothesis**

Dimensions of wellbeing (Emotional wellbeing, Psychological wellbeing, Social wellbeing) and mode of learning (Online, Offline, Blended mode) are independent that is the number of frequencies in each category is equal and there is no significant difference between the expected and observed frequencies.

1. Emotional wellbeing and mode of learning (Online, Offline, and Blended mode) are independent and there is no significant difference between the expected and observed frequencies.
2. Psychological wellbeing and mode of learning (Online, Offline, and Blended mode) are independent and there is no significant difference between the expected and observed frequencies.
3. Social wellbeing and mode of learning (Online, Offline, and Blended mode) are independent and there is no significant difference between the expected and observed frequencies.

Gender and mode of learning (Online, Offline, and Blended mode) are independent and there is no significant difference between the expected and observed frequencies.

**Alternative Hypothesis**

Dimensions of wellbeing (Emotional wellbeing, Psychological wellbeing, Social wellbeing) and mode of learning (Online, Offline, Blended mode) are dependent that is the number of frequencies in each category is not equal and there is a significant difference between the expected and observed frequencies.

1. Emotional wellbeing and mode of learning (Online, Offline, and Blended mode) are dependent and there is a significant difference between the expected and observed frequencies.
2. Psychological wellbeing and mode of learning (Online, Offline, and Blended mode) are dependent and there is a significant difference between the expected and observed frequencies.
3. Social wellbeing and mode of learning (Online, Offline, and Blended mode) are dependent and there is a significant difference between the expected and observed frequencies.

Gender and mode of learning (Online, Offline, and Blended mode) are dependent and there is a significant difference between the expected and observed frequencies.

**Method: -**

This study is based on primary source of data of 666 college students (427 females and 239 males) in the age group of 18 to 24 years of age from Vasai - Virar area (Maharashtra, India). The data was gathered by a survey designed to acquire self-report of college students regarding the effectivity of Online, Offline and Blended mode of learning on their subjective sense of wellbeing.

**Operational Definition of Variables –**

1. Mode of Learning (Online, Offline, Blended mode)
2. Subjective Wellbeing (Emotional wellbeing, Psychological wellbeing, Social wellbeing)

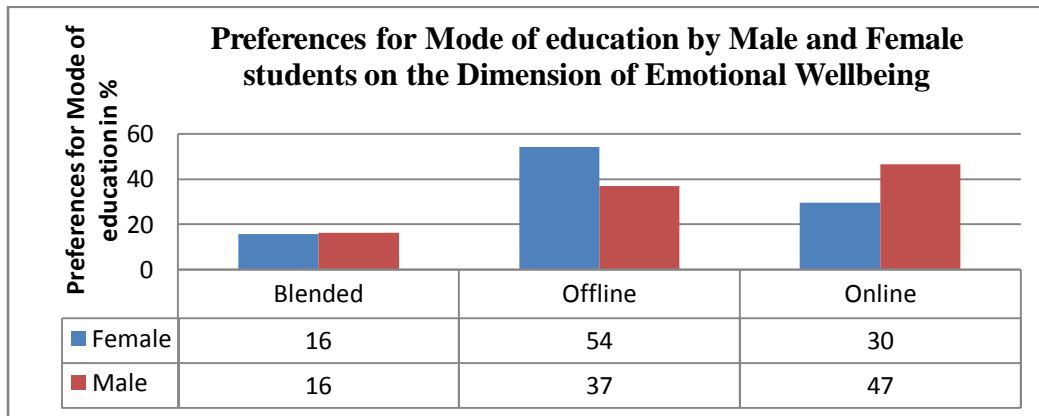
**Statistical test: –**Chi Square Test

**Results: -**

The data of total 666 college students from Vasai-Virar area was analysed for the present study. The subjective wellbeing of college students was analysed on three dimensions - Emotional wellbeing, Psychological wellbeing, Social wellbeing on the basis of self-report. Chi square test was applied to know students' preference for Online, Offline and Blended mode of learning for enhancing their subjective wellbeing.

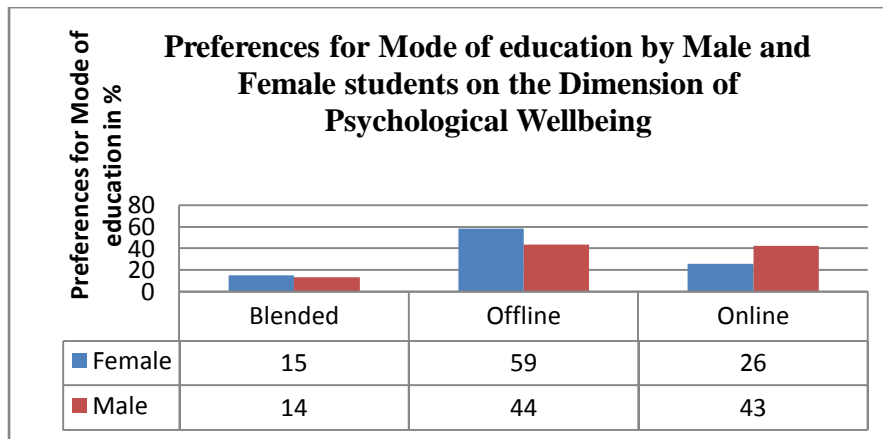
On the Dimension of Emotional Wellbeing, the number of expected and observed frequency is not equal for Online, Offline and Blended Mode of learning. Expected frequencies for Online, Offline and Blended Mode of learning were 222 for each and observed frequencies were 107, 321, 238 respectively. The value of chi square was found to be 104.67 with the DF (2) which is significant at 0.005 level. (P < 0.005 level). Thus, it rejects the null hypothesis that is Emotional wellbeing and mode of learning (Online, Offline, and Blended mode) is independent and there is no significant difference between the expected and observed frequencies.

	Online	Offline	Blended Mode	Total
<b>Expected Frequency (Fe)</b>	222	222	222	666
<b>Observed Frequency (Fo)</b>	238	321	107	666
<b>Fo-Fe</b>	16	99	-115	
<b>(Fo-Fe)<sup>2</sup></b>	256	9801	13225	
<b>(Fo-Fe)<sup>2</sup>/Fe</b>	1.15	44.15	59.57	104.9
<b>X<sup>2</sup></b>	(59.87 + 44.15 + 1.15) = 104.87			
<b>Degree of Freedom (DF)</b>	(3-1) = 2			
For DF = 2, X <sup>2</sup> of 104.87 is significant at the 0.005 level				



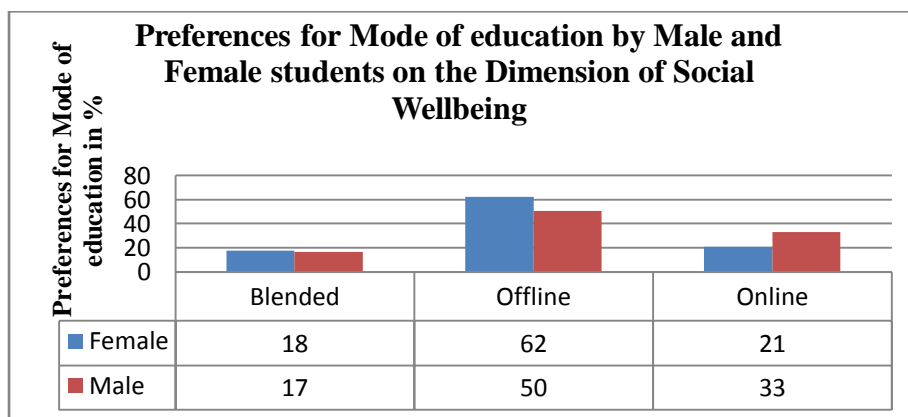
On the Dimension of Psychological Wellbeing, the number of expected and observed frequency is not equal for Online, Offline and Blended Mode of learning. Expected frequencies for Online, Offline and Blended Mode of learning were 222 for each and observed frequencies were 97, 353, and 215 respectively. The value of chi square was found to be 148.18 with the DF (2) which is significant at 0.005 level. (P < 0.005 level). Thus, it rejects the null hypothesis that is Psychological wellbeing and mode of learning (Online, Offline, and Blended mode) are independent and there is no significant difference between the expected and observed frequencies.

	Online	Offline	Blended Mode	Total
<b>Expected Frequency (Fe)</b>	222	222	222	666
<b>Observed Frequency (Fo)</b>	215	353	97	666
<b>Fo-Fe</b>	-6.627	131.4	-124.806	
<b>(Fo-Fe)<sup>2</sup></b>	43.92	17275	15576.53	
<b>(Fo-Fe)<sup>2</sup>/Fe</b>	0.2	77.81	70.16	148.2
<b>X<sup>2</sup></b>	(70.16 + 77.81 + 0.20) = 148.18			
<b>Degree of Freedom (DF)</b>	(3-1) = 2			
For DF = 2, X <sup>2</sup> of 148.18 is significant at the 0.005 level				



On the Dimension of Social Wellbeing also, the number of expected and observed frequency is not equal for Online, Offline and Blended Mode of learning. Expected frequencies for Online, Offline and Blended Mode of learning were 222 for each and observed frequencies were 115, 384, and 167 respectively. The value of chi square was found to be 183.18 with the DF (2) which is significant at 0.005 level. ( $P < 0.005$  level). Thus, it rejects the null hypothesis that is Social wellbeing and mode of learning (Online, Offline, Blended mode) is independent and there is no significant difference between the expected and observed frequencies.

	Online	Offline	Blended Mode	Total
<b>Expected Frequency (Fe)</b>	222	222	222	666
<b>Observed Frequency (Fo)</b>	167	384	115	666
<b>Fo-Fe</b>	-55	162	-107	
<b>(Fo-Fe)<sup>2</sup></b>	3025	26244	11449	
<b>(Fo-Fe)<sup>2</sup>/Fe</b>	13.63	118.2	51.57	183.4
<b>X<sup>2</sup></b>	$(51.57 + 118.22 + 13.63) = 183.41$			
<b>Degree of Freedom (DF)</b>	$(3-1) = 2$			
For DF = 2, X <sup>2</sup> of 183.41 is significant at the 0.005 level				



From the sample of 666 students, total female students were 427 and male students were 239. Chi square test was applied to know preference of male and female students for Online, Offline and Blended mode of learning for enhancing their subjective wellbeing. Expected frequencies for Online, Offline and Blended Mode of learning were 162, 167, 98 respectively for female students and 91, 93, 55 respectively for male students. Observed frequencies for Online, Offline and Blended mode of learning were 142, 190, 95 respectively for female students and 111, 70, 58 respectively for male students. The value of chi square was found to be 15.98 with the DF (2) which is significant at 0.005 level. ( $P < 0.005$  level). Thus, it rejects the null hypothesis that is Gender and mode of learning (Online, Offline, Blended mode) are independent and there is no significant difference between the expected and observed frequencies. Most of the female students prefer offline education for their wellbeing.

51.9 % of the students prefer offline mode of education for their physical wellbeing. While 32.3 % of students prefer online mode and 15.8% of students prefer blended mode of learning for their physical wellbeing.

**Observed Values**

Row Labels	Online	Offline	Blended mode	Grand Total
Female	142	190	95	427
Male	111	70	58	239
Grand Total	253	260	153	666

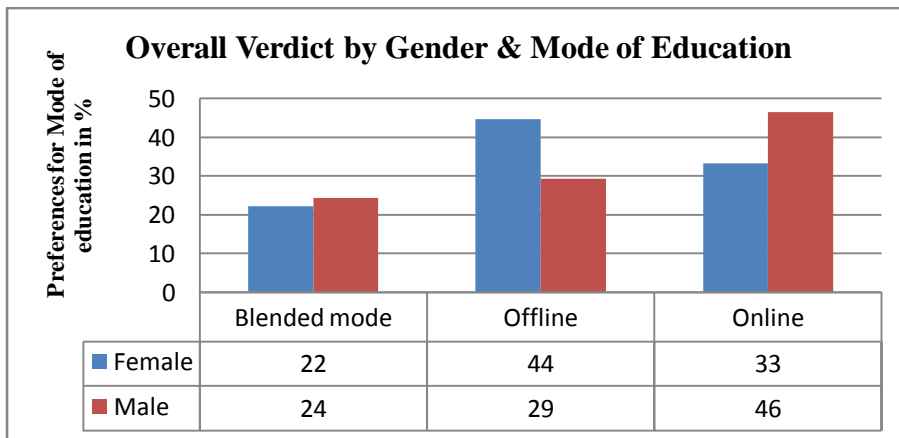
**Expected Values**

	Online	Offline	Blended mode
Female	162	167	98
Male	91	93	55

**Chi-Square Table**

Observed Frequency (Fo)	Expected Frequency (Fe)	Fo-Fe	(Fo-Fe) <sup>2</sup>	(Fo-Fe) <sup>2</sup> /Fe
142	162	-20	400	2.47
190	167	23	529	3.17
95	98	-3	9	0.09
111	91	20	400	4.4
70	93	-23	529	5.69
58	55	3	9	0.16
			X <sup>2</sup>	15.98

<b>Degree of Freedom (DF)</b>	$(3-1) * (2-1) = 2 * 1 = 2$
For DF = 2, X <sup>2</sup> of 15.98 is significant at the 0.005 level	



**Discussion: -**

On the dimension of Emotional wellbeing, chi square was found to be 104.67 with the df (2) which is significant at 0.005 level. It supports the alternative hypothesis that is ‘Emotional wellbeing and mode of learning (Online, Offline, and Blended mode) are dependent and there is a significant difference between the expected and observed frequencies.’ On the dimension of Psychological wellbeing, chi square was found to be 148.18 with the df (2) which is significant at 0.005 level. It supports the alternative hypothesis that is ‘Psychological wellbeing and mode of learning (Online, Offline, Blended mode) are dependent and there is a significant difference between the expected and observed frequencies.’ On the dimension of Social wellbeing, chi square was found to be 148.18 with the df (2) which is significant at 0.005 level. It supports the alternative hypothesis that is ‘Social wellbeing and mode of learning (Online, Offline, and Blended mode) are dependent and there is a significant difference between the expected and observed frequencies.’ It suggests that Dimensions of wellbeing (Emotional wellbeing, Psychological wellbeing, Social wellbeing) and mode of learning (Online, Offline, Blended mode) are dependent. Students view that mode of learning has an important function in determining their subjective wellbeing. Observed frequencies suggest that college students prefer offline mode for all dimensions of wellbeing however preference for offline learning is much higher for enhancing social wellbeing. Considering the

gender factor, the value of chi square was found to be 15.98 with the DF (2) which is significant at 0.005 level. It supports alternative hypothesis that is 'Gender and mode of learning (Online, Offline, and Blended mode) are dependent and there is a significant difference between the expected and observed frequencies.' Observed frequencies for female college students are much higher than expected frequencies for offline mode when compared to their male counterparts. It shows the strong preference of female college students for offline learning. It is consistent with previous research that women associate their value and happiness with the quality of relationships they have with other people. Need of relatedness is satisfied in offline mode through face-to-face contact with peers, informal talks, facilitation of nonverbal communication and direct interaction with teachers. Men associate their value and happiness with achievements. Thus, this gender difference in preference for mode of learning exist. (Matud et.al.) Taking students' opinion in to consideration, Online mode of learning can give advantages like interesting content with the use of videos, PowerPoint and animation; convenient and time saving, providing safety from covid infection and accessible recorded lectures. Also, students faced problem mainly internet and connectivity issue, difficulty in concentration, lack of interaction with teachers in online learning. In Offline education, students find benefits like direct interaction with teachers, direct contact with friends, personality development and instant doubt clarification. In offline mode, students pointed out problems like wastage of time in travelling, fear of covid infection, learning without visuals and ICT, peer pressure, etc.

**Conclusion: -**

Present study analysed perspective of college students regarding effectivity of mode of learning in enhancing their subjective wellbeing. Findings of the study supports the hypothesis that is 'Dimensions of wellbeing (Emotional wellbeing, Psychological wellbeing, Social wellbeing) and mode of learning (Online, Offline, Blended mode) are dependent and students gave strong preference for offline mode of learning for all three dimensions of wellbeing. Also, Gender and mode of learning (Online, Offline, and Blended mode) are dependent and female students prefer offline learning strongly for their wellbeing compared to male students.

**Recommendations: -**

1. Offline mode of learning is required for subjective wellbeing of students.
2. If female students are more in a class, offline mode of teaching is must.
3. Offline learning can be made more interesting if it incorporates ICT.
4. Online mode can be effective if videos of students and teachers are on and if there is scope for direct interaction with teachers and peers.

**References: -**

1. Chaudhary A, Sonar N, TR J, Banerjee M, Yadav S Impact of the COVID-19 Pandemic on the Mental Health of College Students in India: Cross-sectional Web-Based Study JMIRx Med 2021;2(3):e28158 URL: <https://xmed.jmir.org/2021/3/e28158> DOI: 10.2196/28158
2. Jacob J, V. R. V, Issac A, Stephen S, Dhandapani M, Krishnan N, V. R. R, Jose S, Nair A, S. M. A. Somatoform Symptoms among Frontline Health-Care Providers during the COVID-19 Pandemic. Indian J Psychol Med. 2021;43(3):272–274.
3. Feldman, R. S. & Babu, N. (18<sup>th</sup> ed.). (2018) Development across the life span. Pearson Publication
4. Matud, M. P., López-Curbelo, M., & Fortes, D. (2019). Gender and Psychological Well-Being. International journal of environmental research and public health, 16(19), 3531. <https://doi.org/10.3390/ijerph16193531>
5. Minium, E. W. (1970). Statistical reasoning in Psychology and Education. John Wiley.
6. Snyder, C. R. & Lopez, S. J. (Eds.). (2002) Handbook of Positive Psychology. Oxford University Press.

## **Changes In The Literacy Levels Of Both Genders In Urban And Rural India**

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**Abstract:** Education is the only means through which women may be empowered. As the world has grown more globalized, education has emerged as one of the most fundamental criteria for success in both life and society. This research aims to determine the literacy rate among boys and girls who live in urban and rural regions of India. The study uses secondary data gathered by the Census of India in 2011 for its findings. The recent research discovered a shockingly significant disparity in literacy rates between men and girls, previously unknown. This considerable disparity in literacy rates throughout the nation may be attributed to various factors in society. Why do these disparities continue, and why are a few states and union territories trailing behind in terms of attaining high literacy rates, particularly among females, according to this research? The primary goal of this research is to determine the best methods for increasing female literacy levels to high levels.

**Keywords:**globalized;shockingly;disparity;empowered;fundamental criteria

#### **Introduction:**

Learning to read and write is a process that turns a rough, unpolished human into a polished civilized personality. Education is a necessary instrument for achieving success in life. 'To empower women in the larger battle against inequality and injustice in society, literacy must be seen as a tool of empowering women in the larger struggle. In different countries, the term "literacy" may mean various things. According to the Census of India, a person's capacity to read and write an introductory message with comprehension in any language is a sufficient foundation for designating them as literate. Every person in India has the fundamental right to education, according to the Indian Constitution, which was ratified in 1950. Instead, even in the twenty-first century, gender prejudice may be seen in this situation. Both the federal and state governments have developed and put into effect several programmes to eliminate this prejudice and encourage female education. Nonetheless, for various reasons, similar programmes do not have the same positive consequences in our nation. It is an issue that requires prompt attention.

Furthermore, India is still battling to obtain universal education, but there has been no beneficial outcome in this regard as well. The countries that have attained a high literacy rate are prospering and leading the globe, and they are classified as developed nations by the United Nations. Such instances should serve as a model for India. 'Literacy is a key measure of social development,' says the World Bank. Literacy and formal education are both associated with knowledge. The level of literacy has a direct relationship with economic progress. In this specific location, literacy is considered one of the most crucial requirements for living and developing as a human being in the future.

Education also helps minimize inequities and serves as a method of elevating one's social standing within one's own family. According to the World Bank, "illiteracy is fundamentally a symptom of social inequality, namely the uneven allocation of power and resources." Literacy programmes should now be developed to educate women while also enabling them to see and grasp more clearly how society impacts their views and even their methods of knowledge. Women's educational demands and learning styles would be better met if such an intervention were implemented. Nonetheless, it would be done to avoid reinforcing society's conception of women's demands as subservient to those of their families and community as a whole.

#### **Objectives of the study:**

1. To draw attention to the fact that several Indian states and union territories are falling behind in terms of female literacy rates;
2. To investigate the causes and contributing variables that contributes to the disparity in literacy levels between men and women in a given society.
3. To figure out how to raise the level of female literacy in the nation to an acceptable level.

#### **Methodology:**

A study of the literacy rates in India is presented in this paper. Using secondary data gathered by the Census of India in 2011, the researchers conducted their research. The research uses current data from 2011 to demonstrate the disparity in male and female literacy rates at the state level in each state. To display the literacy status in India, data has been separated into three categories, and maps have been created to depict the results. For the current research, four maps and four tables have been designed to

display the data visually.

**Discussions:**

According to the findings of this study on the subject, there is a significant difference in literacy rates between men and girls in India. Between India's states and union territories, there is a massive disparity in terms of economic development. Only a few states and union territories have shown a minimal or non-existent difference in literacy rates. On the other hand, the remainder of India has established a moderate to significant disparity in literacy levels. The researchers discovered the following two statistics concerning the female literacy rate: Female literacy in urban areas is practically on par with male literacy in rural areas; nonetheless, female literacy in rural areas is relatively low throughout the nation. One important point to note is that India's overall urban population accounts for just 31.16 percent of the country's total population. The remaining 68.84 percent of the population lives in rural areas, and this rural portion of India constitute the most minor portion of the total population. The following four maps depicting the male and female literacy rates in rural and urban areas illustrate the abovementioned statistics.

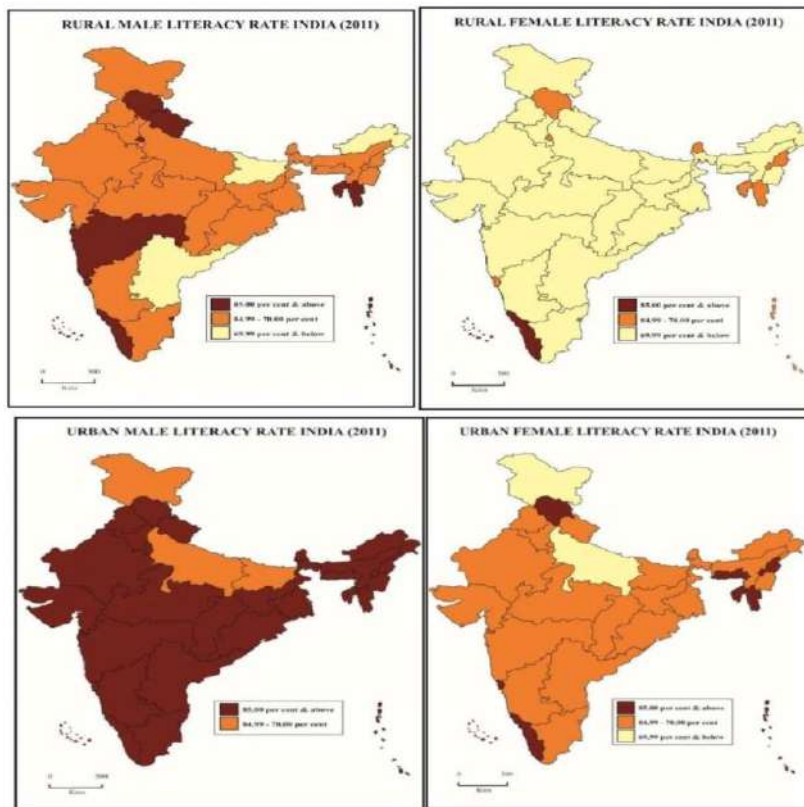


Fig: 1

According to census statistics on India's literacy rate, rural females are very low, with just 57.93 percent of rural females literate, which is extremely low considering that rural females account for 48.69 percent of the country's total rural population. On the other hand, the urban female population amounts to 48.16 percent of the entire urban population, while urban female literacy is 79.11 percent of the total urban population. According to the latest available statistics, only 64.64 percent of women in our nation are literate, although male literacy rates reach 80.89 percent. In light of the data shown above, it was evident that there is a significant 16.25 percent disparity in literacy rates between males and females throughout the nation. Rural ladies account for a disproportionately large proportion of those falling behind in the struggle to become literate.

The percentage of literate rural women is shown in Table 1. According to the data, Kerala has the highest female literacy rate, followed by Lakshadweep, Goa, the Andaman and Nicobar Islands, and Mizoram, in that order. In terms of rural female literacy, Rajasthan's states and union territories are at the bottom of the list, followed by Jharkhand, Bihar, Dadra and Nagar Haveli, and Andhra Pradesh.

**Table 1: Proportion of Rural Female Literacy Rate in India(2011)**

STATE/UNION TERRITORY	RURAL FEMALE LITERACY RATE
Kerala	90.80
Lakshadweep*	88.50
Goa	81.60
Andaman & Nicobar Islands*	79.90
Mizoram	79.80
Tripura	79.50
Himachal Pradesh	74.60
Chandigarh*	73.20
Delhi*	73.10
Puducherry*	73.00
Sikkim	72.40
Daman & Diu*	71.90
Nagaland	71.50
Maharashtra	68.50
Meghalaya	68.40
Manipur	66.30
Uttarakhand	66.20
Punjab	65.70
West Bengal	65.50
Tamil Nadu	65.00
Assam	63.00
Gujarat	61.40
Orissa	60.70
Haryana	60.00
Karnataka	59.70
<b>India</b>	<b>57.90</b>
Chhattisgarh	55.10
Uttar Pradesh	53.70
Madhya Pradesh	52.40
Arunachal Pradesh	52.00
Jammu & Kashmir	51.60
Andhra Pradesh	51.50
Dadra & Nagar Haveli*	49.60
Bihar	49.00
Jharkhand	48.90
Rajasthan	45.80

Source: Census of India, 2011

Note: \*= Union Territory

In India, the fraction of urban female literacy rate is shown in Table 2 as a percentage. It demonstrates that Mizoram is the most competitive state in this category, followed by Kerala, Tripura, Meghalaya, and Himachal Pradesh as the next five most competitive. On the other hand, Jammu and Kashmir have the lowest female literacy rate in the country, followed by Uttar Pradesh, Bihar, Rajasthan, and Andhra Pradesh. The common factor in the states and union territories with high rural-urban female literacy rates (i.e., Tables 1 and 2) is that these areas have a lower level of social stratification than other parts of the country and that the status of women was higher in these areas in the past than in other parts of the country in the past. On the other side, the low female literacy rate in Jammu, Kashmir, and Andhra Pradesh is because these states have been subjected to persistent terrorism. On the other hand, Bihar, Uttar Pradesh, Rajasthan, Jharkhand, and Dadra & Nagar Haveli have shrewd societies, even though these places are among the most backward and least developed in the nation.

**Table 2: Proportion of Urban Female Literacy in India (2011)**

STATE/UNION TERRITORY	URBAN FEMALE LITERACY RATE
Mizoram	97.30
Kerala	93.40
Tripura	91.40
Meghalaya	89.10
Himachal Pradesh	88.40
Lakshadweep*	87.80
Nagaland	87.40
Goa	86.60
Andaman & Nicobar Islands*	86.60
Maharashtra	84.90
Assam	84.90
Sikkim	84.70
Puducherry*	84.20
Dadra & Nagar Haveli*	83.40
Daman & Diu*	82.90
Tamil Nadu	82.30
Karnataka	81.40
Chandigarh*	81.40
West Bengal	81.00
Gujarat	81.00
Delhi*	80.90
Orissa	80.40
Uttarakhand	79.30
Manipur	79.30
Punjab	79.20
<b>India</b>	<b>79.10</b>
Chhattisgarh	77.20
Haryana	76.90
Arunachal Pradesh	76.70
Madhya Pradesh	76.50
Jharkhand	75.50
Andhra Pradesh	74.40
Rajasthan	70.70
Bihar	70.50
Uttar Pradesh	69.20
Jammu & Kashmir	69.00

Source: Census of India, 2011

Note: \*= Union Territory

The differences in male and female literacy rates in rural and urban sections of the nation are shown in the following two tables, namely, tables 3 and 4. Meghalaya, Kerala, Lakshadweep, Mizoram, Nagaland, and Tripura are the states/union territories with the slightest discrepancy in male-to-female literacy rates in both rural and urban areas, according to the World Bank. The high status of women, the large sex ratio, reduced social prejudice, the presence of two broad-minded religious sects, namely Christianity and Buddhism, and the higher literacy levels of the base female population contribute to the low gender literacy gap in the country. Rajasthan, Dadra and Nagar Haveli, Jharkhand, Uttar Pradesh, Madhya Pradesh, Jammu & Kashmir, Manipur, and Chhattisgarh are among the states and union territories with the highest literacy disparities, followed by Gujarat and Maharashtra. As previously stated, some areas of India are terror hotspots. In contrast, others have a low sex ratio, a low status of women in the home and society in ancient times, and the presence of religious groups and communities that are incredibly shrewd and narrow-minded when it comes to granting some freedom to women.

**Table 3: Difference in Urban Male-Female Literacy Rate in India (2011)**

STATE/UNION TERRITORY	U.M.L.R.**	U.F.L.R.***	DIFFERENCE
Rajasthan	87.90	70.70	17.20
Jammu & Kashmir	83.90	69.00	14.90
Chhattisgarh	90.60	77.20	13.40
Jharkhand	88.40	75.50	12.90
Manipur	91.70	79.30	12.40
Madhya Pradesh	88.70	76.50	12.20
Bihar	82.60	70.50	12.10
Haryana	88.60	76.90	11.70
Arunachal Pradesh	88.40	76.70	11.70
Andhra Pradesh	85.80	74.40	11.40
Uttar Pradesh	80.40	69.20	11.20
Dadra & Nagar Haveli*	94.00	83.40	10.60
Orissa	90.70	80.40	10.30
Delhi*	91.00	80.90	10.10
Gujarat	91.00	81.00	10.00
Uttarakhand	89.10	79.30	09.80
<b>India</b>	<b>88.80</b>	<b>79.10</b>	<b>09.70</b>
Tamil Nadu	91.80	82.30	09.50
Daman & Diu*	92.10	82.90	09.20
Puducherry*	93.00	84.20	08.80
Chandigarh*	90.10	81.40	08.70
Karnataka	90.00	81.40	08.60
Lakshadweep*	95.80	87.80	08.00
Sikkim	92.40	84.70	07.70
Punjab	86.70	79.20	07.50
West Bengal	88.40	81.00	07.40
Maharashtra	92.10	84.90	07.20
Assam	91.80	84.90	06.90
Goa	93.20	86.60	06.60
Andaman & Nicobar Islands*	93.10	86.60	06.50
Himachal Pradesh	93.40	88.40	05.00
Nagaland	91.60	87.40	04.20
Tripura	95.50	91.40	04.10
Kerala	97.00	93.40	03.60
Meghalaya	92.50	89.10	03.40
Mizoram	98.00	97.30	00.70

Source: Census of India, 2011

Note: \*= Union Territory, \*\*Urban Male Literacy Rate, \*\*\*= Urban Female Literacy Rate

Following the result reached in the preceding paragraph, it may be concluded that urban female literacy is equivalent to rural male literacy. According to the latest census data, approximately 79.11 percent of urban females and 77.15 percent of rural men are literate. Both of these percentages are pretty close to one another. Comparing the two extreme ends of this literacy divide reveals a shockingly significant disparity and aids in forming a realistic image of Indian girls in general. This disparity may be observed in the following maps, which show that the urban male literacy rate can reach as high as 88.76 percent.

**Table 4: Difference in Male- Female Literacy Rate in India (2011)**

STATE/UNION TERRITORY	R.M.L.R.**	R.F.L.R.***	DIFFERNCE
Rajasthan	76.20	45.80	30.40
Dadra & Nagar Haveli*	76.40	49.60	26.80
Jharkhand	72.90	48.90	24.00
Uttar Pradesh	76.30	53.70	22.60
Madhya Pradesh	74.70	52.40	22.30
Jammu & Kashmir	73.80	51.60	22.20
Chhattisgarh	77.00	55.10	21.90
Haryana	81.60	60.00	21.60
Bihar	69.70	49.00	20.70
Uttarakhand	86.60	66.20	20.40
Gujarat	81.60	61.40	20.20
<b>India</b>	<b>77.10</b>	<b>57.90</b>	<b>19.20</b>
West Bengal	84.40	65.50	18.90
Orissa	79.60	60.70	18.90
Karnataka	77.60	59.70	17.90
Andhra Pradesh	69.40	51.50	17.90
Daman & Diu*	89.40	71.90	17.50
Tamil Nadu	82.00	65.00	17.00
Maharashtra	85.10	68.50	16.60
Delhi*	89.40	73.10	16.30
Arunachal Pradesh	67.40	52.00	15.40
Himachal Pradesh	89.10	74.60	14.50
Puducherry*	87.40	73.00	14.40
Manipur	80.30	66.30	14.00
Chandigarh*	85.80	73.20	12.60
Assam	75.40	63.00	12.40
Sikkim	84.60	72.40	12.20
Punjab	76.60	65.70	10.90
Tripura	90.10	79.50	10.60
Goa	91.70	81.60	10.10
Andaman & Nicobar Islands*	88.50	79.90	08.60
Mizoram	88.20	79.80	08.40
Nagaland	79.00	71.50	07.50
Lakshadweep*	94.50	88.50	06.00
Kerala	95.40	90.80	04.60
Meghalaya	71.50	68.40	03.10

Source: Census of India, 2011

Note: \*= Union Territory, \*\*=Rural Male Literacy Rate, \*\*\*= Rural Female Literacy Rate

The rural female literacy rate can be as low as 57.93 percent, illustrating the urban-rural divide. There is a significant disparity in literacy rates in India, with a difference of 30.83 percent between the two extremes. As a result, as previously said, these data paint a negative image of Indian ladies. Another finding of the current research is that practically all of India's northeastern

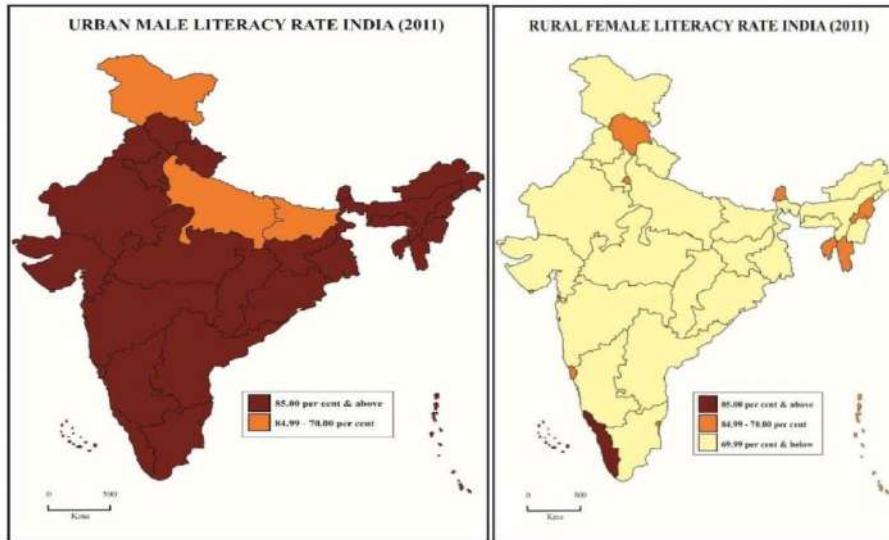


Fig: 2

states and Kerala, Goa, Himachal Pradesh, and Lakshadweep are doing well economically. India is predominantly a rural nation in terms of population. It is necessary to devote more attention to rural regions than metropolitan areas since rural areas provide an unfavourable image, particularly for females.

**Reasons for Low Female Literacy Rate in India:** Following are the reasons for the low female literacy rate in India:

- 1) Male domination has been a feature of Indian culture from its inception, and it is the primary cause of women's low levels of literacy and social position.
- 2) India has a weak economic foundation and an agricultural culture, which pose obstacles to the advancement of education in two ways. In one sense, parents cannot send their children to school due to a lack of financial resources; in another, the majority of Indian families are involved in agriculture and get their income from this activity. A labour force is required for agricultural practices for them to be successful. As a result, families relied on their children to work in the labour sector and could not send their children to school.
- 3) Many government schools in India do not have bathroom facilities, making it difficult for females to attend school.
- 4) The desire for sons is the second most crucial factor contributing to poor female literacy. When it comes to having a boy over a girl, families that prefer a son always overlook the requirements of their daughter/s and do not want to invest money in their education.
- 5) Females have a low social position in specific religious communities, while their lives are confined to the four walls of the home in other religious groups. Female members of such organizations are not permitted to leave the group for educational reasons.
- 6) In our civilization, some specialized tasks (such as weaving) are exclusive to a specific group, and such jobs are also restricted to female family members. They do not have to be educated to do so. Literacy is low among persons who speak nonofficial and non-standardized languages, and these people are typically excluded from participation in literacy programmes.
- 7) In India, many communities lack convenient access to middle, high, and senior secondary schools. As a result, rural parents are hesitant to send their girls to faraway schools.
- 8) Since females were more illiterate than men in the past, half of our nation's population stayed uneducated. As time passes, it has risen to become the foundation of a country that is both huge and illiterate in nature.
- 9) The family's history significantly impacts their children's educational opportunities. If one or both parents are literate, they understand the importance of education, and such families are becoming rare in our nation.
- 10) A substantial portion of India's population is uninformed of their rights and the available programmes to help them advance in society. The majority of those who are clueless are women across the nation.
- 11) Most people in our culture study for functional usefulness (income). Many parents of female children believe that investing in their daughters' education is a waste of money since their daughter would be sent to her husband's house one day.
- 12) Low literacy rates were caused by discrimination based on caste and the social position of groups.

13) In many developing nations, parents' perceptions about the degree of education their daughters need and their girls' goals for a future education are influenced by the societal practice of early marriage of daughters.

14) According to the authors, "Social acculturation perpetuates the assumption that women's use of literacy is restricted owing to their main roles as spouses and mothers." While men's claims to knowledge and study are seen as superior to women's, the reverse is true.

**Suggestions:** Following are some strategies and suggestions that, if implemented adequately, could improve the picture of the female literacy rate in India.

1) Creating awareness of a person's rights and responsibilities at the grassroots level via a comprehensive campaign may be beneficial in educating that individual. This should be a continual process rather than a one-time event to be completed.

2) It should be simple to go to and from school. Every primary school should be within a one-kilometer driving distance of each other. Elementary, middle, and high schools should all be within two kilometers, while senior secondary institutions should be within five kilometers.

3) Occupational and skill development programmes should be implemented early in a student's educational career.

4) More female instructors should be introduced at all levels of education so that girls may readily interact with them and feel secure in their learning environment.

5) Because it is based on a stereotype, our educational system must be overhauled. It is difficult to get a solid job even after graduating from college. Our educational system should incorporate technical, skill development, and applied studies so that after 10-15 years of study, one may be prepared to enter the workforce and be successful. Educating a female will no longer be seen as a burden if it is put into effect.

6) Local transportation charges should be kept below a certain level to be affordable for low-income students.

7) Schools run by the Indian government need quick renovation since they lack basic amenities such as drinking water and bathroom facilities.

8) When government programmes are implemented in the community, the government should intervene less and be regulated or cared for by the local authorities rather than the state.

9) Abolishing socioeconomic stratification-based discrimination in educational institutions should be a key priority. This would almost certainly result in positive outcomes in increasing the overall number of pupils.

**Conclusion:**

It is possible to infer that the image of female literacy rates in India is quite bleak. A great deal has been accomplished, but there is still much more work. Although society is changing, it must be prepared for the changes on the horizon. If India wants to flourish, it must ensure that its female citizens get an equal education. Similarly, women should be treated in the same way as men, but first and foremost, intelligent men must recognize that women are also human beings, not objects, to be treated as such. Education is the sole means for such individuals to see a shift in their psychological state. Issues such as the low status of women, son preference, poor school conditions, a narrow-minded society, a lack of awareness about the importance of education, a low sex ratio, social discrimination, poverty, and other factors are some of the significant issues that are the primary reasons for low female literacy levels in our country. Females' futures should be secured by a collaborative effort between the government, non-profit organizations, local governments, and the general public.

**References:**

1. Agarwalla, S. K., Barua, S. K., Jacob, J., & Varma, J. R. (2015). Financial Literacy among Working Young in Urban India. *World Development*, 67(March), 101–109. <https://doi.org/10.1016/j.worlddev.2014.10.004>
2. Arora, A. (2016). Assessment of Financial Literacy among working Indian Women. *Business Analyst*, 36(March), 219–237.
3. Baluja, G. (2016). Financial Literacy Among Women in India : A Review. *Pacific Business Review International*, 9(4), 82–88. [http://www.pbr.co.in/2016/2016\\_month/October/11.pdf](http://www.pbr.co.in/2016/2016_month/October/11.pdf)
4. Hoggart, R. (2017). The uses of literacy. *The Uses of Literacy*, 1–320. <https://doi.org/10.4324/9781351302043>
5. Librarian, N. B. (2015). Digital Literacy among Student Community in Hisar District: A Study. *Journal of Information Management*, 2(2), 9–15. <http://www.splp.in>
6. Massey, G. (2017). Gender Disparity in Literacy in India. *The Cambridge Handbook of Sociology*, 1, 487–496. <https://doi.org/10.1017/9781316418376.048>
7. Nedungadi, P. P., Menon, R., Gutjahr, G., Erickson, L., & Raman, R. (2018). Towards an inclusive

- digital literacy framework for digital India. *Education and Training*, 60(6), 516–528. <https://doi.org/10.1108/ET-03-2018-0061>
8. Prashant Bharadwaj, Asim I. Khwaja, A. M. (2020). Population Exchange and its Impact on Literacy, Occupation and Gender – Evidence from the Partition of India. *International Migration*, 53(4), 90–106. <https://doi.org/10.1002/9781119631729.ch5>

## **Grammar Competence And Academic Self Concept Of Secondary School Students**

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**Abstract :** Grammar is crucial in Second Language communication or communicative competence. Students' sense of self-esteem and self-concept are two factors that contribute to their success in using English. Academic self-concept and self-concept are frequently found to have mutually reinforcing effects. Thus, English language mastery and the development of grammar competence can have a significant impact on a student's academic self-concept, performance, and achievement. The objectives of the study are to find the level of Grammar Competence and Academic Self- Concept of Secondary School Students and their comparison based on Gender. The investigator also intended to find the relationship between both the variables. Normative Survey method was used for the study and the sample of the study consists of 250 Secondary School Students in Thiruvananthapuram District. The tools used for the study were Grammar Competence Test and Academic Self- concept Scale. The major findings of the study are The Grammar Competence and Academic Self- concept of Female Secondary School students is greater and significant than the Male students. The study also found that there is a relationship between Grammar Competence and Academic Self- Concept Of Secondary School Students.

**Keywords:** Grammar Competence, Academic Self- Concept, Secondary School Students

### **Introduction**

English is widely recognized as a passport to better education and job opportunities. The English language is essential in connecting the world together (Ahmad, 2016). Throughout every phase of human life language has a greater prominence. Children acquire language and vocabulary primarily by interacting with others. English is accepted as a universal language for communication and it unifies all who speak it. The objectives of learning English can be classified under four heads namely listening, speaking, reading and writing skills and also communication skills. Learning language means not only using them appropriately, but also producing grammatically correct sentences. Grammar plays an important role in Second Language communication or communicative competence. Canale and Swain (1980) propose that communicative competence include at least three components: Grammar Competence, Sociolinguistic competence, and Strategic Competence (communication strategies). Thus, in order to communicate in the target language, learners must be able to use their Grammar Competence. The way learners use their grammatical competence will determine how effectively they communicate with others. It plays a specific role in the learners' language production in this case. In this regard, Krashen (1982) claims that there is a mental device within humans that is gained through the learning process and serves as an editor to what he or she says. Monitor is the name given to this mental device. This monitor is created through a process known as learning. The process of learning itself will be closely related to the conscious process, which in this case is related to the process of explicit learning of grammatical rules. As a result, learning the grammatical rules will enable learners to have such a device to correct their mistakes. Interaction with others is a mini- laboratory use allowing learners to make discoveries about their usage of language as they use to communicate their ideas. Similarly, socio-cultural approaches of language teaching point out that in interaction, learners receive help ( from their interlocutor) while producing language, allowing them to express ideas they could put into words on their own. This stretches their own linguistic resources, building their own language Competence (including Grammar Competence) and also their academic self-concept (Donato, 2004).

Academic Self-concept is referred as student perception of self, as learner, and how they interact with the learning environment. In Academic Self-concept research, self- concept is known to be a predictor of behavior and performance (Yeung, et al., 2012). Academic self-concept describes how students perceive themselves as learners in school settings (Hoge & Renzulli, 1993), and it has implications for both student achievement and well-being (e.g., Altmann & Dupont, 1988; Marsh, 1991; Marsh et al., 1984). Academic self-concept informs students' perceptions of not only their current tasks and school-related activities, but also their future goals and academic ambitions (Ahmavaara & Houston, 2007; Marsh, 1991). In general, students with low academic self-concept may choose less rigorous or challenging academic and career paths, potentially leading to a loss of skills and advancement for both the individual and society (Ahmavaara & Houston, 2007; Marsh, 1991).

Language and grammar learning is far more ego-involved than other areas of study (Horwitz, 2010). Due to the intrinsically social nature of the language learning process, a very common problem in language learners is that they believe their ideas are not being expressed properly in the target language, which may make them appear immature or foolish (Arnold & Brown, 1999; Pellegrino, 2005 in Meshkat, 2015). The use of a language in which the individual does not have complete command exposes the self to particular danger. One factor that contributes to students' success in using English language is their sense of Self-Esteem and also their Self-concept. Academic Self-concept and self-concept are often found to have mutually reinforcing effects on each other. Thus, mastery of the English language and the development of grammar competence can have a significant impact on a student's academic self-concept, performance, and achievement. In regard to this, the paper attempts to explore the Grammar Competence and Academic Self-Concept of Secondary School Students.

### **Objectives Of The Study**

1. To find out the Grammar Competence of Secondary School Students
2. To find out the level of Academic Self- Concept of Secondary School Students
3. To compare the Grammar Competence of Secondary School Students with regard to Gender
4. To compare the Academic Self- Concept of Secondary School Students with regard to Gender
5. To find out the relationship between Grammar Competence and Academic Self- Concept of Secondary School Students

### **Hypotheses Formulated For The Study**

1. The level of Academic Self- Concept of Secondary School Students is moderate
2. Secondary School Students differ significantly in their Grammar Competence with regard to Gender
3. Secondary School Students differ significantly in their Academic Self- Concept with regard to Gender

### **Methodology**

The components of the methodology followed are detailed below.

#### **Method Adopted**

The purpose of the present study is to find out the significant relationship between Grammar Competence and Academic Self- Concept of Secondary School Students. After going through the methods and approaches contained in the wide range of studies, and considering the nature of the study, the researcher has adopted Normative Survey method for the present study.

#### **Population Of The Study**

All the Secondary School Students of Thiruvananthapuram District constitute the population of the study.

#### **Sampling And Sample**

For the present study, the sample has been drawn using Cluster Sampling technique.

#### **Sample For The Study**

The population of the present study constitutes all the Secondary School Students of Thiruvananthapuram. Two Government Schools and two Aided Schools are taken as clusters and total 250 students were taken as total sample.

#### **Tools Used For The Study**

For the present study, the investigator has administered the following tools

**Grammar Competence Test-** Developed by the investigator. Six aspects of Grammar like 1) Synonyms; 2) Spellings; 3) Nouns and Pro nouns; 4) Prepositions; 5) Conjunctions; 6) Verbs that are closely related to the characteristics of the target construct constitute the items. With regard to this 80 items were initially constructed. The test was given to 10 experts for validation (content and face validity). Thus, the second draft of the test with 72 statements following four options has been given with the decisive factors and the deliberations of the experts. It was then followed by the administration of test was on a sample of 130 students purposively selected for item analysis. Based on the stratified item analysis procedure, the tool was standardized by the investigator. The final test comprised 40 Questions. Thus, the investigator prepared the Grammar Competence test. The pattern of Scoring is, 1 score for correct option and 0 for wrong option.

**Academic Self- Concept Scale-** Developed by the investigator. Four components of Academic Self-Concept like 1) Self- Confidence; 2) Identity; 3) Role Performance; 4) Pride, that are closely related to the characteristics of the target construct constitute the items. The developed Academic Self- Concept Scale consists of 27 statements and it is designed on the basis of frequency in Likert form with the five points as continuum. Initially an item pool of 27 statements was developed and it contains both the positive and negative statements. The item pool was then given to 10 experts and by considering their deliberations, the item pool was finalized for the development of the scale. The final draft of the scale with 21 statements following five response categories has been given. It was then followed by the administration of scale on a

sample of 115 students purposively selected for item analysis. Based on the stratified item analysis procedure, the tool was standardized by the investigator and the final scale comprised of 20 statements. Thus, the investigator prepared the Academic Self- Concept Scale.

**Statistical Techniques Used For The Study**

1. Descriptive statistics
2. Pearson product moment correlation

**Delimitations Of The Study**

The study is delimited to Secondary Schools under the jurisdiction of the University of Kerala

**Analysis And Interpretation Of Data**

The main purpose of the study was to find out the level of Grammar Competence and Academic Self- Concept of Secondary School Students. The quantitative analysis in this study has been done through data collected from 250 Secondary School Students with Grammar Competence Test and Academic Self- Concept Scale. As the main objective of the study was to find out the relationship between Grammar Competence and Academic Self- Concept, the investigator used Karl Pearson's Coefficient of Correlation. The statistical analysis was done on the basis of the objectives formulated for the study. Based on the results of statistical processing of data, the investigator tested the hypotheses formulated for the study.

**Analysis Of The Level Of Grammar Competence Of Secondary School Students**

**Table 1**

*Level of Grammar Competence of Secondary School Students*

Level	N	Percentage
High	37	15
Moderate	182	73
Low	31	12

Table 1 depicts that 15% Secondary School students out of the total sample belong to the high level, 73% Secondary School students out of the total sample belong to the moderate level, and 12% Secondary School students of the total sample belong to the low-level. Hence, the investigator concluded that Grammar competence Secondary School students are moderate.

**Analysis Of The Level Of Academic Self- Concept Of Secondary School Students**

**Table 2**

*Level of Academic Self- Concept of Secondary School Students*

Level	N	Percentage
High	56	22
Moderate	155	52
Low	39	16

From table 2, it is clear that 22% Secondary School students out of the total sample belong to the high level, 52% Secondary School students out of the total sample belong to the moderate level, and 16% Secondary School students of the total sample belongs to the low-level. Hence the investigator concluded that the level of Academic Self- Concept of Secondary School students is moderate.

**Analysis Of Grammar Competence Of Secondary School Students With Regard To Gender**

The Grammar Competence scores of the Male and Female from the selected sample were compared using the test of significance. The difference between their mean scores was computed by using the critical ratio. Details regarding the results obtained are given in Table 3.

**Table 3**

*Test of significance for the difference between the mean Grammar Competence scores of Male and Female Secondary School Students*

Category	Sample	Mean	SD	CR	Level of Significance
Male	128	29.43	5.97	4.13	0.01
Female	122	32.18	4.50		

From table 3, it is clear that there is a difference between means that are significant at 0.01 level (C. R =4.13). This result shows a significant difference in grammar competence of Male and Female Secondary School students. Here the mean score of Male Secondary School students (M= 29.43) is less than that of Female Secondary School students (M=32.18). Hence, the investigator concluded that

grammar competence of Female Secondary School students is greater and significant than the Male students.

#### **Analysis Of Academic Self- Concept Of Secondary School Students With Regard To Gender**

The Academic Self- Concept scores of the Male and Female Secondary School Students of the selected sample were compared using the test of significance. The difference between their mean scores was computed by using the critical ratio. Details regarding the results obtained are given in Table 4.

**Table 4**

*Test of significance for the difference between the mean Academic Self- Concept scores among Male and Female Secondary School Students*

Category	Sample	Mean	SD	CR	Level of Significance
Male	128	81.71	10.98	2.70	0.01
Female	122	85.09	8.77		

Table 4 shows that the difference between means is significant at 0.01 level (C. R = 2.70). This result shows a significant difference in the Academic Self- Concept of Male and Female Secondary School Students. Here the mean score of Female Secondary School Students (M= 85.09) is greater than that of Male Secondary School Students (M=81.71). Hence, the investigator concluded that the Academic Self- Concept of Female Secondary School Students is higher than that of Male Secondary School Students.

#### **Analysis Of Relationship Between Grammar Competence And Academic Self- Concept Of Secondary School Students**

**Table 5**

*Shows the relationship between grammar competence and Academic Self- Concept of Secondary School Students*

N	Coefficient of correlation
250	0.415

From table 5, the investigator used Karl Pearson's Coefficient of Correlation (r) to study the intensity of the between grammar competence and Academic Self- Concept of Secondary School Students. The obtained value of r is .415, the calculated r = .415, and is significant at 0.05 level. (r =.415; p<0.05). Investigator concluded a marked and substantial correlation between Grammar Competence and Academic Self- Concept of Secondary School Students.

#### **Findings Of The Present Study**

1. The level of Grammar Competence of Secondary School Students is moderate
2. The level of Academic Self- Concept of Secondary School Students is moderate
3. The Grammar Competence of Female Secondary School Students is greater and significant than the Male students.
4. The Academic Self- Concept of Female Secondary School Students is higher than that of Male Secondary School Students.
5. There is a marked and substantial correlation between grammar competence and Academic Self- Concept of Secondary School Students.

#### **Educational Implications**

In the light of conclusions obtained in this research, the following suggestions are presented:

1. Grammar instruction should be prioritized in order to cultivate students' communicative competence and should be context based always.
2. Grammar instruction through composition should be encouraged.
3. Grammar activities should be tailored according to the learners' interests.
4. Motivation: Having fun should be a part of any class, especially one dealing with grammar. The only weapon capable of defusing the situation is FUN. (2) Video games. (3) Music. (4) Make a mime. Poems (five). (6) Audio visual aids are all potential ways to have fun while introducing almost any grammar topic (Sudhakar & Farheen, 2015).
5. A student with a positive Academic self-concept may or may not have more skills than a student with a negative Academic self-concept. However, having a positive academic self-concept will help

students face and overcome academic challenges. As a result, teachers must collaborate with students to assist them in developing a positive academic self-concept.

6. Teachers should encourage their students to set attainable goals. A teacher can encourage students to take on only what they can reasonably accomplish. Teachers should assist students in breaking down large project goals into manageable steps.

#### **References**

1. Ahmad, S. R. (2016). Importance of English communication skills. *International Journal of Applied Research*, 2(3): 478-480. file:///C:/Users/user/Downloads/
2. Ahmavaara, A., & Houston, D. M. (2007). The effects of selective schooling and self-concept on adolescents' academic aspiration: An examination of Dweck's self-theory. *British Journal of Educational Psychology*, 77, 613-632.
3. Altmann, H. A., & Dupont, S. F. (1988). The relationships between academic self-concept, global self-concept, and academic achievement. *Canadian Journal of Counselling*, 22, 170-174.
4. Canale, M., & Swain, M. (1980). Theoretical Bases of Communicative Approaches to Second Language Teaching and Testing. *Applied Linguistics*, 1, 12-18.
5. Donato, R. (2004). Aspects of Collaboration in Pedagogical Discourse. *Annual Review of Applied Linguistics*, 24, 284 - 302.
6. Hoge, R. D., & Renzulli, J. S. (1993). Exploring the link between giftedness and self-concept. *Review of Educational Research*, 63, 449-465
7. Horwitz, E. K. (2010). Foreign and second language anxiety. *Language Teaching*, 43, 154-167. <http://dx.doi.org/10.1017/S026144480999036X>
8. Krashen, S.D. (1982). *Principles and Practice in Second Language Acquisition*. Oxford: Pergamon.
9. Marsh, H. W. (1991). Failure of high-ability high schools to deliver academic benefits commensurate with their students' ability levels. *American Educational Research Journal*, 28, 445-480.
10. Marsh, H. W., Smith, I. D., & Barnes, J. (1984). Multidimensional self-concepts: Relationships with inferred self-concepts and academic achievement. *Australian Journal of Psychology*, 36, 367-386.
11. Meshkat, M & Hosseini, S. (2015). The Relationship between Academic Self-concept and Academic Achievement in English and General Subjects of the Students of High School. *ResearchGate*, 1.1-6.
12. Sudhakar, M., & Farheen, F.S. (2015). The Importance of Grammar in English Language Teaching. *International Journal of Scientific Research*, 4(8). <https://www.worldwidejournals.com/>
13. Yeung, A., Craven, R., & Kaur, G. (2012). Mastery goal, value and self-concept: What do they predict?. *Educational Research*. 54. <https://doi.org/110.1080/00131881.2012.734728/>

## **Socio- Economic Impact of Rural- Urban Migration- A Case Study of Bhaini Badshah Pur, Hisar District, Haryana**

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**Abstract:** The concept 'Migration' refers to the mobility of an individual or group of individuals from place to another temporarily or permanently. The current research is to analyse the impact of migration on the SES in rural populations and the main causes that lead to rural-urban migration. The study is based on primary data from 177 migrant workers of a particular village namely Bhaini Badshah Pur, Barwala, Hisar in Haryana. Statistical software such as SPSS and multivariate regression tool is employed to obtain objective based results. The results highlight that due to quality of education and occupation prospects are the major factors motive of rural-urban immigration. Furthermore, it has been argued by village people that the SES with regards of schooling, earnings, livelihood pattern and health are developed up to a larger extent just because of migration. The same outcomes are verified with the use of the multivariate regression model.

**Keywords-** Rural- urban migration, SES (Socio- Economic status), Education, Migrants, Employment Opportunities

### **Introduction**

The concept 'Migration' can be defined as the mobility of person from one province to another province whether temporarily or permanently. The decision with respect to movement influenced by predominant SES. Socio-Economic condition refers to a composite measure that typically includes economic status, measured by income; social status, measured by education; and work status, occupation (Dutton and Levine, 1989). Migration is defined as a qualitative mechanism that affects individuals and households in terms of their education, social, economic and demographic profile (Adewale 2005). The International Labour Organization for Migration (2011) has defined migration as the movement consisting of an individual or group of individuals, usually across international or within a state. It also includes the flow of refugees, distressed migrants, migrants of economic aspiration and individuals moving for different objectives. The concept is very crucial and it focused the attention of the government body and policy planners. In many communities, migration is one of the major components of livelihood to reduce the risk and increase household income. There are numerous inter-linked factors that push the rural masses for migration. According to the census of India (2011), international migrants hit the absolute figure above 45.58 crores which is 30 per cent greater than those in 2001. At the same time, it has been calculated that around 39.6 crores (88 per cent) migrants within their home countries i.e. rural to urban areas or undeveloped to a developed economy and it can be expected to incline in the long run. Migration is gradually recognized importance as an immense part of the rural population has been leading an uncertain economic life due to the non-synchronization of employment opportunities in the agriculture sector in the rural areas and the rapidly-growing population. There is a close relationship between urbanization and rural-urban migration in every part of the world. Migration deals with the movement of individuals, families, or collectives from one region to another. This movement may be either within the country from rural to an urban area or rural to rural areas or urban to rural areas (R. Mishra). Social and economic are two major causes of migration. At the time of 1960-1970 inter-state migration in India was low due to the predominance of agriculture, the rigidity of the caste system, the role of joint families, the diversity of language and culture, food habits and lack of education (Chatterjee and Bose, 1997; Nair and Narain, 1985). But the rapid transformation of the Indian economy, improvement in the level of education and that of transport and communication facilities, a shift of workforce from agriculture to industry and other tertiary activities grows the rural to urban migration among Indian people in recent times. In India 1991-2001, 21.5 per cent of the total population of Haryana was migrants which increased up to approx. 34 per cent in 2017 which are mainly due to marriage with 65 per cent (census of India). Various determinants cause the change in the pattern of migration, which is mainly identified as high population density, the surplus of the labour force, high employment rates, dissatisfaction with housing, demand for higher schooling, rural-urban wage differentials, the distance between village and city etc.

## **Review of Literature**

Vero and Odyuo (2021) examined the major reason for rural-urban migration and the impact on Socio-Economic conditions on the migrants in Phiro village in the Wokha district. Primary data was collected through personal interviews and questionnaires whereas; secondary information was gathered from books, research journals and census of India etc. The results indicate that poor infrastructure for education and lack of work alternatives are the main reason for pushing people toward urban migration. Moreover, a positive change was also noticed on Socio-Economic determinants because of migration. Alphonse Badole (2020) worked on the effect of rural-urban migration on Socio-Economic conditions in Ghana. The author found significant changes in the migrant's livelihoods in terms of education, health and employment. Moreover, the study also revealed that lack of employment opportunities was the major cause of the rural people movement. Priyanka and Megha (2018) did an empirical study on the Social structure of Bilawal village in CharkhiDadri of Haryana. The village was selected based on physiographic variability in the form of the presence of morphological characteristics such as waterfall, various types of rocks, and relatively different types of socio-economic conditions. Primary data were collected from 100 families out of 535 based on random sampling. The author found that people of this village are moving towards secondary occupation for their livelihood and the scenario is improving with time. Lakhwinder *et al* (2017) evaluated the relationship between migration and economic development in 36 villages in Punjab as this state has been continuously receiving a large number of migrants from Haryana, Uttar Pradesh, and Bihar since the green revolution. The results indicated that wheat harvesting, paddy sowing, and paddy harvesting are peak season when the migrant workers are most needed in Punjab and after this season they usually go back to their respective native places. Kamala and Abhimanyu (2017) worked on reasons of migration in the Himalayan region of the state Uttarakhand from secondary sources i.e. census report 2011 and primary data collected from researcher self the fieldwork during July to October 2016 through interviews. They found that migration raises the issues of improved human to resources ratio at the origin and betterment economic situation alongside possible deterioration in a social situation. Out-migration has an impact that it improves the income and standard of living of source areas in several ways. The remittances received in source areas generate demand for goods and services in that region which further improves employment and income opportunities. During the same time, Sandeep Rao and Veena examined the SES of migrant's workers who settled in Bengaluru. The primary motive of the research was to analysis the situation prior and after migration. The main purpose of the study was to analyses the gravity of the situation through a questionnaire method from Bangalore as migrated people are the highest in number in this state. The results indicate that unskilled labourers have to depend on middlemen for jobs and they exploited the rural workers. Further, Berhanu (2012) found that higher the value of household assets leads to lower migration. The key reason behind this was argued by the people that as the land-holding more, more hands are required to increase the productivity, hence the lower propensity to migrate. Ackah and Medvedev (2010) compared migration between male-headed and female-headed families and found that male-headed families have more capable than their counterpart female-headed in terms of earning and hence, they are more likely to become migrants. Moreover, Pundir and Singh (2001) examined the nature and extent of rural-urban linkage and its impact on SES of people in two villages in Gujarat. The research highlighted that the villages which are well linked with urban areas seem to be improved condition than the villages which are not properly connected to urban areas. Further, the income level of the people living in the villages linked with urban areas is comparatively higher than that of the villages which are not linked. Dasgupta and Laisley (2000) identified social, political, economic variables that were associated with migratory movement from villages. Primary data was taken from 40 villages from seven districts in India. They found that literacy rate, diversification of occupation, and commercialization of agriculture were significantly associated with migration levels in villages. Females usually migrate for one of the following four reasons: to work, to study, to accompany their husbands, and to accompany their families in case of married.

### **Objective of the study**

The major objectives of the study are the following-

1. To examine the Socio-Economic condition of migrants in the study area.
2. To examine the variation of migration as per social and economic category in the study area
3. To examine the Socio-Economic livelihood before and after the migration.
4. To examine the major destination place of migration and the type of work undertaken by migrants.
5. To examine the major reasons that push for rural-urban migration in the study area.

## Research Methodology

**Sources and techniques of collection:** The research is based on primary and secondary data. In order to obtain the primary data, the researcher has chosen 177 families in which individuals or entire families are migrants and a self-administered questionnaire is prepared to gather information. Questions are asked from respondent's regards demographic profile, major reason for rural-urban migration and its impact on their livelihoods however; secondary data are collected from magazines, journals, and Census of India and official records of village authority.

**Statistical tools for data analysis:** To get the objective based empirical outcomes, descriptive and inferential statistical tools are employed. To meet the constraint of this statistical analysis, SPSS software version 25.0 is adopted. Moreover, regression analysis is also employed to analyse the data and results are presented through tables and charts.

**Size and Location:** The village, Bhaini Badshah Pur (Barwala) belongs to the Hisar district in Haryana and situated more or less in the centre of the state and even in the district. According to census 2011 information, the location code of Bhaini Badshah Pur village is 061001. It is situated 6 kilometres away from the nearby town, Barwala, and the distance with Public Work Department (PWD) road is 1 km. It is situated 40km away from Hisar, which is both district & sub-district of Bhaini Badshah Pur village. Nayagaon, (2 km) Daultpur (3 km), Uklana (5km), Khedar (2 km), Faridpur (4km) are the nearest villages of it. Uklana and Barwala are the tehsils of this village.

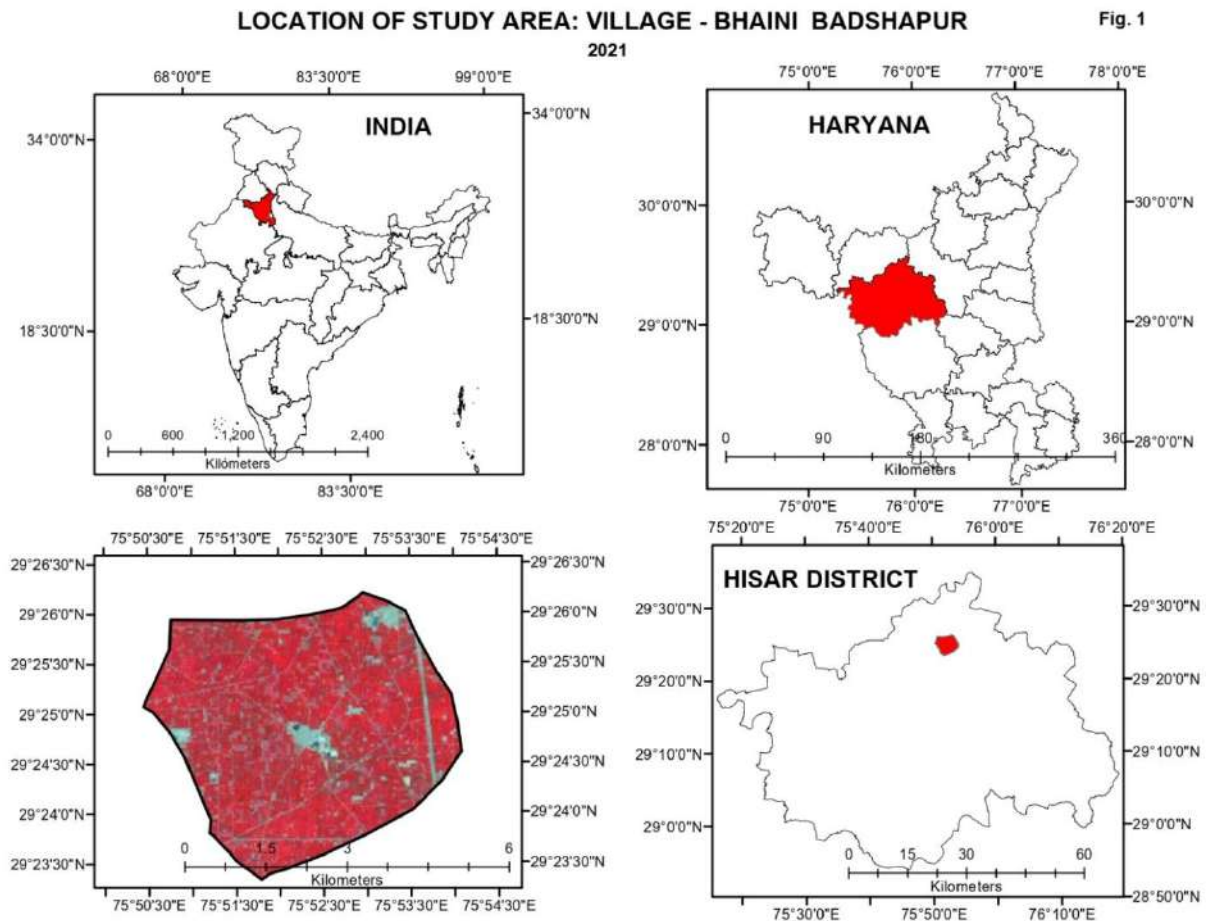


Figure 1: Location map of Bhaini Badshah Pur, Barwala

## Result & Discussion

### Socio- Economic characteristics of the migrants in the study area

Table 1 highlight that 88 per cent of migrants are male however only around 12 per cent are females. The result is supported by the viewpoint of Awumbila *et al.* (2015) whose analysis argued that due to reproductive responsibilities along with decision-making restrictions, women are less likely to migrate compared to their counterpart males. Hence, it could be a factor that females are less migrating towards the urban area in the study area. With regards to age group, the results indicate that majority of the migrants are young person's ages between 16-30 years which is signifies 49.71 per cent, followed by the age 31-45 years (35.59 per cent), migrants between the age group of 46-60 years also represents by 11.89

per cent and migrants more than 61 years are only 2.25 per cent. In general, the tendency of out-migration is steadily declining with age proliferations. The results are supported by findings of research by Sjaastad (1962), young people show a high propensity to migrate compared to their old counterparts because young people are willing to take the high risk associated with migration and expect more profits over a while. Education is one of the important weapon that effect the decision of movement. In the migration context, education can be two contrasting viewpoints on migration. Firstly, migrant people are well qualified comparative non-migrants as they have a better option of getting good jobs (Levy, 1974) while other viewpoints that migrant people are less educated and unskilled (Bealset. Al 1967). When compared is made based on education in the study area, it is found that most of the migrants are educated up to senior secondary (29.20 per cent), however, least proportion represent illiterate, primary educated and territory education qualification 6.87 per cent, 5.15 per cent and 5.84 per cent respectively. These result supported the viewpoint of the study by Deotii and Estruch (2016) who says that more educated people are more likely to move outside due to lack of employment opportunities except primary occupation compare to illiterate people. Moreover, it is also observed that more qualified and skilled people had a high propensity to migrate to other districts, states, and countries however, less educated people are migrating for unskilled work to either to other villages or nearest town Barwala. Moreover, in terms of earnings, the results show that majority of the migrants are earning more than Rs.50000 per month (48.58 per cent), followed by income slab 30000-50000 (28.24 per cent) and least migrants are earning income less than Rs10000 (1.69 per cent). Thus, the results represent that majority of the migrant can meet their financial expectations. Finally, land-ownership of migrants revealed that most of the migrants are landless and land has up to 2 acres, 31.07 per cent and 28.80 per cent respectively. The key reason is observed behindthat currently landless people do not agree to take land on lease-in as this is not profitable for them hence land-owner required more people to increase the agriculture productivity hence, it could be the reason that landless people are more likely to migrate.

**Table 1: Socio- Economic profile of migrants**

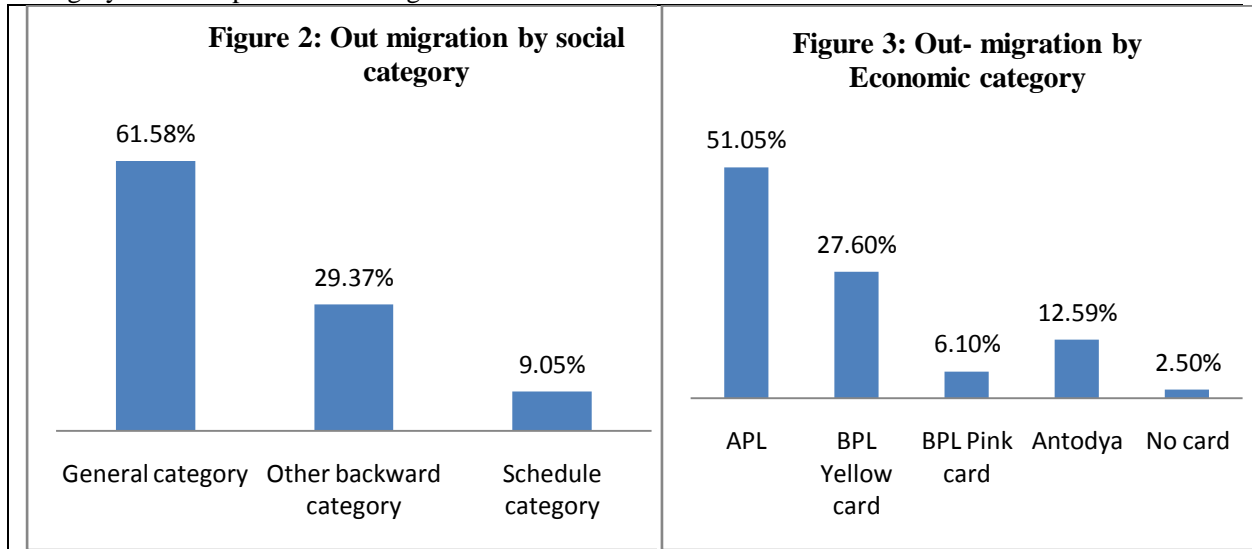
<b>Variable</b>	<b>Frequency</b>	<b>Per cent</b>
<i>Gender</i>		
Male	157	88.70%
Female	20	11.30%
<i>Age</i>		
Less than 15 years	1	0.56 %
16-30	88	49.71%
31-45	63	35.59%
46-60	21	11.89%
61 and above	4	2.25%
<i>Education</i>		
Never attend school	20	6.87%
Literate	6	2.06%
Primary	15	5.15%
Middle	35	12.02%
Secondary	44	15.12%
Senior Secondary	85	29.20%
Graduate	51	17.52%
Post- graduate	18	6.18%
Other professional/ Technical	17	5.84%
<i>Monthly Income</i>		
Less than Rs10000	3	1.69%
10000-30000	38	21.46%
30000-50000	50	28.24%
50000 and above	86	48.58%
<i>Land- holding ownership</i>		
Landless	55	31.07%
1-2 acre	51	28.80%
3-4 acre	35	19.77%
5-10 acre	17	9.6%

More than 10 acre	19	10.73%
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(Source: Field survey January 2022)

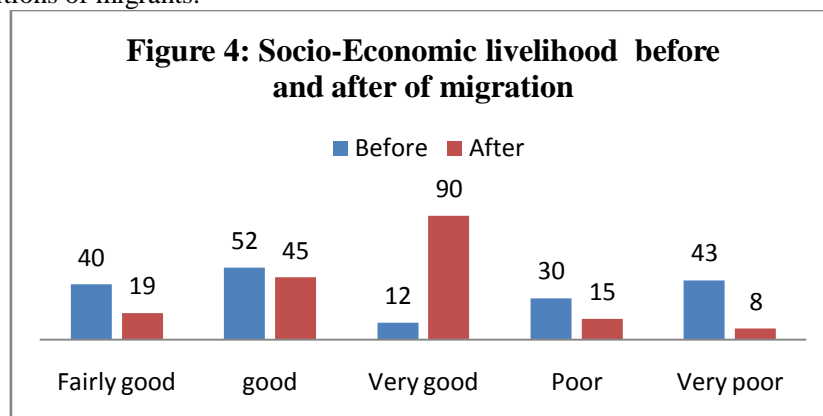
**Disparity of migration among social and economic categories in the study area.**

The below figure no. 2 represents the variation of migration among social categories and the results indicates that major proportion of out- migration are associated with the general category households (61.58 per cent), followed by 'other backward category' (29.37 per cent) and least proportion belongs to the schedule category by 9.05 per cent. Comparison with regards economic categories is represented through figure no.3 and it highlights that more than half proportion (51.05 per cent) of migrants belongs to APL ration card and followed by BPL category (27.60 per cent) migrants in this village. So, it is a contradiction of the commonly accepted notion that most deprived communities such as the schedule category are more prone to out-migration for better-off households.



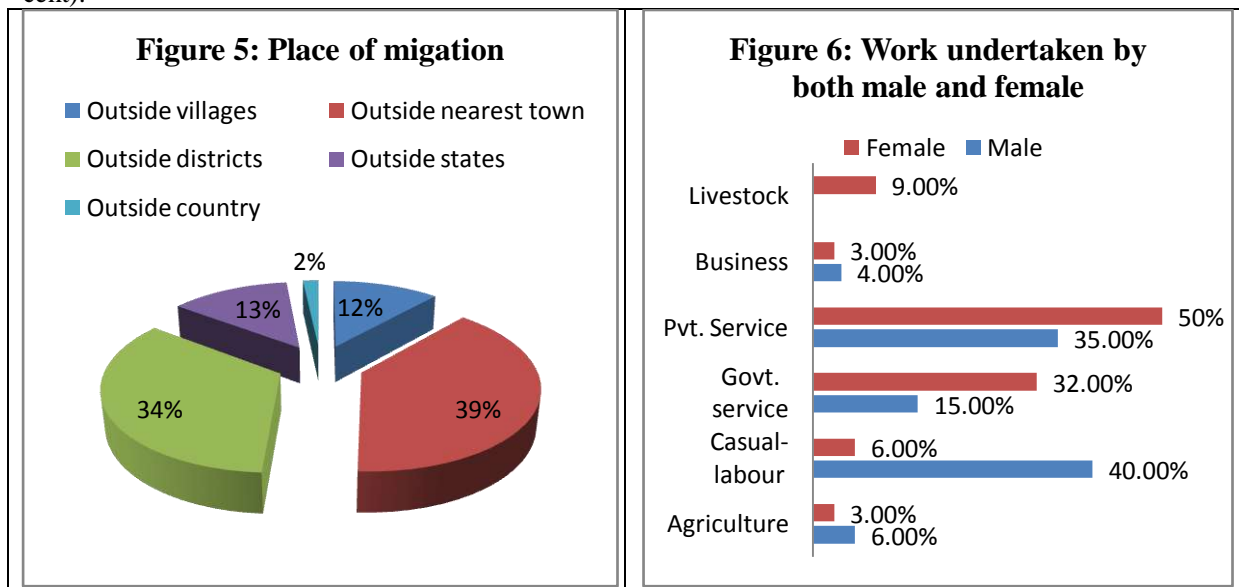
(Source: Field survey, January 2022)

**Socio- Economic impact of migrants before and after rural-urban migration:** In below figure no. 4, the outcomes indicate that there is a progressive impact on the SES of migrants. For instance, the result indicates that only 6.7 per cent of the migrants had a very good condition in the village, while this proportion has raise up to 51 per cent because of rural-urban migration. Improved employment prospects could be significantly associated with this increased proportion. Furthermore, the result also revealed that around 17 per cent of the migrated people reported poor condition just before migration however, this percentage reduced to nearly half (8.4 per cent). Moreover, 24 per cent of migrants lived under very poor conditions but this situation improved drastically (4.5 per cent). The major reason behind argued by migrants are the availability of jobs, better infrastructural facilities, a modern health care system, upgraded education, communication and a couple of other amenities which contributed largely to improve Socio-Economic conditions of migrants.



**Place of destination and type of work undertaken**

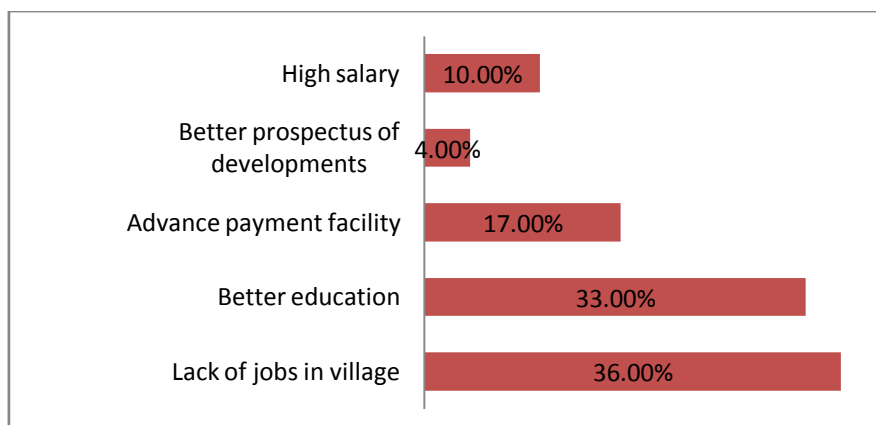
Further, questions are also asked about place and type of the work undertaken at the destination the place and results are presented through ahead figures. Figure 5 represents that a major proportion of migrants primarily migrate at short distances such as other nearest towns (Barwala)and other districts by 39 per cent and 34 per cent respectively. Moreover, it is also noticed that people who migrate to the nearest town go daily or casual labour and come to native home in the evening whereas the migrants who migrate to other districts mainly in Gurugram, Noida, and Hisar in Haryana state and accommodated along with their family. Furthermore, some people are also reported to have migrated to other states such as Rajasthan, Bangalore, Delhi, and Chandigarh (13 per cent), and five people are migrated to the U.S.A, Canada, and Ireland which constituted 2 per cent of migrants. When the comparison is made based on occupation in both males and females, a huge variation can be observed in both genders among various occupational categories from figure 6. The results deliver an interesting picture of the migrants. A huge ratio of migrated people in both gender are engaged in territory or service activities (82 per cent and 50 per cent respectively). Thus, it can be concluded that there is lack of salaried employment in rural areas paralleled to metropolitian areas. However, agriculture and business are least preferred by both males and females during the migration period. Casual labour is the next most preferred occupation by males (40 per cent).



(Source: Field survey January 2022)

**Reason for migration**

The major causes of out-migration are also presented through figure 7. The analysis shows that people of the Bhaini Badshah Pur village are out- migrated because of the unavailability of employment opportunities and lack of quality of education. Land scarcity is another important push factor provoking the migrants to leave the village. In destination places, diversification of jobs and superior educational amenities are the attractive factors. In this village, the largest proportion of people is migrated to attain better and higher education and for jobs. These people are staying at their workplace. One important point also observed from the study is that no family is moved outside with the entire household as few members of the household are staying at the native village to take care of the house and land. However, people who are migrated to outside states and countries are just for better employment and education.



(Source: Field survey January 2022)

The result of regression analysis are shown through tables 2 and 3 which identified that social category, age, gender and income are highly associated with the decision making regard rural- urban movement however, land is not significantly attributed with this as the households who possess more land are engaged themselves in primary occupation in the study area.

**Table 2: Beta coefficient, t value and Multivariate Regression model**

	Coefficient Beta	t- value	p- value (sign.)	
Constant			-7.255	.000
Social category	.032		.785	.433
Age	.538		13.274	.000
Gender	.261		6.937	.000
Education	.014		.322	.748
Income	-.039		-.913	.362
Land ownership	.003		.069	.945

(Significant level\* p<0.01)

**Table 3: ANOVA model**

	Sum of Squares	Mean Square	F	Sign.
Regression	1546.212	257.702	54.830	.000 <sup>b</sup>
Residual	2397.026	4.700		
Total	3943.238			

(Adjusted R Square- .385)

## Conclusion

The current research reflects that the migrations from the village towards metropolitan cities are taking a rapid pace. The results reflected that the population of the study area has dropped by more than double in the last few decades. The primary objective is to analysis the SES of migrants and found that there is strong association between migration and improved SES of migrants. Moreover, educated people do not prefer to work in agriculture where there is no certainty of income. Hence, these people search for jobs outside for more remunerative and permanent work engagement. In terms of age groups, it is noticed that young people are more likely to migrate as they are more adventurous& willing to attain higher education. This indicates that the young population are reducing in the study area hence, the government need to take some initiative to improve and upgrade the existing school, set up agro-based industries etc. This will not create only employment in rural areas but also reduce the congestion in the metropolitan areas. The study also found that major destination places are Delhi NCR, Gurugram, Hisar district and Punjab where the majority of the people of the study area migrate. Although there are varied reasons for migration the key motive of mobility is due to work opportunities and education at destination places. Thus, income is another important factor of migration. Apart from this, steps should be taken to improve health facilities, transport and road connectivity which assist to develop the capabilities in the rural masses. Moreover, the focus is also required to shift from the tradition way of agriculture to modern cropping methods which will also boost up the village economy. Interestingly it is also observed that although migration has become a way of a better life for educated people, still they are connected to the roots

because of having land- ownership, culture and strong kinship ties; therefore, they visit in village frequently.

### Reference

1. Amarender Reddy, Radhika Rani, Tim Cadman, T. Reddy, Battarai and N. Reddy (2016). “*Rural transformation of a village in Telangana: A study of Dokur since 1970s*”. International journal of rural management 12 (2), pp. 143-178.
2. AlphoneBadolo (2020). “*The effects of rural- urban migration on socio-economic status-A case of Sunyanimunicipal area of Ghana*”. Global scientific journal, Issue 11.
3. Lakhwinder ,Inderjeet and Ranjeet. “*Changing character of rural economy and migrants labour in rural Punjab*”. Vol. 16 (1)
4. KyaingKyaingThet (2014). “*Pull and Push Factors of Migration: A Case Study in the Urban Area of Monywa Township, Myanmar*”. News from the world of statistics, Vol. 1, Issue 4
5. Veena A and Sandeep Rao (2017). “*An Analysis of socio- economic conditions and migration patterns of migrants settlement in Bangaluru*”.
6. Priayanka and Megha (2018). “*Social structure of Bilawal village in Badhra block of Haryana: A geographical analysis*”. Vol.6, 2321-9939.
7. Adewale (2005). “*Socio- Economic factor associated with urban- rural migration Nigeria- A case study of Oyo state Negeria*”. Journal of human ecology, Vol. 17(1), pp.13–16.
8. Deotti, L., &Estruch, E. (2016). “*Addressing rural youth migration at its root causes: A conceptual framework*”.
9. International Labour Organization(2003). “*Statistics of employment and unemployment- Economically active population*”.
10. Berhanu (2012). “*The rural- urban Nexus in migration and livelihoods diversification: A case study of East Este Wereda and Bahiri Dari town, Amharai Region*”. African Books Collective.
11. Awumbila, M., Teye, J. K., Litchfield, J., Boakye-Yiadom, L., Deshingkar, P., &Quartey, P. (2015). “*Are migrant households better off than non-migrant households? Evidence from Ghana*”.
12. Ackah, C., & Medvedev, D. (2010). “*Internal Migration in Ghana: Determinants and Welfare impact*”. 25
13. P.K. and Viswanath (2015). “*Socio- economic conditions of migrant labourers-An empirical study in Kerala*”. Vol. 5 (11).
14. Kainth, G.S. (2009). “*Push and Pull Factors of Migration: A Case of Brick Kiln Industry of Punjab State*”. Asia-Pacific Journal of Social Sciences, 1, 82-116.
15. Yelhi Vero &khonzanthungOyuo (2021). “*Socio- Economic impact of rural- urban migration- A case study of Phiro village, Workha district*”. Annual Peer- Reviewed journal, Issue no 2, ISSN: 2349-8269.

## **Human Health risks from Heavy Metals in fresh Water fish in Paschim Medinipur district of West Bengal**

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**Abstract:** Heavy metals are individual metals and metal compounds that can impact human health. These are all naturally occurring substances which are often present in the environment at low levels. In larger amounts, they can be dangerous. Generally, humans are exposed to these metals by ingestion (drinking or eating) or inhalation (breathing). Working in or living near an industrial site which utilizes these metals and their compounds increases ones risk of exposure, as does living near a site where these metals have been improperly disposed. Subsistence lifestyles can also impose higher risks of exposure and health impacts because of hunting and gathering activities. Animals can accumulate metals as well by eating plants, fish, or drinking water with elevated metal concentrations. These metals are not excreted by the animals; rather, they accumulate mostly in the organs as well as the skin, hair, and bones. Fish accumulate metals from the water they live in as well as from organisms they eat. Bottom feeders are particularly susceptible to metals bioaccumulation as they can ingest sediments laced with metals. When comparing the accumulation of heavy metals in fishes of both marine and freshwater biomes, it can be observed that freshwater fishes tend to accumulate heavy metals in their organs more than marine fishes. The reason for such a difference between the two biomes is that freshwater fishes tend to lose salts and gain water. On the other hand, marine fishes tend to gain salts and lose water. Consequently, freshwater fishes are more exposed and vulnerable to heavy metal pollution. Heavy metals are specifically important due to their toxicity and ability to bioaccumulate in aquatic biomes. Heavy metals tend to accumulate in the aquatic environment because they cannot be degraded. Ultimately, this leads to human exposure and results in serious environmental problems.

### **Introduction:**

The environmental pollution is the universal problem and in aquatic network the heavy metals are most important pollutants because of their toxicity, accumulation and bio-magnification by marine creatures. Source of natural aquatic systems contamination of heavy metals are domestic, industrial and anthropogenic activities. The pollution caused by heavy metals might have. The heavy metal pollution have dreadful effects on the environmental equilibrium and a variety of aquatic entities. In the list of animal species, detrimental effects of these pollutants, can never be negligible for fishes . Fishing is a also general pastime including in urban areas .The pollutants such as heavy metals bioaccumulation in food chain causes the antagonistic effects, even death so in aquatic ecosystem fishes are used to determine the health condition among other animals . Accumulation patterns are more in some fish species than others because of the ability of fish to bioaccumulation metals. Heavy metals in fish come mainly from their diet, and levels of bioaccumulation of contaminants are higher in fish which comes higher through food chain . In this study, the levels of five heavy metals i.e. zinc, nickel, cadmium, lead and chromium has been determined from the fishes, sediments and water.

Heavy metals concentrate in water and entered into the food chain. The patterns of bioaccumulation of heavy metals are determined by the absorbance and excretion rates of fish. Different factors such as physical and chemical properties of water as well as seasonal changes are the reason of significant enhancement of metals in different fish tissues. Metal residual problems in the fish epithelium are stern, because of the presence of higher metal concentrations in water and sediments. On the contrary, heavy metals are of serious concern in this respect because they can be easily elevated in the food chain due to their bioaccumulation processes. The pattern of heavy metal uptake in fish is different in different species according to various factors i.e. the developmental and psychological factors and also the age of the fish. The toxic effects of heavy metals can affect the individual growth rates, physiological functions, mortality and reproduction in fish. Heavy metals entre in fish bodies by three possible ways: by gills, by digestive track and body surface. The gills are considered as the significant site for direct uptake of metals from the water , though the body surface is normally estimated to take minor part in uptake of heavy metals in fish . Heavy metal accumulation can also be caused by the food source, possibly leading to bio-magnification, the augmentation of toxins up the food chain . The periodic difference of heavy metals based on the data of two consecutive years and samples gathered from the fish farmexposed the following result: summer > autumn >winter > spring. As a human food, Fish are considered as an excellent source of

polyunsaturated fatty acids (predominantly omega-3 fatty acids), protein, Zn, iron and calcium . Seafood will be an even more important and safe source of food in future for protein and fatty acids for human intake and products made from aquaculture (WHO, 1999). Different factors that are considered to be critical are size, developmental stage and salinity in heavy metal toxicity to marine and estuarine organisms .Affected organisms show response to heavy metals by accumulating in their bodies or by shifting to the next trophic level of the food chain.

#### **Review of literature:**

**Afshan S, Ali S, Farid M, Bharwana S A et. al., 2014::** Most of the heavy metals are found in the body of fish. When people use fish as food, those metals enter the human body and cause various problems. Heavy metals are released into the environment for various human activities and aquatic animals die as they enter the food chain, so we need to use advanced technology to ensure that these heavy metals do not mix with the environment.

**Nwani C D, Nwachi D A, 2010 :**

A study was conducted between March 2006 and February 2007 to assess the concentration of Fe, Zn, Cu, Mn, Pb, and Cr in the gills and muscles of six fish species (*Chrysichthys nigrodigitatus*, *Clarias anguillaris*, *Tillapia zillii*, *Mormyrus rume rume*, *Mormyrus macrophthalmus* and *Mormyrus tapirus*) from lotic freshwater ecosystem at Afikpo South- East Nigeria using Atomic Absorption Spectrophotometer This study shows that while the concentration of Zn, Cu and Pb both in the muscles and gills of all the fish species were within the WHO (1994) and FEPA (2003) prescribed limits that of Fe (except in the muscles), Mn and Cr were beyond the limits. The BCF was highest in Fe but lowest in Cu both in the gills and muscles. If people use fish as food, the metals will also enter the human body through the food chain, which can be very harmful to human health.

**Bilal S, Junaid N, Ayub R, 2019:** conducted a study To assess and compare the concentration of heavy metals in farm and fresh water fish commonly consumed in district Peshawar Heavy metals accumulation in fresh and farm fish is an emerging global health issue. High level of mercury and arsenic are found in this study. Accumulation of heavy metals in the body of the fish has become a special health problem. The study found high levels of mercury and arsenic. Therefore, the concentration of mercury is above WHO in all samples is higher than that of other metals.

**Azamana F, Juahira H, Yunusb K, Azida A, 2015:**

Different metals (cobalt, manganese, zinc) are needed in small quantities for the survival of humans and other animals, but their levels can be very harmful for overeating. But other heavy metals are not an important element for humans, but are responsible for long-term accumulation in the body, causing illness and death in humans. This present mini-review accounts for the description of heavy metal in fish and the effect of toxic metals on the human health. Besides, the acid digestion method was also discussed in order to identify the best method for applying in the laboratory analysis. The best method used can reduce the contamination error in the results.

#### **Statement of the Problem:**

Heavy metals are one of the elements of the environment, their presence in the environment is considered unique. These metals cannot be removed once they enter the environment. So many problems arise from different aspects, this is why these metals are used in different cases to work with. We are concerned about various carcinogenicities today because of the presence of these toxic metals. These metals are causing cancer in human life, so tests on the metals have shown that their toxicity levels are intense and long lasting. Metals have been shown to causes acute as well as chronic poisoning in man and other experimental animals. And most of the metals are present in edible portion of fish. Humans are also affected by eating fish and can cause a few of health problems. The levels of toxic elements in different fishes depend on the fish sex, age, season and place. The pollution of waterways with anthropogenic activities are the major cause of aquatic loss and imbalanced food chain. Hence the researcher has selected his research entitled as "Human Health risks from Heavy Metals in fresh Water fish in Paschim Medinipur district of West Bengal"

**Rationale of the Study:** The main source of animal protein is fish. So many people depend on fish farming for their livelihood. But due to the contamination of heavy metals the production of fish is declining a lot, so the fishery resources are declining, these heavy metals are present for a long time, when these metals are released in the environment they enter the body of different fish in the pond. So the amount of these metals in the world is slowly increasing. Experiments with various fish have shown that the effects of metals are very harmful.

**Objectives:** The study will be conducted with the following objectives-

1. To study how heavy metals are accommodated in human body.

2. To study how the heavy metal affect the health of the human beings.
3. To study how the heavy metals affect the fresh water fishes.
4. To study how human health is being affected by fish consumption.
5. To find out the diseases caused by the heavy metals consumption.
6. To find determine the heavy metals concentration and toxicity in freshwater fishes.

#### **Hypothesis:**

**Hp-1:** There is significant affect of the heavy metals on the human body.

Hp-2: There are various fatal diseases caused by the heavy metals.

Hp-3: There is significant affect of the heavy metals on the fresh water fishes.

Hp-4: There is significant affect of the heavy metals on the bio diversity reserve.

Hp-5: There is highly affect of the heavy metals on the total food chain of the environment.

#### **Methodology:**

A total of 20 fish, belonging to the species *Lebeo rohita*, *Catla catla*, *Cirrhinus mrigal sp* was purchased from local fishermen. The sampling sites selected for this study were aquarium in home environment in Paschim Medinipur, West Bengal. The study will be conducted from April 2022 until December 2022. For *Lebeo rohita*, *Barbus ticto*, *Catla catla*, *Cirrhinus mrigala* weight of 1.5 kg and the length was 21.5 cm. The collected samples were stored in a cooler packed with ice and were sent immediately to the laboratory for the dissection of the organs after removing the scales and washed thoroughly. Only the fish tissues (muscles, gills, and liver) were dried separately for 24 h to a constant weight in an oven at 105 °C. The various organs from each species collected were pooled and milled with a mortar and pestle. About one gram of the dried tissue was weighed and then transferred into polyethylene tubes, and 8 mL of nitric acid and 4 mL of perchloric acid were added to the sample. All standard solutions and chemicals that were used in the current study were obtained from Merck (Darmstadt, Germany), and all of them were of analytical grade. To avoid contamination, all bottles and glassware used in the preparation of the samples were soaked in nitric acid for 15 min and rinsed with deionized water before being used. The prepared sample was left overnight at room temperature. The sample was digested, and the digestion tubes were placed in a water bath set to a boiling temperature. The tubed sample was left to boil for an hour and a half until all tissues had been dissolved. Then, they were cooled, filtered, and placed in plastic bottles. Acidic digestion of the sample was done according to the procedures mentioned in but the mineralization procedures were modified for the current study. The determination of heavy metals in the fish tissues was carried out using an atomic absorption spectrophotometer.

**Statistical Analysis :**The concentrations of metals in fish tissues were reported as µg/g per wet weight. One way-ANOVAs and t-tests were used to evaluate differences between *Catla catla* and *Lebeo rohita*. A p-value less than (0.05) was considered to be statistically significant. All statistical calculations were performed using Windows-based SPSS version 23.

#### **Conclusion:**

After reviewing all the issues, we came to know that various heavy metals are of biological importance as well as many heavy metals have biological toxicity in the laboratory, so these heavy metals are of great concern. The concentrations and oxidation states, which make them harmful. It is also important to know their sources, leaching processes, chemical conversions and their modes of deposition in polluting the environment, which essentially supports life. Literature sources point to the fact that these metals are released into the environment by both natural and anthropogenic means, especially mining and industrial activities, and automobile exhausts. They leach into the underground waters, moving along water pathways and eventually depositing in the aquifer, or are washed away by run-off into surface waters thereby resulting in water and subsequently soil pollution. Poisoning and toxicity in ecosystem occur frequently through exchange and co-ordination mechanisms.

#### **Reference:.**

1. Afshan S, Ali S, Farid M, Bharwana S A, Ahmad R.( 2014), Effect of Different Heavy Metal Pollution on Fish, Res. J. Chem. Env. Sci, 2(1);74-79.
2. Azamana F, Juahira H, Yunusb K, Azida A.(2015), HEAVY METAL IN FISH: ANALYSIS AND HUMAN HEALTH-A REVIEW, Jurnal Teknologi, 77(1);61-69.
3. Bilal S, Junaid N, Ayub R. ( 2019), Frequency & characteristics of diarrhea in patients with acute dengue fever, J Med Sci, 27(4);322-28.
4. El-Shehawi A M, Ali F K, Seehy M A.(2007), Estimation of water pollution by genetic biomarkers in tilapia and cat fish species shows species site interaction, Afr. J. Biotech, 6;840-846.
5. Mahurpawar M.(2015), EFFECTS OF HEAVY METALS ON HUMAN HEALTH, International Journal of Research – GRANTHAALAYAH, 2394-3629.

6. Nwani C D, Nwachi D A, Okogwu O I, Ude E F, Odoh G E.(2010), Heavy metals in fish species from lotic freshwater ecosystem at Afikpo, Nigeria, *Journal of Environmental Biology*, 31(5);595-601.
7. RASHED M N.( 2001), Monitoring of environmental heavy metals in fish from Nasser Lake, *Environ. Int*, 27;27- 33.
8. Yousafzai A M, Douglas P C, Khan A R, Ahmad I, Siraj M.( 2010), Comparison of Heavy Metals Burden in Two Freshwater Fishes *Wallago attu* and *Labeo dyocheilus* With Regard to Their Feeding Habits in Natural Ecosystem, *Pakistan J. Zool*, 42(5);537-544,.

## **A study on rural people's usage levels of online banking especially in pandemic period**

**Delma Pulikkottil**

**Abstract:** Indian banking witnessing a dynamic phase due to the invention of internet connectivity. Now a days all of the bank's riding on technology to achieve competitive advantage. The paper focus on assessing Rural people's awareness and factors that attract them for online banking. Structured questionnaire was used for data collection and the collected data analyses by using percentage analysis. The paper talks about the services provided by banks. It also captures how online banking ease is helping for social distancing. This study involves all type of age group and occupational status.

### **Introduction**

Banking sector plays a significant role in the development of an economy. The advent of Information Technology (IT) and its convergence with communication technology have drastically changed the landscape of banking services across the globe. The core issues faced by banks today are on the fronts of consumer's service expectations, cutting operational costs and managing competition. For this, banks are exploring new financial products and services options that would help them to grow the existing consumers. And any new financial product or service that a bank offers will be intrinsically related to technology. Modern banking is no longer confined to the branches only especially in the pandemic period. Internet banking system allows individuals to perform banking activities at home via internet. Internet banking transaction states that customers use the internet to get access to their personal or business bank accounts. Internet banking allows customers to do their banking transactions anytime and providing continuous control over their accounts. Now days Indian consumers are being provided with multiple modes of accessing banking transactions, including Telebanking, Payment banking Mobile banking, Internet banking, PC banking and banking through ATMs. Internet banking is one of the latest arrays in India. It has the core features and functions designed to improve the consumer's retention and adoption while placing the utmost emphasis on system security form simple account review to sophisticated payment transfer and self- service functionality.

### **Statement Of Problem**

Banking industry is currently witnessing a healthy competition to adopt new technology. With the evidence of Information Technology and its massive application in banking delivery of banking services has become more electric and online. The demand for internet banking is necessity hated by growing E-Commerce transactions and the domestic shift in banking left by the technology. During this pandemic period Internet banking is gaining acceptance from customers and its first catching up in India particularly in Kerala with great efficiency. There is a need to understand the customers awareness extent of internet banking use and the reason for the limited use. Since internet banking is delivered to the medium of Internet it is vulnerable to Cyber frauds and hence both bank and uses need to be extra cautious while using it. Before it is necessary to know the security, features adopted by bank customers awareness and the close on the security features and the precautions taken by the uses for safe banking over internet. The degree of usage of internet depends on customer satisfaction and it is determined by variety of factors. Due to the circumstances, it is felt imperative to make a study from the perspective of internet banking users in rural area. This present study focuses on use of internet banking among rural people.

**Objectives:** 1) To identify awareness level of rural people regarding internet banking.  
2) To identify the factors influencing to use the internet banking rural people.

### **Scope Of Study**

Internet banking have a greater importance in modern era. The scope of study is confined to the use of internet banking among rural people of Pavaratty Panchayat of Thrissur District. This study helps to define the factors influencing internet banking among rural people.

### **Research Methodology**

#### **Research Design**

A research design is the arrangement of conditions for collection and analysis of data in manner that aims to combine relevance to research purpose with economy in procedure. We are making use of questionnaire for the study. Descriptive research design is used for the study. Under this study, the primary data which was collected through structured questionnaire. 50 respondents from Pavaratty Panchayat was chosen as a sample size and random sampling technique is used for the study. Tools used under this study were percentage and table

#### **Limitations Of Study**

- The study was restricted to 5th ward in Pavaratty Panchayat of Thrissur district.
- Only a sample of 50 respondents was taken for study.
- The study could not be conducted in depth as the topic selected was wide and were provided only with limited time and resources

### **Review Of Literature**

Ying Wu et al. (2010). A STUDY OF BANK CUSTOMERS' PERCEIVED USEFULNESS OF ADOPTING ONLINE BANKING He made a survey on 194 online banking customers in Taiwan and they concluded that consumers use internet banking rather than other banking channels for the benefits it has been providing. In contrast, Octovian and Daniela (2006) mentioned that Romanian customers do not adopt internet banking services because they have lack of information about internet banking. In a parallel the study by Octovian and Daniela (2006) and Omar et al. (2011) found that most of the bank customers are still unaware of internet banking services and also customers have concerns about security, safety and lack of trust about internet banking services in Pakistan.

Jayshree Chavan (2013) Internet banking- benefits and challenges in an emerging economy. *International Journal of Research in Business Management*, 1(1), 19-26. The paper discusses some challenges in an emerging economy. Paper concluded that one of the benefits that banks experience when using ebanking is increased customer satisfaction. This due to that customers may access their accounts whenever, from anywhere, and they get involved more, this creating relationships with banks. Banks should provide their customers with convenience, meaning offering service through several distribution channels (ATM, Internet, physical branches) and have more functions available online.

Rajpreet Kaur Jassal et. el (2013) Comparative Study of Online Banking Security System of various Banks in India. "This paper aims to explains about the reason behind the security breaches and the participation of both customers and the banks to enable the hackers or crackers to access others network. The present study aims to find various types of flaws in the security of online banking those results in loss of money of account holders and financial institutions. Security breaches are not only because of banks faults and banks inadequate police but customers are equally responsible for it, because customer's awareness regarding security is equally important.

Roshanlal and R saluja (2012) E-Banking: The Indian Scenario, Asia Pacific. *Journal of Marketing & Management Review*, ISSN 2319 – 2836 Vol.1 (4). The progress in e-banking in Indian banking industry is measured through various parameters such as Computerization of branches, Automated Teller Machines, Transactions through Retail Electronic Payment Methods etc. Statistical and mathematical tools such as simple growth rate, percentages and averages etc are used. The paper also highlights the challenges faced by Indian banks in adoption of technology and recommendations are made to tackle these challenges. The paper concludes that in years to come e- banking will not only be acceptable mode of banking but preferred mode of banking.

### **THEORETICAL FRAMEWORK**

#### **Electronic Banking**

Electronic banking refers to the use of technology which allows customers to access banking services electronically whether it is to pay bills, transfer funds, view accounts or obtain information and advices.

Internet Banking has become an integral part of banking system in India. The concept of e-banking is of fairly recent origin in India. Till the early 90's traditional model of banking i.e. branch based banking was prevalent, but after that non-branch banking services were started. The Indian government enacted the IT Act, 2000, with effect from the 17th October 2000. To examine different aspects of Internet banking RBI set up a committee on Internet Banking. The committee had focused on three major areas of Internet banking, Technology and security issues, legal issues and regulatory and supervisory issues. RBI had accepted the suggestions and recommendations of the working committee and accordingly issued guidelines to banks to implement internet banking in India. The old manual systems which were prevalent in Indian banking for centuries seem to replace by modern technologies. Indian banks are making sincere efforts for the adoption of advanced technology and installation of e-delivery channels but still the concept and scope of E-banking is still evolving. It facilitates an effective payment and accounting system thereby enhancing the speed of delivery of banking services considerably. While E-banking has improved efficiency and convenience, it has also posed several challenges to the regulators and supervisors. Several initiatives taken by the government of India, as well as the Reserve Bank of India (RBI), have facilitated the development of E-banking in India. As already discussed, the government of India enacted the IT Act, 2000, which provides legal recognition to electronic transactions and other means of electronic commerce. The RBI has been preparing to upgrade itself as a regulator and supervisor of the technologically dominated financial system. It issued guidelines on risks and control in computer and telecommunication

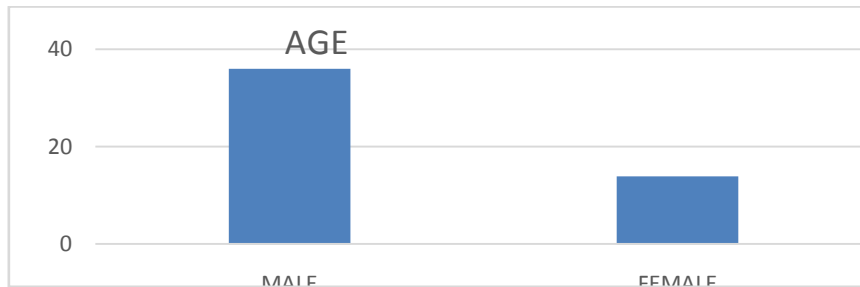
system to all banks, advising them to evaluate the risks inherent in the systems and put in place adequate control mechanisms to address these risks. The existing regulatory framework over banks has also been extended to E-banking. It covers various issues that fall within the framework of technology, security standards, and legal and regulatory issues.

**Data Analysis**

**Sex Composition Of Respondents**

TABLE 4.1

GENDER	NO OF RESPONDENTS	PERCENTAGE
MALE	36	72%
FEMALE	14	28%



(Source:Primarydata)

**Interpretation**

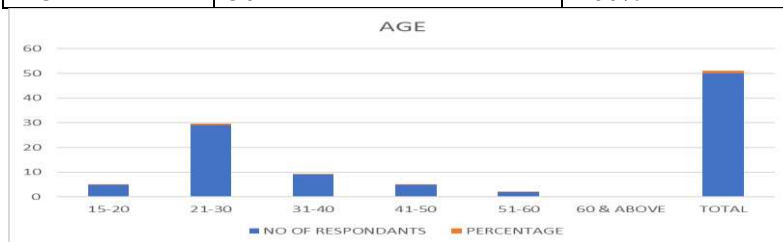
From the above figure it is clear that about 72% of respondents are Male and remaining 28% are women.

TABLE 4.2

**AGE COMPOSITION OF RESPONDENTS**

(Source :Primary data)

AGE GROUP	NO OF RESPONDANTS	PERCENTAGE
15-20	5	10%
21-30	29	58%
31-40	9	18%
41-50	5	10%
51-60	2	4%
60 & ABOVE	0	0%
TOTAL	50	100%



Interpretation : from the above figure it is clear that many of the respondents are youngsters 30% of respondents are bellowing's to 21-30 age group and 31-40 respectively

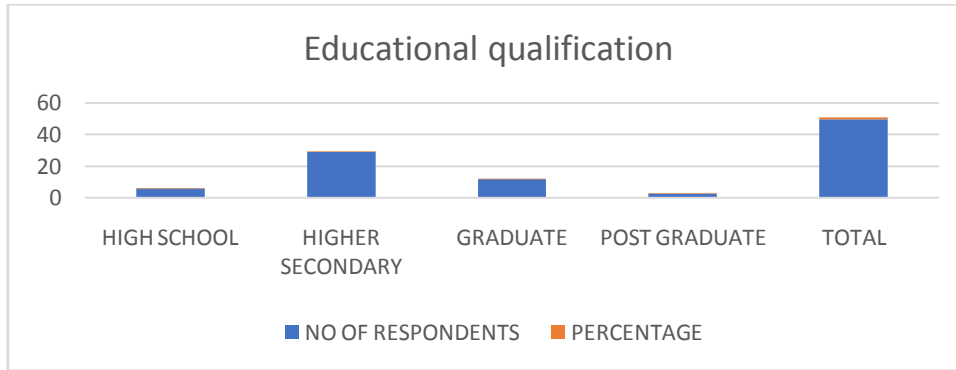
**Table 4.3**

**Education Qualification Of Respondents**

EDUCATION QUALIFICATION	NO OF RESPONDENTS	PERCENTAGE
HIGH SCHOOL	6	12%
HIGHER SECONDARY	29	58%
GRADUATE	12	24%
POST GRADUATE	3	6%

TOTAL	50	100%
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(Source: Primary Data)

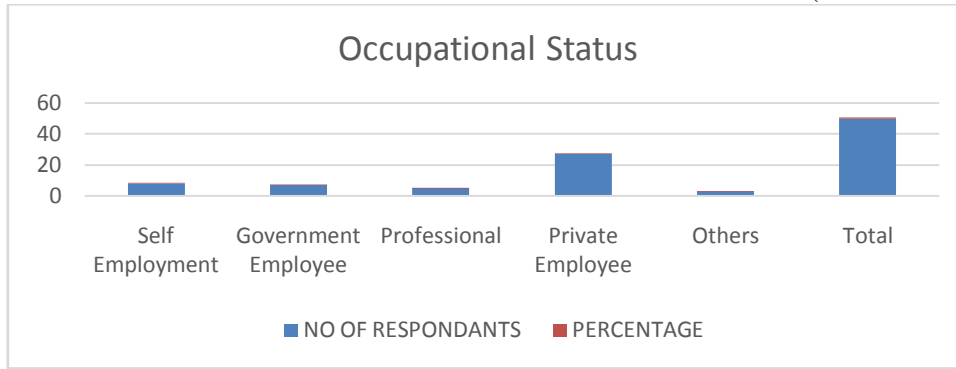


**Interpretation :**

From above figure it is clear that about 58% of respondents has done their higher secondary and least percentage are post graduates .Around 24% of respondents are graduates and 12% has only completed their high school.

TABLE 4.3 OCCUPATIONAL STATUS OF RESPONDENTS

(Source : Primary data )



OCCUPATION STATUS	NO OF RESPONDANTS	PERCENTAGE
Self Employment	8	16%
Government Employee	7	14%
Professional	5	10%
Private Employee	27	54%
Others	3	6%
Total	50	100%

**Interpretation :**

From above figure , it is clear that about 54% of respondents are Private employee. About 16% are self employed and 14% are government employee. Remaining is neither professionals nor others.

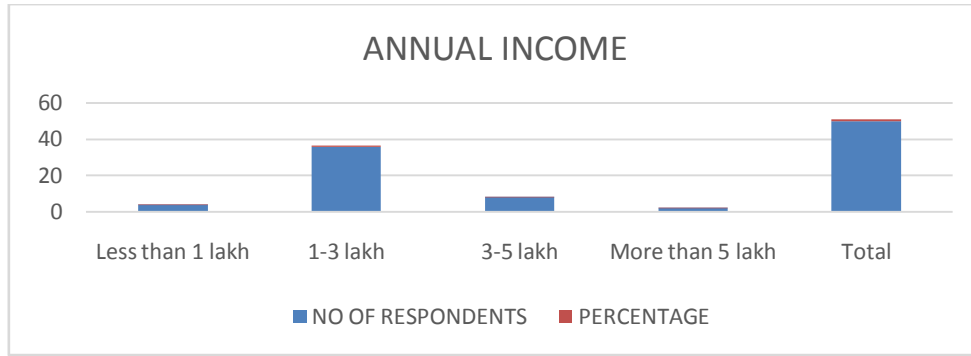
TABLE 4.4

(source :Primary data)

Annual income

FIGURE 4.4

ANNUAL INCOME	NO OF RESPONDENTS	PERCENTAGE
Less than 1 lakh	4	8%
1-3 lakh	36	72%
3-5 lakh	8	16%
More than 5 lakh	2	4%
Total	50	100%



Interpretation :

72% of respondents have an annual income between 1 to 3 lakh and 16% of respondents are in range of 3 to 5 lakh. Rest of 4% respondents have more than 5 lakh of income.

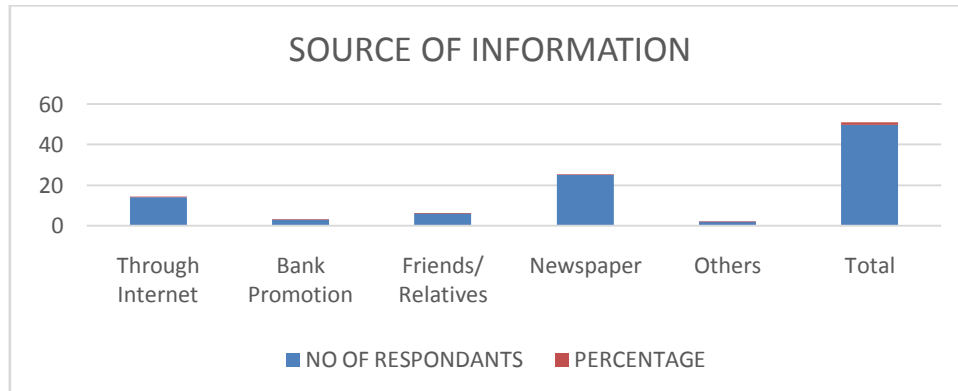
TABLE 4.6

Source of information

(source :Primary data)

Source of information	NO OF RESPONDANTS	PERCENTAGE
Through Internet	14	28%
Bank Promotion	3	6%
Friends/ Relatives	6	12%
Newspaper	25	50%
Others	2	4%
Total	50	100%

(source :Primary data)



Interpretation:

From above figure it is clear that about half of the respondents aware about e-banking through newspaper.28% & 12% aware through internet & friends& relatives respectively.

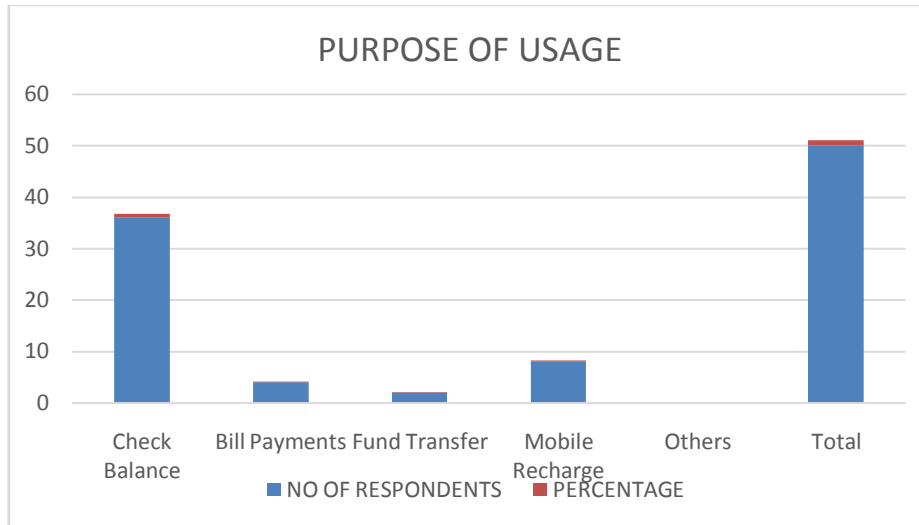
TABLE 4.7

PURPOSE OF USAGE

PURPOSE OF USAGE	NO OF RESPONDENTS	PERCENTAGE
Check Balance	36	72%
Bill Payments	4	8%
Fund Transfer	2	4%
Mobile Recharge	8	16%
Others	0	0
Total	50	100%

(Source: Primary Data)

FIGURE 4.7



Interpretation:

From the above figure it is clear that majority are using internet banking for checking their account balance. They comprises of 72%. About 16% of respondents are using for mobile recharge and 8% are using for bill payments. But rare are using for fund transfer.

TABLE4.9

PRIVACY HAVE AN INFLUENCE ON USAGE OF E-BANKING

PRIVACY HAVE AN INFLUENCE ON USAGE OF E-BANKING	NO OF RESPONDENTS	PERCENTAGE
STRONGLY DISAGREERE	0	0
DIAGREE	0	0
NO OPINION	8	16%
AGREE	26	52%
STRONGLY AGREE	16	32%
TOTAL	50	100%

(Source: Primary Data)

Interpretation:

From the above graph, it is clear about that more than half of respondents agree that the factor privacy has influenced on the usage of internet banking. Only 16% of them have no opinion about the factor privacy.

TABLE4.10, FREQUENCY OF USING E-BANKING

FREQUENCY OF USING E-BANKING	NO OF RESPONDENTS	PERCENTAGE
DAILY	5	10%
WEEKLY	18	36%
MONTHLY	27	54%
YEARLY	0	0
NEVER	0	0
TOTAL	50	100%

(Source :Primary Data)

Interpretation :

From the above graph, it is clear about that more than half of respondents use internet banking on monthly basis. 36% of respondents use weekly and only 10% use it daily. There is anybody who have never use internet banking.

TABLE 4.11, RELIABILITY AS A FACTOR

(Source: Primary Data)

RELIABILITY HAVE AN INFLUENCE ON USAGE OF E-BANKING	NO OF RESPONDENTS	PERCENTAGE
STRONGLY DISAGREE	0	
DISAGREE	2	4%
NO OPINION	6	12%
AGREE	19	38%
STRONGLY AGREE	23	46%
TOTAL	50	100%

Interpretation:

From the above graph, it is clear about that majority of respondents strongly agree that reliability has a great influence on their E-banking usage. Only few have no opinion and disagree to the statement.

TABLE 4.12

USAGE OF E-BANKING IS AN AFFORDABLE SERVICE

(Source: Primary Data)

USAGE OF E-BANKING IS AN AFFORDABLE SERVICE	NO OF RESPONDANTS	PERCENTAGE
STRONGLY DISAGREERE	0	0
DIAGREE	0	0
NO OPINION	3	6%
AGREE	27	54%
STRONGLY AGREE	20	40%
TOTAL	50	100%

Interpretation:

From the above table and figure it is clear about that majority of the respondents agree that the E-banking services are affordable for them. Very few has no opinion about the statement.

TABLE 4.13

USAGE OF E-BANKING ENABLES TO DO SERVICES QUICKLY & EFFECTIVELY	NO OF RESPONDENTS	PERCENTAGE
STRONGLY DISAGREE	0	0
DISAGREE	3	6%
NO OPINION	5	10%
AGREE	16	32%
STRONGLY DISAGREE	26	52%
TOTAL	50	100%

(Source: Primary Data)

**Interpretation :**

From the above table and figure, it is clear that very large percentage of the respondents go with statement that, E –banking enables to do quick and effective transactions and services. Only few has no opinion and disagree with the statement.

## **FINDINGS**

Through an analysis of use e banking of rural people in the 5 ward of Pavaratty Panchayat of Thrissur following is the findings:

- Majority of the respondents are males
- Most of them belong to age group of 21- 30.None of them is there from the group 60& above.
- Being rural area, majority has done their higher secondary only.24% of are graduates and only few has done their post graduates
- Most of them are private employees and 16% are self employed ones. Remaining are government employee or professionals or other occupations.
- Majority of the respondents receives the annual income of between 1-3 lakh and very rare people earn more than 5 lakh.
- Everyone has bank account and they are using E-banking for various purpose.
- Mainly they use E-banking for checking their account balance and for mobile recharge.
- Majority of the respondents use E-banking on weekly and monthly basis.
- A huge no of respondents agree that factor privacy has a great influence on their usage of E-banking. Most of them are very cautious about their personal data and risk involved in the use of E- banking
- More than half of the respondents go with the fact that the factor reliability has great influence on the usage of E-banking.
- Most of them are agreeing that E-banking is an affordable service for them.
- E-banking enables them to do their transactions and services more quickly and effectively
- Everyone has a good experience with use of E-banking.

### **Suggestions**

Based on the findings of the study, the following suggestions are made;

- Majority of respondents are using E-banking only for checking balance. Only few use it for fund transfer and bill payment. The reasons behind this fear of risk and unaware of usage. So banks need to take proper steps to educate rural people regarding their usage
- Factors like privacy and reliability has a great influence on the usage of E-banking. So banks need to give more importance to privacy of their customer's personal details and transactions. They need to provide quality and trustworthy platform to do their e-banking services with great amount of security and consistency.

## **CONCLUSION**

Internet banking is on the rise. When viewed as another channel, its benefits are modest. However, when integrated with other channels, Internet banking becomes a powerful tool for improving consumer satisfaction and increasing cross-selling opportunities. But at the same time banks must keep in mind that, every electronic channel including the Internet has its short falls which can have major consequences. Keeping track of the ever changing banking industry and the latest update in Internet technology, banks need to equip themselves for the competition. Even though there are enormous opportunities, transaction should not be neglected or relegated to the sidelines. This is because there are numerous aspects of banking which cannot be currently accomplished by electronic impulses. Internet banking seems poised to become an important part of the Indian banking sector in the years to come. The banking today is re-defined and re-engineered with the use of Information Technology and it is sure that the future of banking will offer more sophisticated services to the customers with the continuous product and process innovations. The concept & Technology are new to the rural consumer in recent year, mostly people are using nearer to one year. The different facilities of internet banking which are provided by the bank in that, balance inquiry are the mostly preferred out by its various facilities, the concept are not much developed so the other types of facilities are provided by the bank are not having much usage likes Term loan, online FD, Demand Draft facilities etc. Comparing the traditional banking with internet banking it seems that most respondent are satisfying with internet banking that it provide the different types of facility available to the respondent to use. Expectations of consumers towards Internet-banking are time saving, convenience, user friendly and best in security. The major reasons for using internet banking facilities are, peoples having traditional account in the same bank and excellent services provided by them.Thus, there is a paradigm shift from the seller's market to buyer's market in the industry and finally it affected at the bankers level to change their approach from "conventional banking to convenience banking" and "mass banking to class banking". The shift has also increased

the degree of accessibility of a common man to bank for his variety of needs and requirements. Analysts claim that Internet banking holds lots of potential with the emergence of growing Internet awareness among customers, integration of banking services with e-commerce service, the increasing reach of the Internet and the entry of global players in the banking sector. Reserve Bank of India has come out with Internet banking related guidelines.

#### **BIBLIOGRAPHY**

1. Ashok Bahadur Singh (2012) Mobile Banking Based Money Order for India Post: Feasible Model and Assessing Demand Potential Procedia - Social and Behavioral Sciences 2012; 37:466-481.
2. Balwinder Singh and Pooja Malhotra (2014) Eurasian Journal of Business and Economics Vol. 2 (4) pp 43-62.
3. JayshreeChavan (2013) Internet banking- benefits and challenges in an emerging economy. International Journal of Research in Business Management,. 1(1), 19-26. “
4. Vikas Chauhan and vipinChoudhary (2015)V Chauhan, V Choudhary.Apeejay - Journal of Management Sciences and Technology (AJMST) 2 (3), 29-40, 2015.7, 2015.

## **Temperature Dependence Thickness, Grain size And Optical Properties of ZnO Thin Films By Spray Pyrolysis Techniques**

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**Abstract:** ZnO thin films were deposited by Chemical Spray Pyrolysis technique. The substrate temperature was maintained at 400°C for uniform deposition of thin film. The pH of the solution and morality were controlled for uniform spray on to heated glass substrate. The transparent white colored thin films were annealed in air atmosphere at 450°C for the betterment oxidation of ZnO material. As deposited an annealed films were characterized using the XRD. The films have uniform morphology with uniform grains distribution throughout the substrate. The electrical properties were studied using four probe method. Plots of Log  $\rho$  vs (1000/T) for various substrate temperature at constant 0.2M concentration show that The dependence of log of electrical resistivity with reciprocal of temperature is nonlinear due to the irregular grain boundaries and large spacing between them (defect states). The other studies reveal that the ZnO thin films are more useful for optoelectronic applications.

### **Introduction:**

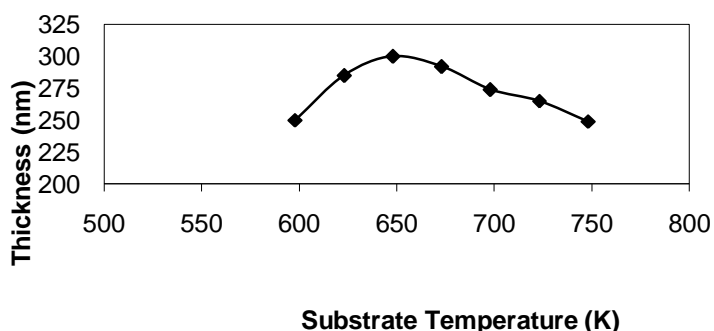
Semiconductor II-VI group have numerous applications in photovoltaic, solar cell optoelectronic devices. However, particularly Zinc oxide (ZnO) has been of considerable interest to the electrical and optical industries, due to its electrical, optical and acoustic characteristics. ZnO thin films are of great interest for applications like optoelectronic devices such as lasers modulators and optical switches and photovoltaic applications [1-4]. Different techniques have been employed to prepare ZnO thin films such as RF magnetron sputtering [5], sol-gel [6], DMSO chemical bath [7] and spray pyrolysis [8]. Out of them spray pyrolysis technique is considered as a useful technique for large area deposition due to the low cost and simplicity of the apparatus[9]. In the present work polycrystalline wurtzite zinc oxide thin films have been deposited by spray pyrolysis technique using aqueous solution of zinc acetate. The preparation of oxide thin films by spray pyrolysis from an aqueous solution presents several advantages over the above techniques. The wide bandgap properties of semiconductors, such as Zinc oxide are conducting, transparent in the visible region with a wide direct bandgap of 3.30 eV at room temperature.

### **Experimental:**

ZnO thin films have been deposited by spraying an aqueous solution of zinc acetate having 0.2M on a heated glass substrate. The substrate temperature was kept within the range 648-748K with an accuracy of  $\pm 5K$ . Compressed air was used as a carrier gas having spray rate maintained at 5ml/min. The nozzle to substrate distance was kept 25cm apart. To enhance the conductivity deposited films were annealed at 375K for 60 min. The films from acetate solution having other morality constriations such as 0.1,0.3 and 0.4 were also prepared at optimum substrate temperature without changing other preparative parameters. The apparatus and deposition details have been already reported. Structral Characterization of ZnO thin films was carried out using PHILIPS X-pert PRO model X-Ray diffractometer. The optical studies were carried out using technique and using model..

### **Result and discussion:**

#### **XRD analysis:**



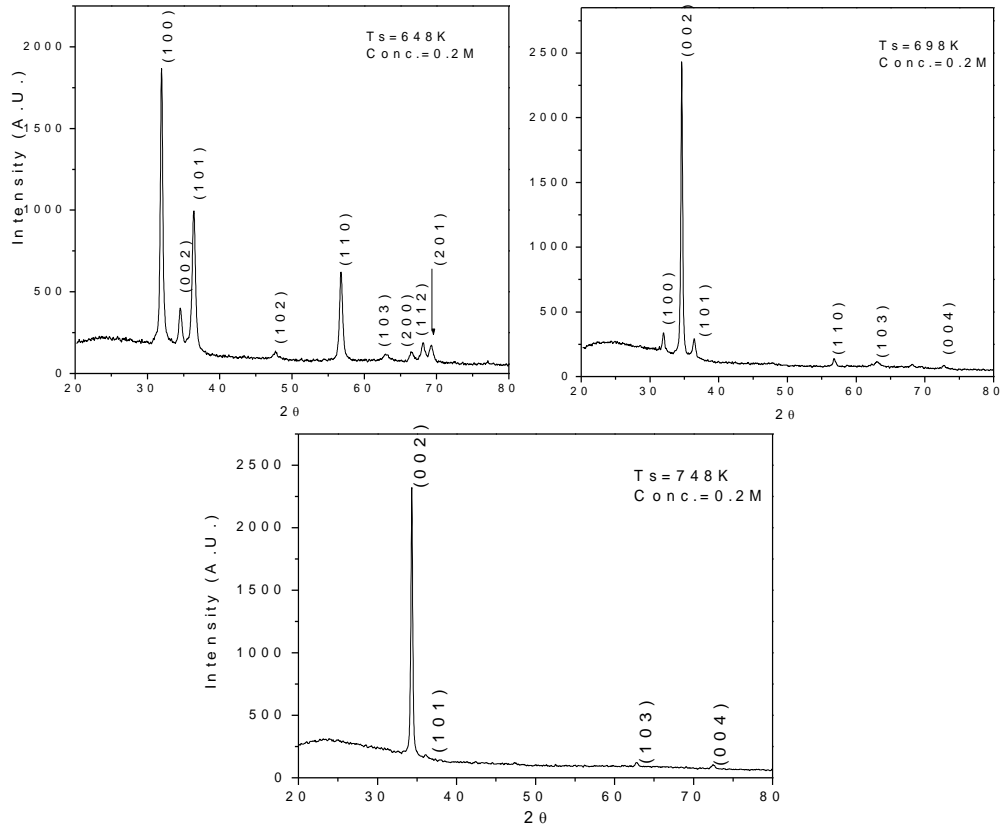
**Figure 1** Variation of thickness with substrate temperature for ZnO Thin films at constant 0.2 M concentration.

Thickness of deposited ZnO thin films was measured by a gravimetric weight difference method using equation 1.

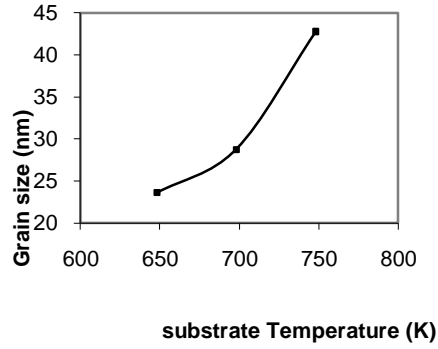
$$n_o^2 - k_o^2 = n_1^2 \sin^2 \phi_1 \left[ 1 + \frac{\tan^2 \phi_1 (\cos^2 2\psi - \sin^2 2\psi \sin^2 \Delta)}{(1 + \sin 2\psi \cos \Delta)^2} \right]$$

$$n_o k_o = \frac{n_1^2 \sin^2 \phi_1 \tan^2 \phi_1 \sin 2\psi \cos 2\psi \sin \Delta}{(1 + \sin 2\psi \cos \Delta)^2}$$

The density of deposited material was assumed to be the same as that of bulk form. {i.e.  $\rho = 5.67526$  (19)  $\text{gm/cm}^3$  for ZnO films}. Figure 1 shows the variation of thickness with the substrate temperature of ZnO thin films at a constant 0.2 M concentration. It was observed that thickness of the film increases up to substrate temperature 648 K and thereafter decreases. ZnO thin films deposited at 648 K has maximum thickness. The decrease in thickness for lower substrate temperature than 648 K may be attributed to incomplete thermal decomposition of the sprayed solution. For higher substrate temperature thickness again decreases may be due to complete decomposition. Thus, substrate temperature 648 K is optimized for ZnO thin films.



It is also found that the strongest preferential orientation is along (002) crystal plane for 0.1 M and 0.3 M concentrations while it is along (100) crystal plane for 0.2 M and 0.4 M. Indicating that most grains have orientation along c- axis and a-axis respectively. The c-axis orientation of ZnO thin films is known for the thin films obtained by sputtering, chemical vapor deposition [10, 11], and spray Pyrolysis techniques [12].



**Figure 2** Plots of grain size versus substrate temperature of ZnO thin films at 0.2 concentration

Figure 2 shows the variation of grain size with substrate temperature at constant 0.2 M concentration of ZnO thin films. It is clear that grain size increases with the increase in substrate temperature.

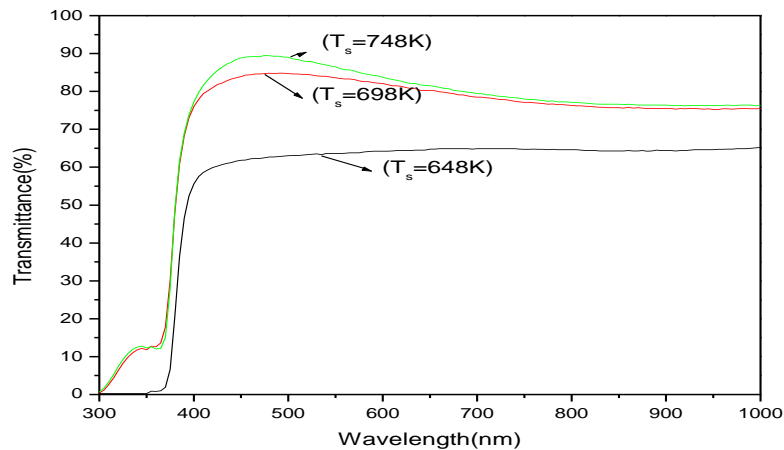
**Optical Transmittance Studies:**

The optical transmittance spectra of zinc oxide thin films deposited by spray pyrolysis as a sample for different substrate temperature at constant molar concentrations are as shown in Figure 3. The transmittance spectra were recorded within the wavelength range 300-900 nm. From Figure 3 it is observed that the transmittance increases as the substrate temperature increases. The spectra clearly show two regions; one for lower wavelengths with high transmittance up to 400 nm and other for longer wavelength after 400 nm shows transmittance shows nearly constant variation. The transmittance spectra obtained for various concentrations as shown in figure 3 gives the similar results. The optical absorption coefficient ( $\alpha$ ) of ZnO thin films have been calculated from the transmittance spectra. In general the optical absorption coefficient ( $\alpha$ ) and photon energy ( $h\nu$ ) are related as;

$$\alpha = (A/h\nu) (h\nu - E_g)^m \quad (2)$$

where A is a constant and m takes values 1/2, 2, 3/2 and 3 for allowed direct, allowed indirect, forbidden direct and forbidden indirect transitions, respectively [13]. The allowed direct transition in a semiconductor is related by;

$$\alpha = A (h\nu - E_g)^{1/2} \quad (3.2)$$



**Figure.3** Transmittance spectra of ZnO thin films for various substrate temperatures at a constant 0.2M Concentration.

**Conclusion:**

Thin films of ZnO have been prepared on to glass substrate using precursor solution of zinc acetate by spray pyrolysis deposition technique. From all the diffractograms it is clear that the material deposited is ZnO of polycrystalline nature. Results of x-ray diffraction measurement shows spray pyrolysis of zinc acetate leads to pure ZnO films with a hexagonal wurtzite type structure. These films show the orientation along c-axis with a grain size of the order of 30 nm. It is observed that the transmittance

increases as the substrate temperature increases. The spectra clearly show two regions; one for lower wavelengths with high transmittance up to 400 nm and other for longer wavelength after 400 nm shows transmittance shows nearly constant variation. Arrhenius plots for temperatures lower than 400 nm gives the bandgap for ZnO, which was of the order of 3.4 eV.

**References:**

1. Zhong Lin Wang, *Materialstoday*, (2004), 26.
2. K.L. Chopra, and S.R. Das, *Thin Film Solar Cells*, Plenum Press, New York.
3. K.S. Weissenrider and J. Mullar, *Thin Solid Films*, 300, (1997), 30.
4. J. Mullar, and S. Weissenrider, *Fresenius, J. Anal. Chem.*, 349, (1994), 380.
5. F.C. Lin, Y. Takao, Y. Shimizu, and M. Egashira, *Sens. Actuators B*, 843, (1995), 24, 25.
6. M.S. Ramanchalam, A. Rohatgi, W.B. Carter, J.P. Shaffer, and T.K. Gupta,
7. *J. Electron. Mater.*, 24, (1995), 413.
8. W.-C. Shih and M.-S. Wu, *J. Cryst. Growth*, 137, (1998), 319.
- A. Banerjee, and G. Guha, *J. Appl. Phys.*, 69, (1991), 1034.
9. M.de laL.Olvera, A.Maldonado, R.Asonmoza and S.Tirado-Guerra, *Thin Solid*
10. *Films*, 411, (2002),198.
11. S. Srivastav, C.V.R. Vasant Kumar, and A. Manisingh, *J. Phys. D* 22, (1989), 1768.
12. S.K. Ghandhi, R.J. Field, and J.R. Shealy, *Appl. Phys. Lett.* 37, (1980), 449.
13. M.F. Ogawa, Y. Natsume, T. Hirayama, and H. Sakata, *J. Mater. Sci. Lett.*, 9 (1990), 1351.
14. D. Bhattacharya, S. Choudhuri and A.K. Pal, *Vacuum*, 43, (1992), 313.

## **Growth and Optoelectronic properties of ZnO Thin films by Chemical Spray Pyrolysis Deposition Technique**

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**Abstract :** ZnO thin films were deposited by Chemical Spray Pyrolysis technique. The substrate temperature was maintained at 425°C for uniform deposition of thin film. The pH of the solution and morality were controlled for uniform spray on to heated glass substrate. The transparent white colored thin films were annealed in air atmosphere at 450°C for the betterment oxidation of ZnO material. As deposited an annealed films were characterized using the XRD, and Spectrophotometry. The films have uniform morphology with uniform grains distribution throughout the substrate. The transmittance spectra indicate that films have more transparence and calculated band gap is equal to 3.13 eV. The other studies reveal that the ZnO thin films are more useful for optoelectronic applications.

### **Introduction:**

Zinc oxide (ZnO) has been of considerable interest to the optical and electrical industries, because of its electrical optical and acoustic characteristics. Zinc oxide thin films are usually prepared by several techniques, such as Molecular Beam Epitaxy [1], Chemical Vapour Deposition[2], Ion Plating[3], Magnetron Sputtering[4], Laser Ablation[5] and Spray pyrolysis[6] etc. The preparation of oxide thin films by spray pyrolysis from an aqueous solution presents several advantages over the above techniques. In the present work highly transparent and conductive Zinc oxide thin films were prepared by spray pyrolysis technique at different substrate temperatures using a precursor solution of Zinc acetate.

### **Experimental:**

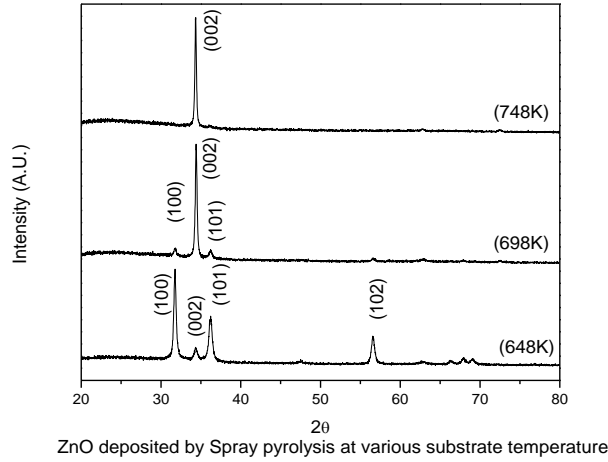
Zinc oxide (ZnO) thin films were deposited by spraying an aqueous solution of zinc acetate 0.2M on a heated glass substrate. The substrate temperature was kept at constant temperature within the range 648-748K with an accuracy of  $\pm 5$ K. Compressed air was used as a carrier gas and spray rate was maintained at 5ml/min. The nozzle to substrate distance was kept 25cm apart. To enhance the conductivity deposited films were annealed at 375K for 60 min. The films from acetate solution having molarity 0.1,0.3 and 0.4 were also prepared at optimum substrate temperature without changing other preparative parameters. The apparatus and deposition details have been already reported.

Characterization of ZnO thin films was carried out using PHILIPS X-pert PRO model X-Ray diffractometer. Film thickness was measured by Tolansky Interferometric method. The electrical studies were carried out using four-probe technique and using SHIMADHZU 160-A model optical transmittance versus wavelength studies were done to determine the optical band gap.

### **Result and discussion:**

#### **XRD analysis:**

Fig 1. shows the X-Ray diffraction pattern of Zinc oxide thin films prepared by spray pyrolysis technique at different substrate temperature using an aqueous solution having molarity 0.2M of zinc acetate. All the peaks in this diffraction pattern indicates polycrystalline nature, which corresponds to hexagonal wurtzite structure of ZnO films with prominent diffraction from crystal planes like (002), (101), (100) and (102) at 648K. These peaks are indexed on the basis of JCPDS data card 5-0664. The preferential orientation was along (002) plane. The calculated values of lattice constant are found to close that of JCPDS data reported for ZnO powder sample. The peak intensity ratio ( $I_{hkl} / I_{max}$ ) gives the measure of preferential orientations in the films. The strongest peak corresponds to (002) plane indicating that most grains have c-axis perpendicular to the surface. The peak intensity of (002) plane increase as the substrate temperature increases.



**Optical studies:**

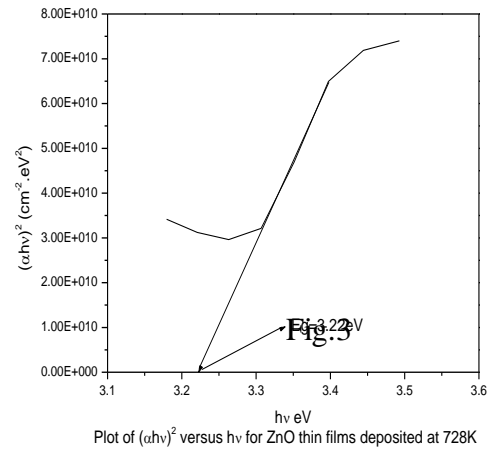
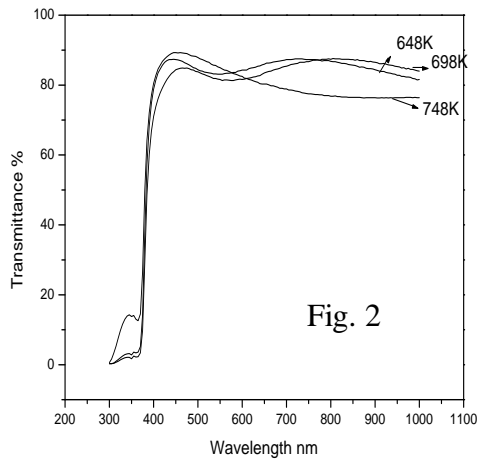
Fig. 2 indicates that the optical transmittance spectra of the as deposited films using an aqueous solution of zinc acetate having molarity 0.2M at various substrate temperatures.

The transmittance measurements was recorded in wavelength range 300-900nm. The intrinsic absorption in a semiconductor occurs in the vicinity of the near band gap. The absorption coefficient alpha was calculated using Lambert's law.

$$\alpha = \frac{-\ln(1/T)}{t}$$

Where T = transmittance and t =thickness of the film.

Figure 3 gives the typical plot of  $(\alpha h\nu)^2$  versus  $h\nu$  for ZnO thin films prepared at 748K. when the linear portion of the graph is extrapolated to zero, the intercept on  $h\nu$  axis gives the optical energy band gap, which was calculated to be 3.22eV.. The effect of band gap widening is attributed primarily to the Burstein-Moss shift in semiconductors. The optical band gap obtained is in good agreement in reported values (Roh and Willians 1981: Cherish Eberspachar et. al. 1986)



**Conculsion:**

ZnO thin films were deposited on heated glass substrates by low cost spray pyrolysis technique. The XRD patterns show a polycrystalline nature with Wurtzite crystal structure. The transmittance of the ZnO thin films depends on substrate temperature. The films deposited at optimum conditions exhibit high conductivity along with transmittance of 87% at 450nm. The best films were obtained at 748K with 0.2M concentration having uniform thickness.

**Acknowledgement:**

We are thankful to the Head of the Department of Physics, Dr. BAM University, Aurangabad for providing lab and computational facilities. One of the Author is also thankful to Principal, Shri Havagiswami College, Udgir, for providing leaves and motivating him to carry out the research work.

**References:**

1. Zhong Lin Wang, *Materialstoday*, (2004), 26.
2. K.L. Chopra, and S.R. Das, *Thin Film Solar Cells*, Plenum Press, New York.
3. K.S. Weissenrider and J. Mullar, *Thin Solid Films*, 300, (1997), 30.
4. J. Mullar, and S. Weissenrider, *Fresenius, J. Anal. Chem.*, 349, (1994), 380.
5. F.C. Lin, Y. Takao, Y. Shimizu, and M. Egashira, *Sens. Actuators B*, 843, (1995), 24, 25.
6. M.S. Ramanchalam, A. Rohatgi, W.B. Carter, J.P. Shaffer, and T.K. Gupta, *J. Electron. Mater.*, 24, (1995), 413.
7. W.-C. Shih and M.-S. Wu, *J. Cryst. Growth*, 137, (1998), 319.

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