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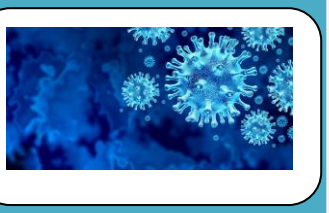

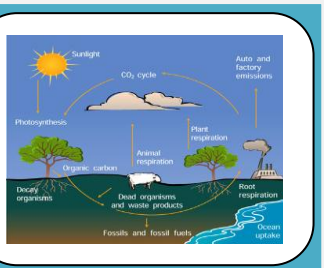

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Impact of Environment on Agriculture, Health, Water Resources, Social Life & Industrial Development

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CONTENTS

Impact of Corona Crisis on Buying Behaviour of Health Insurance Policyholders in Solapur City

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Abstract :

The present study related with the buying behavior about health insurance products in Solapur City. As the corona crisis had negative impact on the economy of every country, which disturbed the all type of financial planning of the individuals who have not taken sufficient of health insurance cover. The present research is related to find out the variables which caused impact on the buying behavior of the respondents for buying health insurance products. For the present study the primary data was collected online using google form from January 2021. The data was analyzed by using various statistical tools such as Mean, Percentage and Chi-square test were used for the hypothesis testing. The analyzed data was presented in tabulation format. After analyzing the data, it was concluded that, the buying behavior of male respondents was more than the female respondents. It was also found that, the effect of income is important for buying of health insurance policy. The respondents were self-motivated for buying Health Insurance policy. The 'Star Health & Allied Insurance Co.Ltd.' is playing very important role in the Solapur city. It was also found that advertisement factor does not affect on buying health insurance policy.

Keywords: *Health Insurance, Buying behavior, Corona Crisis, Motivating factors.*

Introduction :

The study is carried out to find the buying behavior about health insurance policy in the people of Solapur City. Due to COVID-19 pandemic not only India but also whole world has impacted long term, medium term and short term financial planning. Those who have not taken the health insurance policy, the financial impact of COVID-19 was more than health insurance policyholders. This situation encouraged the researcher to carry out the study and find out the financial impact on the health insurance policyholders. In the market, there were various players in the health insurance sector. The researcher tried to know the most preferred health insurance policy in the Solapur city.

Rationale of the Study:

The researcher want to study the impact of corona crisis on the buying behavior of buying health insurance policies in Solapur city considering gender, income, preference to companies & motivating factors.

Objectives of the study

1. To study the buying behavior of health insurance policy in lower income group during corona crisis
2. To study the buying behavior of males and females regarding the health insurance policy.
3. To know the company which were popular for selling health insurance policy in Solapur City.
4. To study the motivating factors for buying health insurance products.

Hypothesis :

H_{01} : The age and income factors does not effects on buying the health insurance policy.
H_{11} : The age and income factors effects on buying the health insurance policy.
H_{02} : The females were not conscious about purchase of health insurance policy than Male.
H_{22} : The females were conscious about purchase of health insurance policy than male.
H_{03} : Agents/officials do not play an important role in buying health insurance policy.
H_{13} : Agents/officials play an important role in buying health insurance policy.

Review of Literature:

Pattnaik A.K. (2019), in the study found that, one of the important factors in finalizing the medical insurance is the level of satisfaction. Continuous efforts can be made that how maximum people with their families can go for medical insurance. **Suman Devi (2019),** according to the researcher, health insurance should be available to all. The researcher expects a higher public awareness about the health insurance. He also advocates public and private cooperation for exploring the full potential of India. **Dr. Rana Rohit Singh et.al. (2020),** according to them it is found that, innovations in health insurance sector can play a very important role in India. The health insurance companies should adopt new business models to increase their business in all respect.

Research Methodology:

For the present study, primary as well as secondary data was used. Primary data was collected through a structured questionnaire. For selection of samples, the snowball method of non-probability sampling method was used. The total sample size was 186 which were collected from the Solapur city of Maharashtra State. The primary data was collected through online mode by using google form during the month of January, 2021. For testing of the hypothesis Chi-square test was used at 5% level of significance.

Data Analysis and Interpretation :

1. Buying behavior in males and females :

Table 1 : Buying behavior in males and females

No.	Gender	Respondents	Percentage
1.	Male	122	65.59
2.	Female	64	34.41
	Total	**186**	**100.00**

Source : Compiled by the researcher.

Table 1 reveals that, out of total 186 respondents, 122 (65.59%) respondents belong to male category and remaining 64 (34.41%) respondents belongs to female category. It is clearly noted that, the buying behavior of health insurance policy is more in male category as compared to female category.

2. Impact of income on buying the health insurance policy.

Table-2 : Income of the respondents

No.	Income group (Per annum)	Respon-dents	Percen-tage
1	Below Rs. 3 Lakhs	65	34.95
2	Rs. 3 - 5 lakhs	46	24.73
3	Rs. 5 - 10 lakhs	53	28.49
4	Above Rs. 10 lakhs	22	11.83
	Total	**186**	**100**

Source : Compiled by the researcher.

Table-2 shows that the lower income group respondents were also interested in buying the health insurance policies.

3. Awareness in age group for buying the health insurance policy

Table 3 : Age of the respondents

No.	Income group	Respon-dents	Percen-tage
1	Upto 30 years	49	26.34
2	30-40 years	37	19.89
3	40-50 years	56	30.11
4	50-60 years	40	21.51
5	Above 60 years	4	2.15
	Total	**186**	**100.00**

Source : Compiled by the researcher.

4. Data Analysis of the most preferred Insurance Companies selling their health insurance policy in Solapur City.

Table 4 :

No.	Name of the Health Insurance Company	No. of Buyers	Percen-tage
1	Star Health & Allied Insurance Co.Ltd.	40	21.51
2	United India Insurance Co. Ltd.	23	12.37
3	The Oriental Insurance Co. Ltd.	21	11.29

Source : Compiled by the researcher.

Factors influencing on buying health insurance policy :

At the time of buying any product various factors were affected on the decision of the respondents. The researcher collects the data, the factors which were included on the respondents.

Table 5 : Factors influencing on buying health insurance policy.

No.	Motivation factor	No. of Buyers	Percentage
1	Self-motivated	92	49.46
2	Insurance agents / officials	63	33.87
3	Tax consultant / advisor	6	3.23
4	Advertisement	3	1.61
5	Friends / Relatives / Colleagues	18	9.68
6	Any other	4	2.15
	Total	**186**	**100.00**

Source : Compiled by the researcher.

Testing of Hypothesis :

For testing of hypothesis the Chi-square test is used. Table No 6 explains the acceptance or rejection of the hypothesis.

Table 6 : Testing of Hypothesis

Hypothesis	Degree of Freedom	Level of Significance	Table Value of X^2	Calculated Value X^2	Accepted / Rejected
H_{01} :The age and income factors does not effects on buying the health insurance policy	12	5%	21.026	24.99	Rejected
H_{02} : The females were not conscious about purchase of health insurance policy than male.	3	5%	7.815	3.73	Accepted
H_{03} : Agents / officials does not play an important role in buying health insurance policy	4	5%	9.488	227.48	Rejected

Source : Compiled by the researcher.

Table 6 shows that, out of three hypothesis two were rejected and only one hypothesis is accepted. The first hypothesis 'The age and income factors does not effects on buying the health insurance policy' is rejected. It means 'The age and income factors effects on buying the health insurance policy' is accepted. Majority of 40-50 year group respondents were aware about the purchase of health insurance policy. The second hypothesis, 'The females were not conscious about purchase of health insurance policy than male' were accepted. As compare to male, the female respondents were not aware about the buying health insurance policy. The third hypothesis, 'Agents / officials does not play an important role in buying health insurance policy' were rejected and the alternative hypothesis 'Agents / officials play an important role in buying health insurance policy' were playing a very important role for motivating the people for buying health insurance policy.

Conclusions & Recommendations:

During the research, the researcher was found that, the buying behavior of male respondents was more than the female respondents during the study period in Solapur City. The researcher studied on the factor of income, which effects on buying the health insurance policy. During study period, it was found that even the income was below 3 lakhs, the respondents were buying the health insurance policy. It means the effect of income is important for buying of health insurance policy. Because, during study period of study, majority of respondents buy the health insurance policy, those who were self-motivated followed by the impact of agents / officials of Health Insurance Company. The age group belongs to 40-50 years were more conscious about the buying the health insurance policy as compared to senior citizens having their age group above 60 years. In the Solapur city, majority players who sell their products in health insurance were **'**Star Health & Allied Insurance Co. Ltd.', followed by 'United India Insurance Co. Ltd.' 23 (12.37%) and 'The Oriental Insurance Co. Ltd.' It was found that advertisement factors does not effects on buying of health insurance policy.

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Water Scarcity : Origin And Management

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Introduction :-

Water is the basic natural resource on the earth and it's basic need for the every life no the earth. Water is consumption by human beings and animal for their survival, human being also use the water for their various activities such as agricultural product, industrial process, domestic needs etc. Plants survival and its growth is depends upon water. So water is very important resource on the earth. The global population has reached 767.35 crores in year of 2019,out of which the Indian population is 136.64 crores which is the 17.80 percent out of the world population. The global population is increased by 155.92 crores which is increased by 25 per cent between the 19years. The Indian population is expected to increase by 30.98 crores and it increased by 29.32 percent as compare to the year of 2000. Supplying adequate water to the global population is difficult task in the wake of growing industrial and domestic needs. The available fresh water resource is limited and it becoming polluted due to various activities of man, such as improper and uncontrolled waste disposal, over exploitation and misuse, inadequate water resource management, rapid urbanization, inadequate sanitation system, transport and leakages of water pollutants in water bodies etc. The shortage of available fresh water is resulting in unsufficient water supply, poor quality and scarcity of water supply has to created the dispute among the one person to another person and other hand one state to another state as well as one country to another country. Water scarcity or tress is the lock of water resource to meet the standard water demand .Half a billion people in the world face water scarcity. Humanity is facing a water crisis due to unequal distribution according to periodic and geographic region, After that sharp rise in global fresh water demand in recent decades . So many crisis created due to the water scarcity. The Cauvery river water disputes between the Tamilnadu state and Karnataka state, The Indus river water dispute between the India and Pakistan, like that so many water crisis pending among the various neighbor countries in the world. This article highlight on the issues which is introduced above with related to availability , use and scarcity of water resources. Also focused the identification of the leading water crisis. I will try to give the possible remedies or alternatives for solution of water problems. The article focuses on the global as well as Indian scenario about the problems created due to the water. Avaibility Of Water On The Earth :- The abundance water resource is available on the earth, but fact is that about 97 percent water on the earth is salty water, there fore that can not direct access to use for us. Out of remaining the 2 percent fresh water is unavailable because of it locked up in glacier, polar ice caps, soil and lies too far under the earth. Near about only 1 percent of the earth's water is available for daily use for us in form of river, dams, lakes and groundwater. The total amount of water available on earth has been estimated at 1.4 billion km^3 .It is enough to cover the earth with a layer of about 3 km. deep, but only 1 percent fresh water is accessible for human being . This 1 per cent water resource is an very unequally distributed on the earth, this unequal distribution is cause to increase the intensity of water scarcity. Asia share the 27 percent renewable water resource out of the total renewable water resource of the earth, Former Soviet Union share the 30 percent renewable water resource , North America share the 14 percent , Africa share the 10 percent, Europe share the 6 per cent and Oceania share the 3.3 percent the renewable water. The global withdrawal of water for irrigation purposes increased to 3250 km^3 by the year 2000 from 500 km3 in year 1900. It means that withdrawal of water increase 5.5 times in the century. The rapid increase of the municipal and industrial needs resulted in the global increase of the water withdrawal from 25 km^3 in 1900 to 1750 km^3 by the year 2000. Irrigation needs are consuming as high as 65 percent of the total water withdrawal globally indicating that despite rapid globalization and subsequent increase in domestic needs in the later half of 20 th century ,irrigation needs are not globally forgotten. The availability of water resource and increasing needs of water withdrawal highlights the significance of the global need to preserve our fresh water resources. In Indian contest, the 24 river basin and the total water resource of these basin has been estimated at 1953 km^3, and according to the National Commission for Integrated Water Resource Development of the total availability of 1953 km^3 of the water resources in India. That only 1086 km^3 can be made use of, The annual precipitation of India is about 4000 km^3. Approximately 64 percent of the total area of the country accounts for less than 29 percent of its total water resource. In present scenario growing Indian population the demand of water is relatively much higher than supply. In 2050 expected that the India's population would be about 1582 million and water requirement for irrigation and domestic use would be between 628 to 807 km^3 and 90 to 112 km^3 respectively .Besides that the industry, power and other sectors would require water between 973 to 1180 km^3 as estimation .So insufficient supply of water is being felt in many states has even led to interstate conflict .

Approches For Control The Water Crisis :-

It that understood from the above information that availability of water become the critical situation to control the present and future water crisis. There fore measures could include river basin management and water conservation options which would increase the life of available water on earth. All these aspects should be properly planned and moniter regularly .the following approaches suggested in this study for control the water crisis.

1. **Water Conservation** : Water conservation play very vital role to handle the water crisis. Among that rainwater harvesting creation of low reservoirs such as check dams, farm dams etc. are improving water efficiency of water in irrigation through better practices such as drip irrigation, sprinkler irrigation, crop rotation ,recycling and reuse of treated waste water and rain water harvesting, these approaches are very important to control water crisis.
2. **Water Stored In Ground :-** The water stored in the ground dose not evaporate, this water spread moisture for crops over a wide area. It also protect from contamination by human and animal waste.
3. **Planning Of Water Requirement** : Water requirement for domestic ,commercial and industrial sectors should be planned by the town planning department and agricultural department. Water requirements for irrigation development in the area must be regularly updated.
4. River Basin Management :- The available water from our river basin should be effectively managed keeping in view the above mentioned options .Large amount of water from these rivers join the sea since it is not properly utilized. The need of the hours is interlinking of these rivers for developing the available water resources and there by improving the economic growth of the country.
5. **Increase the Participation of the public** :- Involvement of public in various stages of water resources planning . financing ,design, consideration, operation and maintaining is very important for proper use of water resource. The local administration for taking necessary action against the water misusers and the polluters in their locale.
6. **The Treatment and Supply of Water** :- Satisfactory treatment and supply of water will be the key to public satisfaction. The supply of quality water by respective sectors will lead to socio-economic development in the area. This will result in the area for a prospective and healthy life.
7. **The Water Availability** :- The quantity and quality of the water available in area must be thoroughly surveyed with coordination from the respective department such as Ground water Department or Water Pollution Control Department.
8. **Maintain The Co-ordination among Agencies** :- Co-ordination among the various agencies such as Industrial Development Corporation, Irrigation Department, Ground Water Department etc. They are key members of implement water related strategies.

Summary And Conclusion :-

The availability of water on the earth, needs of water and present scarcity or crisis of water supply discussed. There is no denying the fact that water related problems in India and the world have reached a crisis point and have lead to the rise of issues of widespread drought, depleting ground water levels, salinity and increasing pollution of water bodies. All these issues related to an imbalance in demand and supply of water. In this present condition of water scarcity and crisis, The urgent need for a effective water resource planning is addressed above in approaches for control the water crisis. The need of hour is water conservation through various ways such as water harvesting is made mandatory to old and new building construction, recycling and reuse of water, adoption of drip irrigation and sprinkler irrigation and increase the water efficiency etc. These practices solve the markable water scarcity and crisis. The inter-linking of rivers also beneficial for improve the water supply in water scarcity region.

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Industrial Development in India

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Abstract:

The Indian economy become in misery at the threshold of the country's independence. Being a colony, she became enjoyable the development desires not of herself, but of a foreign land. The state, that ought to had been responsible for breakthroughs in agriculture and industry, refused to play even a minor function in this regard. However, for the duration of the 1/2 century earlier than India's independence, the world turned into seeing multiplied improvement and expansion in agriculture and industry - at the behest of an energetic position being played by the states. British rulers by no means made any extensive modifications for the benefit of the social area, and this hampered the productive ability of the financial system. In the course of independence, India's literacy become best 17 percent, with a life expectancy of 32.five years. Therefore, once India have become independent, systematic agency of the economic system become a actual venture for the government of that time. The want for handing over increase and development became in large demand in the front of the political leadership - as the us of a was using at the promises and vibes of countrywide fervour. Many essential and strategic choices have been taken by means of 1956, which are nonetheless shaping India's financial adventure.

Key Words*: Industrial Development, Indian Economy, GDP.*

Introduction:

Nowadays India is ranked the seventh biggest economy, and third biggest in terms of purchasing electricity Parity (PPP). The Indian economic system's GDP is pegged at $ 2.9 tn. At a press conference, Finance Minister Arun Jaitley commented, 'We preserve oscillating among the 5th and the sixth biggest economic system, depending on the dollar fee. As we study the years in advance, we are able to be $ 5 tn by way of 2024 and $ 10 tn by 2030 or 2031.The GDP in keeping with capita in India became $ 1963.55 in 2017. The GDP per Capita in India is equivalent to sixteen% of the arena's common, and averaged $ 693.96 from 1960 till 2017. It reached an all - time high of $ 1963.fifty five in 2017.As consistent with a latest WEF document titled 'future of intake in fast-increase consumer marketplace – India', India's market length is pegged to develop at a thriving $ 6 tn in the coming years.

Pinnacle appearing Sectors of Indian economy

The adoption of the brand new economic policy in 1991 noticed a landmark shift in the Indian financial system, as it ended the combined financial system version and license raj gadget - and opened the Indian economic system to the sector. An overview of the top appearing sectors of the Indian economy is given below –

Agricultural sector:

One of the most critical sectors of the Indian economy stays Agriculture. Its proportion within the GDP of the United States has declined and is currently at 14%. But, more than 50% of the total population of the United States of America is still depending on agriculture. Preserving this in thoughts, the Union price range 2017 - 18 gave excessive precedence to the agricultural zone and aimed to double farmers' incomes by way of 2022.

1. Authorities subsidies to agriculture are at an all - time excessive.
2. Further, cropping styles have shifted in favour of coins crops which includes sugarcane and rubber.
3. Advent of cooperative farming like – e - choupal and so forth.
4. Upward thrust of shgs along with lijjatpapad.
5. Agricultural land is being introduced below commercial and business use, thereby straining the closing agricultural land.
6. Many export sectors had been opened for agricultural goods.
7. Meals processing is rising as a 'dawn industry'

Enterprise zone:

Every other essential a part of the Indian financial system is the enterprise area. Changes together with the end of the 'Permit Raj' and opening up of the economy had been welcomed in the United States of America with amazing enthusiasm and optimism. Because of these changes, the economic capacity of the economy has multiplied in view that 1991.

1. Proliferation of industries, from traditional iron and steel to jute and vehicles.
2. Autonomy in production, marketing and distribution.
3. Decreased red - tapism.
4. Encouragement to personal investments, both domestic as well as FDI.
5. Transfer of technology and blessings of studies and improvement to the gain of the economic system.

6. Arrival of investment models which include joint ventures, public-non-public partnerships, MNCs.
7. Private players were given a possibility to enter new sectors, which had been earlier under government monopoly.

Services area:

The world that benefited most from the brand new financial coverage became the offerings zone. Banking, Finance, business technique Outsourcing - and most importantly data era services - have seen double - digit growth.

1. Indian IT giants consisting of Infosys, WIPRO and TCS have made their mark on the global platform.
2. 60 percentage of the GDP contribution comes from the offerings sector.
3. India, with its large demographic dividend ability, has emerged because the IT hub of the arena.
4. New employment opportunities are being created in this area.
5. Establishing of transportation, tourism and medical sectors have caused the increase of provider region abilities.
6. RBI has transitioned from being a regulator to a facilitator.
7. Product range of financial investments.
8. Wider penetration of services such as coverage, banking, stock market etc.
9. Extensive development in forex reserves.

Meals Processing:

Food processing has emerged as a high - growth, high - earnings sector and is one of the recognition sectors of the 'Make in India' initiative. The massive availability of uncooked materials, assets, favorable coverage measures and numerous incentives have led India to be considered as a key attractive market for the arena. With a populace of 1.3 and a mean age of 29, as well as a rapidly developing middle - elegance population that spends a excessive proportion in their disposable earnings on meals, India boasts of a massive patron base. The entire consumption of the food and beverage section in India is expected to growth from $ 369 bn to $ 1.14 tn by means of 2025. The output of the food processing quarter (at market charges) is anticipated to growth to $ 958 bn all through the identical length. India is the second one largest producer of food grains inside the world, 2d only to China. This zone has massive potential in India due to increasing urbanization, earnings levels and a excessive desire for packaged and processed food. Go to the sectors category to study extra approximately the meals processing enterprise.

Production region:

The manufacturing area is the second largest contributor to India's GDP after the services region. Diverse government tasks like Make in India, MUDRA, Sagarmala, Startup India, Freight Corridors, along with a whole - hearted contribution from states, will enhance the percentage of the manufacturing region within the foreseeable future.

However, if India targets to elevate its proportion of producing in GDP to around 25%, the industry will have to seriously step up its research and improvement expenditure. The quantum of fee addition must be multiplied in any respect tiers and the authorities needs to offer attractive remuneration to encourage humans to enroll in the producing quarter.

Current traits within the economic system of India:

Except those tendencies and reforms, it is imperative to bear in mind that to be able to tap the very best potential of the economy and ensure true governance, a top of the line level of synergy is needed between the important and nation government. This can no longer only upload power to our cooperative federal shape but may also beef up India's economy. Projects inclusive of –

1. Goods and services Tax (GST)
2. Insolvency and bankruptcy Code (IBC)
3. Startup India
4. Digital India

These, among others, have helped the Indian economy bounce 65 ranks (within the final four years) inside the global financial institution's Ease of Doing commercial enterprise record. Those measures cemented India's recognition as one of the few bright spots in an in any other case grim international economy. India is most of the quickest developing important economies, underpinned via a strong macro - economic system with declining inflation and enhancing monetary and external balances. Not only that, it was additionally one of the few economies enacting important 'structural reforms', which have placed India as an aggressive player inside the global marketplace. Destiny of Indian economic system To make India a $ 5 tn economic system via 2030, and to achieve regular 8% increase, NITI Aayog has launched a comprehensive record titled 'strategy for brand spanking new India @75'. Its most important objectives are –

1. Doubling farmers' earning.
2. Developing an all India talent pool for the entre and States collectively - including the All India offerings.
3. Presenting a major raise to the 'Make in India' campaign.
4. Reaching 22% tax to GDP ratio through 2023 - up from the contemporary 17%.
5. Achieving 36% of funding fee by means of 2023 - up from the present day 29%.

Guided by means of unwavering democratic credentials and sturdy authorities management, India is an rising superpower with a colorful monetary climate. Under high Minister Narendra Modi, India's increase price within the ultimate zone has been pegged at 7.7%. And with an ever - increasing center - magnificence base and teens demographic, the opportunity for enterprise has in no way been higher. Impact of Industrialization on the Indian financial system. Industrialization has induced a bad effect upon the ecological management of the United States of America; there have been severe troubles together with pollution of diverse kinds, air, water and sound

With discharging of dangerous gases inclusive of carbon dioxide. There has been a growth in Populace, in which humans are coming from rural regions in search for jobs, speedy industrialization, Business employment, boom in number of automobiles because of very excessive financial growth Had been taken into consideration as the foremost powers that are having better strength intake (Krishna,2007).With the effect of industrialization, there has been creation of machines and device, Which has reduced the fame of personnel to merely that of a factor in a machine.

Conclusion:

Inside the Manufacturing of products and services, machines are made use of and most of the work is completed by means of the Machines, employees are simply needed just to perform the machine. In rural regions, industries are Ultimate down with the effect of industrialization in urban regions and villagers are becoming Jobless, some have a low degree of education, while others do now not have any education in any respect and To be able to maintain their residing they are shifting to urban areas in look for jobs. A number of the Rural humans are capable of find work in industries and other sectors of the economic system, whereas a few are unable to locate paintings and sustain in poverty. With the advent of industrialization industries Which includes production, advertising, telecommunications, media, technology have come into being And modified the existence of human beings. Industrialization has been high quality in a few cases, whereas negative in others.

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Spatial Variations in Application of Agriculture Technology in Drought Prone Agriculture Area in Kalamb tahasil: A Geographical Study

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Introduction:

Frequent dry spells are common phenomena during the monsoon season. In rain fed agriculture, the adequacy of rainfall to meet the water requirements of crops and other consumptive and non-consumptive water needs is a basic requirement as well as highly application of agriculture mechanizations. Once in 5 years, deficient rainfall is reported. Severe drought conditions occur once every8-9 years. The Deccan plateau constitutes 50 percent of the Drought-prone area of the state. 12 percent of the population lives in drought prone area. The 1996 drought affected 7 districts and 266.75 Lakh people. The 1997drought affected 17 districts. In 2001, droughts affected about 20,000 villages in 23districts; 28.4 million people and 4.5 million hectares of crops in the State. Rainfall is considered as principle source of water. Therefore, here an attempt has been made to examine the role of agriculture technology for the development of drought prone area.

Keywords: Agriculture Technology**,** Drought Prone, level of agricultural technology and level of agricultural performances, irrigation etc**.**

Objective:

To identify the various levels of agriculture technology and their performance in Drought Prone Area.

Study Area:

Kalamb tahasil is an administrative headquarter which is situated on 18°55′N 75°98′E/ 18°62′N 76°05′E of Osmanabad district of Marathwada region in Maharashtra. Kalamb is a major drought prone tahasil in Osmanabad district. The average annual rainfall is 779mm and temperature is 27^0C. Due to irrigation facility farmers are using agriculture technologies various.

Methodology:

The present paper is based on the secondary data. The following methodology has been employed for the present paper.

1. Levels of Agricultural Technology:

For the computation of the levels of technology the equation evolved by Dutt and Sen Gupta (1969) which further modified by Jasbir Singh (1994) is employed here and composite index values have been derived. The equation is an under –

$$\text{Ite} = \frac{\text{Ie}}{\text{Ir}} + \frac{\text{Te}}{\text{Tr}} + \frac{\text{Toie}}{\text{Toir}} + \frac{\text{Poie}}{\text{Poir}} + \frac{\text{Fe}}{\text{Fr}} + \frac{\text{Pe}}{\text{Pr}} \ldots$$

Where,

Ite = implies the composite index of the level of agricultural technology.
I = means percentage of irrigated area to total cropped area.
T = abbreviates tractors per 1000 hectares of cultivated area.
Toi = means tractor operated implements per 1000 hectares cultivated area.
Poi = power operated implements 1000 hectares cultivated area.
F = stands for fertilizer consumption per 1000 hectares cultivated area.
P = means pesticide consumption per 1000 hectares cultivated area.
e and r subscripts symbolize respectively the Revenue circles and the entire region(Tahasil)

The above procedure is adopted to compute the index value of each Revenue circle. To sum up index value of all parameters then multiplied by 100 to derive the Degree of agricultural technology. The Index value of agriculture parameter is sum up multiplied by 100 to derive the degree of agriculture technology.

Degree of agricultural technology$= \frac{\Sigma \text{LQs}}{\text{N}} * 100$

Here, N specifies the number of parameters of agricultural technology.

2. Level of Agricultural Performance:

$$\text{VW} = \frac{\text{Yae}}{\text{Yar}} + \frac{\text{Pae}}{\text{Par}} + \frac{\text{Ybe}}{\text{Ybr}} + \frac{\text{Pbe}}{\text{Pbr}} + \frac{\text{Yce}}{\text{Ycr}} + \frac{\text{Pce}}{\text{Pcr}} + \quad N = \Sigma LQS/N \ldots$$

Where,

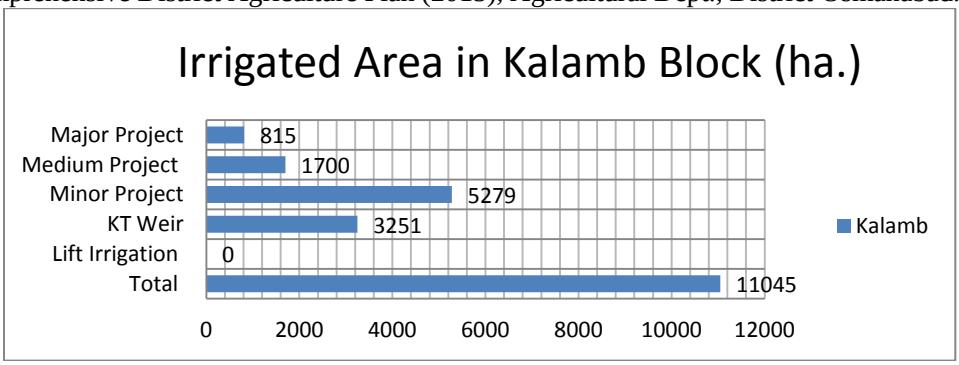
VW – denotes weighted composite index of regional inequality in agricultural Performance.
P - implies cropland occupancy of crop 'a' in kilograms per hectare. a, b and c subscripts denote crops considered, e and r subscripts denote Revenue Circle and Tahasil respectively.
N - is number of crops holding more than 5 per cent of the total cropped area.
LQS – means location quotients in the present study the crops like Jowar, Wheat, Maize, Bajra, Sugarcane etc. are selected as they have occupied cultivated area significantly.
The summed up location quotients (LQS) were divided by the number of crops considered in the Revenue circle and multiplied by 100 to obtain the weighted composite index for the level of agricultural performance.
Thus, weighted composite level of agricultural performance$N = \frac{\Sigma LQS}{N} * 100$

RESULT DISCUSSION

Irrigation potential of Kalamb tahasil:

Block	Total cultivable Area (ha.)	Total Irrigated Area (ha.)	Surface Irrigation (ha.)	Ground Water Irrigation (ha.)
Kalamb	80660	16960	15858	1102

Source: Comprehensive District Agriculture Plan (2015), Agricultural Dept., District Osmanabad.



Source: District Handbook (2015), Water Resource Department, District Osmanabad.

Graph 1.1

As per graph no. 1.1 the distribution of irrigation in the tahasil, reveals the status. It also explains that irrigation through medium project is high and total irrigation covers 21 percent area in Kalamb tahasil.

Levels of Agricultural Technology in Kalamb Tahasil (2015):

Regional inequalities in the level of agricultural technology are responsible for regional imbalances in the levels of agricultural performance. Therefore an attempt has been made to measure and maps the regional inequalities to identify backward and advanced areas in terms of agricultural technology which is responsible for agriculturally developed in Kalamb Tahasil.

Spatial variations in the levels of Agricultural Technology:

The study reveals that there are three different zones are formulated.

>100 - High	65 to 100 Medium	< 65 Low

High level of Agricultural technology Region- above 100, Moderate level of Agricultural Technology Region- between 65 to 100 and Low level of Agricultural Technology Region bellow 65. Moderate level of Agricultural technology Region- between 65 to 100 It includes Kalamb tahasil which have recorded moderate 75.52 (between 65 to 100 index value) level of Agricultural technology in year 1990.

As fallowed as in 2015 after the calculation of index values classified with the help of standard deviation method can conveniently be described into three different zones, Moderate level of Agricultural technology Region- between 65 to 100, It includes Kalamb tahasil which have recorded Medium 88.00 (between 65 to 100 index value) level of Agricultural technology in year 2015.

The study identifies three level of Agriculture Technology Region which is prepared as follows 1.High level of Agricultural Technology Region above 100, 2 Medium level of agricultural technology region 65 to 100. Kalamb tahasil is recorded 75.52 in application of agricultural technology in the year 1990 and 88.00 in 2015 it is due to assured irrigation facilities i.e. Micro Irrigation substantial development of agro-industries like sugar

industries are also plying vital role for promoting the use of new agricultural technology, high literacy rate of tahasil the forward looking attitude of farmers.

Level of Agricultural Performance in Kalamb Tahasil (2015):

The proportion of cultivable land per man has been decreased considerably during the recent past. The increase in crop production is must in India since the areal spread of crop land has almost reached its saturation limit (vidyanath, 1985). It needs, therefore to improve the agricultural productivity. Agricultural productivity is a function of various factors like physical, socio-economic technical and organizational. The level of agricultural productivity as a concept means the degree to which the economic, cultural, technical and organizational variables are also to exploit the biotic resources of the area for agricultural production (Singh, J. 1984).

Regional pattern of the levels of Agricultural Performance:

It is clarified that the composite index values and the level of agricultural performance is positively correlated. It is examined with the help of composite index values.

High level of Performance Region (above 600 index value), **Moderate level of Performance Region** (between 200 to 600 index value), **Low level of Performance Region** (below 200 index value). It includes Kalamb, Tahasil. This has been characterized by assured supply of water mainly from Major, minor irrigation projects. As a result of this zone possesses moderate level of agricultural performance. In this zone Horticulture cultivation is dominant crop growers have adopted modern technology. This has led to moderate level of performance of agriculture. Framers take forward step to accepted new techniques and different crops in deferent session so overall impact of performance is indicating to using agricultural technology also through the implementation area treatment of soil conservation. Therefore Kalamb tahasil is a drought prone area but the efficiency and application of agricultural technology is positively correlated in removal of agriculture drought prone area on the earth.

Relationship Between, levels of Agricultural Technology and levels of Agricultural Performance in Kalamb Tahasil

Levels of Agricultural Technology	Level of Agricultural Performances	Block
Moderate	Moderate	Kalamb

Source: Compile by Author.

Conclusion:

Agricultural change cannot be understood separately from general process of development. The agro-technical determinants are playing vital role in agricultural development. There are different technologies used with varied intensities leading to variations in agricultural efficiency per unit of time and space. With insufficient supply of water to agriculture it is very essential to adopt new soil conservation treatment, micro irrigation techniques and farmers of the Kalamb tahasil change their old farming and adopted new as well as scientific methods of farming, as well as through the implementation area treatment of soil conservation, so it is supported for the agricultural development of drought prone area.

The application of agricultural technology reveals that substantial income from sugarcane, grapevine, green gram, bajra as well as Shade net, poly house farming with forward looking attitude of farmers where less of important role of co-operative societies, factories etc.. It also proves that the levels of agricultural Performance is maintaining moderate i.e. between 65 to 100 percent are confined in Kalamb having assured supply of water, dominance of all crops and pomegranate cultivation. There is more potential to grow technology than available for increasing productivity in drought prone.

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Impact of environment on Health

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Introduction

The Earth, the air, the land, and the water are not an inheritance from our fore fathers but on loan from our children. So, we have to hand over to them, at least, as it was handed over to us". – Mahatma Gandhi.

Environment means anything that surround us. It can be living (biotic) or non-living (abiotic) things. It includes physical, chemical and other natural forces. Living things live in their environment. They constantly interact with it and adapt themselves to conditions in their environment. In the environment there are different interactions , between animals, plants, soil, water, and other living and non-living things. Since everything is part of the environment of something else, the word *environment* is used to talk about many things. People in different fields of knowledge use the word environment differently. Electromagnetic environment is radio waves and other electromagnetic radiation and magnetic fields. The environment of galaxy refers to conditions of interstellar medium.

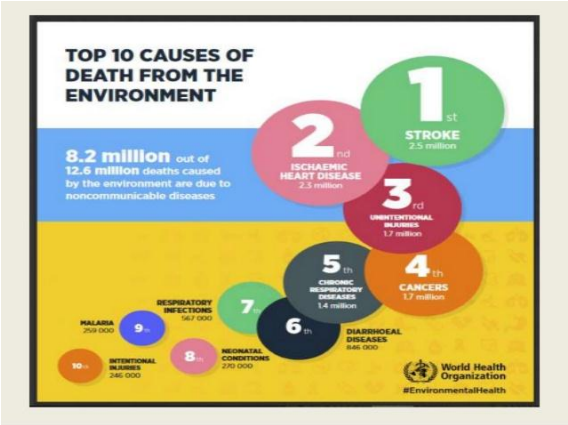
Definition of environment

1: the circumstances, objects, or conditions by which one is surrounded
2a: the complex of physical, chemical, and biotic factors (such as climate, soil, and living things) that act upon an organism or an ecological community and ultimately determine its form and survival
b: the aggregate of social and cultural conditions that influence the life of an individual or community.

Environmental Impact On Health – Every day, most societies in the world are exposed to an increasing health risk as a result of the growing sources of pollution in the world, which are causing great damage to the human body, animals, agricultural wealth and all areas of life. This is a clear disruption of the global ecosystem, which is caused by synthetic substances introduced into the environment or the use of natural materials, but at very high levels. Pollution did not exist in ancient times, but it began to manifest itself in the modern era; as a result of the great development in the use of chemical industries, in addition to the use of radioactive and nuclear materials in wars between countries, all of which have had significant effects on the environment and all living things. Environmental pollution has a cumulative effect on human health. Air pollution can cause respiratory problems such as allergies, asthma, eye and nose irritation and bronchial infections. Water pollution can cause gastrointestinal diseases, nausea, diarrhoea, etc. Noise pollution has physical and psychological health consequences and can impair hearing ability. Polluted lands may contain hazardous chemicals, metals and pesticides that adversely affect human health. Some of the possible consequences of land pollution include birth defects, skin diseases, breathing disorders, and cancer.

The following are the most important types of contemporary pollution:

1. **Chemical Pollution**
2. **Noise pollution**
3. **Radioactive Pollution**



- **Ways to prevent Air pollution**

✓ **Use renewable energy**
✓ **Protect forest and grow more trees**
✓ **Use of solar electric vehicles**
✓ **Proper vehicle maintains**

- ✓ **Clean and efficient garbage disposable system**
- ✓ **Public awareness**

- **Ways to prevent Soil pollution**

- ✓ **Go organic**
- ✓ **Dispose of household waste**
- ✓ **Community awareness**
- ✓ **Proper farming**
- ✓ **Manage industrial waste**
- ✓ **Burn fewer fossil fuels**

- **Ways to prevent Thermal pollution**

- ✓ **Cooling towers and artificial lakes**
- ✓ **Circular ploughing to prevent erosion**
- ✓ **Co-generation**
- ✓ **Environmental awareness**
- ✓ **Save electricity**
- ✓ **Reuse of heated water**

- **Ways to prevent Radioactive pollution**

- ✓ **Safe storage**
- ✓ **Alternate sources of energy**
- ✓ **Proper disposal of radioactive waste**
- ✓ **Clear warning**
- ✓ **Nuclear discharge**

- **Ways to prevent Noise pollution**

- ✓ **Public awareness**
- ✓ **Restriction for loud noise**
- ✓ **Managing stage performance**
- ✓ **Controlling sound instrument**
- ✓ **Banning the firecracker**

Conclusion -

There is a way in which every person care for the environment. Some people respect it. Some try to nurture it. The crucial issues related to the situation today are mainly global warming, greenhouse effect, and climate change. Global warming is the increase in temperature of the earth due to the overconsumption of resources. It leads to other environmental issues like changes in temperature, soil erosion, and abnormal rainfall. Global warming can be tackled through control of pollution levels, lower vehicular emissions, and a person's carbon footprint. Everyone should participate in schemes like **Swachh Bharat Abhiyan** which will not only reduce the air pollution in the country but will also reduce various other kinds of pollution. Use the LED lamps to reduce the effects of ambient light pollution as well as the strength is almost twice as big as the light is called the batteries. Now that we've realized the problem, it's up to us to fix it so that we can continue to grow and change without destroying our home in the name of progress.

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A Study of Social Intelligence Prospective Student-Teachers in Teacher Education Progarmme

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Abstract

In the contemporary world the psychologist are giving more importance to the social intelligence Earlier in the school, the mental development was stressed more, but now days equal stressed loid on the development of social and emotional development. Today it is stressed that in order to become successful in life the social development of the child is very essential. In order to develop child socially, the teacher should be socially sound. To study the social development of student-teachers in teacher Education Programme, this study was undertaken A Descriptive method as well as survey method was used and selected sample of 200 Prospective student-teachers from colleges of Educations in P.A.H. Solapur University, Solapur. was selected and standard scale on social intelligence by Dr. N. K. Chadha and Usho Ganesan was administered. The analysis of the result showed that both male and female Prospective student-teachers in teacher education programme have average social intelligence.

Kay Words:- *Social Intelligence, Student-Teacher, Teacher Education Programme.*

Introduction:

Today in the school child is a Pivotal point around which the education revolves. Every parents when they are sending their children to school, expecting them to be physically robust, mentally alert, socially intelligent and emotionally stable. For making the child to be social intelligent, the teacher who is with the child 6 hours in the school should also be social intelligent, sound and alert, than only she would be in a position to develop social abilities of the child to its fullest. Social scientist Ross Honeywell believes social intelligence is an aggregate measure of self- and social awareness, evolved social beliefs and attitudes, and a capacity appetite to manage complex social change. The social intelligence hypothesis states that soc intelligence, is, complex socialization such as politics, romance, family relationships, quarrels collaboration, reciprocity, and altruism. This study focused on student teacher's perception of their principals of social intelligence to the ways principals self-reported. The similarities and different between perspectives of social intelligence.

What is Social Intelligence?

The degree of ease a person has in being in social situations. Social intelligence is the capacity to communicate and form relationship with empathy and assertiveness. It comes from knowing yourself and exercising proper emotional management. Social intelligence manages the required abilities for effective communication based on empathy, self-knowledge, listing and reading of emotions. Verbal and non-verbal fluency, knowledge of social rules and roles, listing skills, understanding how other peoples emotions work, playing social roles efficiently and self-image and impression management etc are the various abilities does with social intelligence.

The Dimensions of Social Intelligence:-

Social intelligence can be described as a combination of abilities: the first is a basic understanding of people (i.e. a kind of strategic social awareness) and the second is the skills needed for interacting successfully with them. In other words, the ability to get along with other and to encourage them to cooperate with you. Social intelligence can be thought of a encompassing five dimensions

Presence - your external image sense of self that is perceived by others, e.g, confidence, self- respect or self-worth.

Clarity- your ability to express yourself clearly, explain concepts clearly and using lang effectively, while persuading with ideas.

Awareness - your ability to understand social contexts that influence situational behaviour and to choose the behavioural strategies most likely to be successful.

Authenticity-the way of behaviour which gives a perception of honesty?

Empathy - your ability to create a sense of connection with others and to encourage them to cooperate with you, rather than work against you, as well as an appreciation for the emotions and experiences of others.

Rationale of The Study:

Today psychologist proved that social development of child is equally important to mental development and emotional development. The teachers have been entrusted with the responsibility of developing child physically, mentally, socially and emotionally strong. Social interrelation, presence of mind, ability to connect oneself with others, ability to express oneself in any social situation and empathy

towards others are the essential qualities required to become socially sound. During the pre service teacher education training programme University syllabus and college of education both are provided orientation, guidance, field based experiences, activities related to development of student teachers social intelligence. This study was undertaken to investigate how prospective of student-teachers are socially sound in their behaviour which can influence the behaviour of students in a positive way. The study also tries to find out which gender is having high social intelligence.

Objectives:

1. To study the concept of social intelligence regarding perspective's of student-teacher.
2. To study the social intelligence of Male Prospective student-teachers.
3. To study the social intelligence of Female Prospective student-teachers.
4. To Compare the Social intelligence of Male and female Prospective student-teachers.

Hypotheses:

1. The Social intelligence level of Male Prospective student-teachers is very high.
2. The Social intelligence level of Female Prospective student-teachers is very high.
3. There is no significant difference in the Social Intelligence of Male and Female prospective Student-teachers.

Scope: This study would be helpful for the Educationist and Teacher Educator to understand Social intelligence level of prospective student-teachers in teacher education programme.

Limitations Area-This study is limited only to P.A.H.Solapur University,Solapur only..

Unit-This study is limited only to Prospective Student-Teachers of College of Educations affiliated P.A.H. Solapur University, Solapur.

Content-This study would be helpful to study the Social Intelligence Level of student-teachers in pre-service teacher education training programme.

Operational Definition:

Social Intelligence: To act intelligently in a society. Prospective student-teachers: The student-teachers who are taking training in the teacher training college to become certified teachers.

Variables: Independent Variable-Social Intelligence

Dependent variable- Prospective Student-Teachers.

Procedure of the Research Study: The research methodology, design, sampling, tools, procedure and statistical analysis of the present study were as follows. The Descriptive research method was used for the present study. School survey method was executed in the research study. Three Marathi medium teacher education institution i.e. College of education, Barshi, S. S. College of Education, Barshi and J.J. College of Education, Vairag in town area was selected. Total 200 student-teachers in B.Ed. I and II class were selected randomly for the research study. The Dr. N. K. Chadha and Usho Ganesan's standard scale of social intelligence used by the researcher. It was based on the MCQ, objective type questions, Open ended question regarding Social Intelligence perspectives of teachers. The Dr. N. K. Chadha and Usho Ganesan's standard test of social intelligence includes MCQ based written test. Responses of each student-teacher to the test were measured. The collected data were analyzed and interpreted. The relevant findings and recommendations are stated on the basis of statistical analysis through the measure of Mean, S.D,'t' Value.

Discussion of the Result:

1) The Social Intelligence of Male Prospective Teachers is very high.

Variables	Mean	S.D.	't'-Value	Interpretation
Social Intelligence Level (Male)	115.5	7.99	1.2185	Average Social Intelligence

As the mean value is 115.5 according to the norm table which lies in the range of 104-115, Which shows Average Social Intelligence.

2) The Social Intelligence of Female Prospective Teachers is very high.

Variables	Mean	S.D.	't'-Value	Interpretation
Social Intelligence Level (Female)	112.3	4.95	1.2185	Average Social Intelligence

As the mean value is 112.334, according to the norm table which lies in the range of 104-115 which shows Average Social Intelligence.

3) Comparison of Social Intelligence of male and female Prospective teachers.

Variables	Mean	S.D.	't'-Value	Interpretation
Social Intelligence Level (Male)	115.5	7.99	-1.2185	Not Significance at 0.05 Level
Social Intelligence Level (Female)	112.3	4.95		

As that difference in Mean is 3.2 and difference in S.D. is 3.04. calculated 't'- value is, 1.2185 which shows that there is no significant difference or non-significant difference in the Social Intelligence level of Male and Female prospective teachers.

Conclusion:

Hypothesis No.01

The Social intelligence level of Male Prospective Teachers is very high. The Hypothesis No.01 is rejected, as the Mean Value is 115.5, which lies in the range of 104-115, which shows Average Social Intelligence level.

Hypothesis No.02

The social intelligence level of Female Prospective Teachers is very high. The Hypothesis No.02 is rejected as the Mean Value is 112.33, which lies in the range of 104-115, which shows Average Social Intelligence level.

Hypothesis No.03

There is no significant difference in the Social Intelligence level of Male and Female Prospective student-teachers. The Hypothesis No.03 is accepted as the 't' value is, -1.2185 which shows that there is no significant difference in the Social intelligence level of Male and Female prospective student-teachers.

Suggestions:

1. The Social development of the child should be stressed right from their primary schooling.
2. The syllabus should be framed in such a pattern that there should be ample scope for children's Social development.
3. In Teacher Education Programme the topic should be introduced in the syllabus which leads to Social development of prospective of student-teachers.
4. The Environment provided should be socially sound.
5. The teachers and parents should be socially sound for the proper social development of the child.
6. The teacher educators and management should be socially sound for the proper social development of the student-teacher through teacher education programme.
7. The parents and teachers should see that child should be made more cooperative friendly and confident right from early age under the supervision of elders.
8. The training in integrated personality of the child should be stressed because this is one of the most important components of social development.
9. The social exposure should be provided in such a manner that social adjustment ability of the child should be well developed.

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Impact of Environment: R.K. Narayan

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Abstract :

Eco-criticism is the study of literature and the environment from an multiple point of view. The scholars of literature analyses the texts that provide environmental concerns and examine the various ways literature treats the subject of nature. Eco-criticism is the study of relationship between literature and the physical environment. It seeks that man and nature are not opposite but human as a part of nature or eco-system. R.K. Narayan's novel expresses the eastern belief that propagates the man and nature complement each other by sharing responsibilities of creation and its sustenance. In the absence of nature man cannot exist. He will be lost. In the recent century the authors, writers, poets and nova lists have been paying full attention to the environment care. They, become conscious about the presentation of environment. The writers have become eco-concious through their writings. They take more serious thinking in presentating the issues in a fittest manners and make the readers to fall in line the nature and eco-activities. The anthors like Raja Rao, R.K. Narayan, Kamala Markandaya, Anita Desai and Kiran Desai are some important examples. They have applied best presentation in literature in to impress the importance of the enviorment in depth. This has created an important observations to the reader. The healthy enviorment becomes necessary for human being. The present paper tries to understand the impact of environment on the characters on R.K. Narayan. It also ties to reknow the environment in the writing of R.K. Narayan.

Introduction :

As a regional novelists all the characters and works of R.K. Narayan set in a fictional town Malgudi. Malgudi is the environment that pervades all the works of R.K. Narayan. Malgudi is a region that is imaginary and R.K. Narayan's writing is the outcome of this fictional town. Regional novelists like Thomas Hardy depicted all his work in imaginary place Wessex. It is a tough job of a writer to compose such beautiful composition around a one place. But the writers like R.K. Narayan has a genius to write such type of works. Malgudi is a fictional town that appears in the all works of R.K. Narayan. It is imaginary place but it is seen as lively and evergrowing. All of Narayan's writing have an important grace in Malgudi place. In fact Malgudi is a world in itself whatever happen in the world can be seen in Malgudi. It is a microcosm. It's an old and peaceful town. All types of people have their presence in Malgudi. The people that inhabit in Malgudi are simple, honest, absurd and common. They have all the quarrals, joys, passions, dreams, hopes, aspirations, prospectus and so on. Malgudi in R.K. Narayan's novels, its quiet uncomfortable situation during which his Sampath, Margayya find themselves. Narayan believes within the values of living tradition and refuses to be blown off his fact by the surface winds. Narayan doesn't have to be any particular or philosophical point of view but he believes in comprising all views of life. Through Malgudi is an imaginary town it has been regarded as a real living presence. It is a different Indian from romanticized .It touches reality with all its aspects. Narayan's character breathe life in the very atmosphere of Malgudi. All these non-human places of Malgudi gives a sense of understanding to the characters of R.K. Narayan. The most striking quality of these people is they are deeply rooted in tradition. But they can neither accept western culture through attracted to it many times and ironically comes to the place where they have started their journey. This is the impact of surrounding that makes them Indian and teaches the philosophy of life. Narayan is regarded as the most significant contemporary novelist of the Indo-Anglian literature. It is for his faithful representation of Indian small town life and for creating a world which is very much alive, he deserves a wider recognition. In Malgudi life goes on peacefully and leisure without corrupting new ideas of Western philosophy. Albert Mission College, The Central Co-operative bank, Lawlay extension, the Englandia banking co-operation etc. all have impact on the growth and development of Narayan's character. With the ancient river Sarayu, whose birth is taken as a scratching of a line on the sand with an arrow by Sri Ram Chandra. It is this Malgudian where Krishna, Raju, Margayya, Sampath and so on created and become live in this atomosphere. It is something more than mere background. It is alive, real and warm. The temples, streets, roads, mountains, schools, colleges, trees, planes, grounds, rail-tracks, stations appear to be very familiar and moving the story. In this sense, intimacy helps in creating a deeper sense and better understanding of its people and establishes a strange fellowship. In the Bachelor of Arts, it is Chandran who like nature and Raju too in The Guide learns that life is full of sinciarity, honesty and faithfuliness. Self-interest and desire makes human life unhappy. Candran's life can be studied from the impact of river Sarayu & various places forests, planes, temples and variety of environmental elements that transforms his personality. It is also his realization that comes to him that life is not a wandering place but to do something that is creative and meaningful. This lesson of

life can he possible in the search for life through hard work. According to K.R. Srinivas Iyengar –It would be interesting to advance the theory that Malgudi is the real hero of the eleven novels and many short stories, that underneath the seeming change and the human drama there is something the soul of the place, that defies or embraces all change; and is triumphantly and unaltered itself. All things pass and change; men and women try to live and even as they are living are called upon to die, names change, fashion change but the old landmarks the Sarayu, the ills, the jungles of the Grove remain. The one remains, the many change and pass. Chandran who is studding in the final year at Albert Mission College wanders everywhere with his friends. It is on the bank of Sarayu, he sees a fifteen year-old girl Malathi, who was playing in the sands with his sister. And from thereafter, he daily visits the bank of Sarayu to visit the girl. This Sarayu, i.e. river has played a significant role in the fortune of the protagonist. The sight and exposure of this river offers joy and happiness to every people of Malgudi. Even when Chandren is dissatisfied, like common people he goes to river to lessen the sorrow. It shows the power of nature or natural beauty. After wandering a lot during his Sannysi period, finally with the help of post master he reaches to Malgudi. And at eleven at night, he and Mohan went to Sarayu riverside and then after changes himself with realization. This Sarayu is the pride of Malgudi. It is only ten minutes from Eliaman Street. Every time, its sand is crowded with people. On special occasions, it is almost an extra ordinary sight. Walking up to the river for a change or performing religious activity is the part of daily routine life of Malgudians. When a distinguishing personality comes, Municipal president usually takes him to the top of the town hall and proudly points out to Sarayu in moon-light, glistening like a silver belt across the north. It is not just the streets, the lanes and the river but the people like Magayya, Sampath, Jagdish etc who make their little world more interesting in Malgudi. It is here, to note the significance of the river from cultural point of view. For elderly citizens of Malgudi, there is nothing gratifying than a bath in the river before sunrise followed by effecting water to Surya Devta. The generation of Krishna & Chandran does not show interest in it. It is here, on the bank of the Sarayu, man the big bully (Swami and Friends) waits for Rajan and plans to bundle him up and throw him into the river. It is the Sampath confides in Srinivas, the sensational story of his flight with shanti to Mempi Hills.

Conclusion:

Thus, it is very interesting to see the role of nature or natural element like Sarayu on the protagonist of R.K. Narayan like Chandran, Sampath and Raju. In Malgudi all protagonist of R.K. Narayan shows intimacy and connectivity with nature. It is a kind of consciousness that put us towards nature surrounding and environment.

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Miracle Tree: An Overview on Multipurpose Properties of Moringa Oleifera.

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Abstract

Moringa is a genus of trees and shrubs with 13 species found in Africa and Asia. Moringa species are used in a wide range of applications, including medicinal, food, cosmetics, and oil production. Various components have a wide range of therapeutic applications, pharmacological actions, and medicinal chemical sources. M. oleifera has also been promoted and lobbied for as a "miracle tree" by several organisations, resulting in increased international attention. Although M. oleifera has a lot of promise in terms of contributing to medicine and easing malnutrition around the world, there are a lot of other species in the genus that are nearly unexplored and demand additional research. This study provides an overview about nutritional properties, medicinal properties and highlights its commercial application.

Keywords: *Moringa oleifera, Moringaceace, anti-diabetic, anti-microbial, anti- cancerous.*

Introduction:

Moringaceae is a monogeneric family that includes 13 species of dicotyledonous tropical and subtropical flowering trees under the genus Moringa. Moringa oleifera also known as the miracle tree, drumstick tree, the ben oil tree, or the horseradish tree. The tree is native to India, although it can also be found in Asia, Africa, and South America. Moringa has a high protein, vitamin, and mineral content. Because of its therapeutic characteristics and health advantages, moringa has been utilised for generations. Antifungal, antiviral, antidepressant, and anti-inflammatory activities are also present. It is now well recognised as a multi-purpose tree since it is grown for its nutritious pods, tasty leaves, and blossoms, as well as for its numerous useful features such as food, medicine, cosmetic oil, cattle fodder, and water coagulant (Paliwal et al., 2011).

Plantation and Soil Condition.

Moringa Oleifera is a fast growing drought-resistant country of the family Moringaceae. Native to the Indian subcontinent common names include moringa, drumstick tree, Horse radish tree, ben oil tree, and miracle tree. Major varieties cultivated exclusively include PKM 1, PKM 2, KKM 1. Moringa can

propagate of seed can be germinated up to one year round in well draining soil. Moringa seeds have no dormancy period, so they can be planted as soon as they are mature and they will retain the ability to germinate. Moringa seeds germinate in temperature 25 to 35°C within 5 to 12 days after seeding. It requires loamy or sandy soil with a slightly acidic to slightly alkaline PH of 6.5 to 8. The seeds can be implanted at a depth of 2 cm in the soil. The Moringa seed can be soak in plastic bags containing fill seedling with light soil mixture, i.e., 3 parts soil and 1 part sand, after seedling 35 to 45 days, grown about 30 cms, it can be transplanted.

Nutrition Properties:

The Moringa oleifera have important nutrients of each part of plant. The plant is very useful for nutritional and for commercial purpose. The M.oliefera leaves are rich in minerals, Vitamins and other essential phytochemicals. M.Oliefera leaves are rich in minerals like Potassium, Calcium, Magnesium, Zinc, Copper and Iron. It provides Seventeen time more Calcium than milk, Nine time more protein than yoghurt, Fifteen times more potassium than bananas and Twenty five time more Iron than spinach. M.Oliefera leaves are rich in Vitamins like Vitamins-A, B, C, D, E and beta carotene. It provides Ten times more Vitamin A than carrots, Seven times more Vitamin C than Oranges. Phytochemical such as tannins, terpenoids, sterols, flovonaids, saponins, alkaloids. Leaves extract used to treat malnutrition and also and can be used in the diet of the obese. The pods are fibrous and are valuable to treat digestive problems. Augment breast milk in lactating mothers.

Commercial applications- Each Part of the Moringa plant are useful particularly in food, Fodder & medicinal Industry.The seeds of this plant can yield 38%-40% Edible oil. This oil is called ben. It withstands oxidative rancidity. It is used in cooking as a substitute for olive oil for lubrication and also as perfumes. The ben oil contains sterols, oleic acid and tocopherols. The seedcake which is remained after oil extraction is used as fertilizer/green manure and also used for water purification. Moringa oleifera leaves can produce methane gas. The wood of this plant used in paper industry and bark used in tanning industry. The seed oil used to prepare delicate machinery, manufacture of perfumes, hair dressings, arts and for lubricating watches. The pods this tree can absorb pesticides & organic pollutants. **Medicinal Properties :** Moringa tree is often referred panacea. It can be used to treat more than 300 diseases. Indians and Africans have been used in herbal medicine. The phyto chemicals which are present in this plant make it a good medicinal agent.

Anti Diabetic: The aqueous extract of Moringa oleifera leaves has curative properties of both type-1 and type-2 diabetes. The leaves of this plant decrease blood glucose concentration in Wistar rats & Goto-kakizaki (GK) rats modeled type 2 diabetes (Ndong et al., 2007). Type-1 is where patients suffer from non-production of Insulin which maintains the blood glucose level at required normal value.

Anti-Oxidant: Anti oxidants are the substances which remove free radicals from body. These free radicals can cause some diseases like liver cirrhoses, cancer, antherocirrlaosis etc. The Moringa plant is a good source for natural anti oxidants which we can get abundantly. The aqueous methanolic & ethanolic leaf extract of Moringa plant has strong anti oxidants. Due to the presence of kaemeferol Moringa leaves contain anti oxidant activity.

Anti-Microbial: Moringa oleifera also has anti microbial properties. A study proved that its seed extract & fresh leaves juice have anti microbial properties (Caceres et al, .1991). Roots, bark, leaves & seeds of Moringa oleifera showed in-vitro antimicrobial activity against bacteria and fungi. Because of high microbial activity of Moringa, it has been widely used as antiseptics & water purifiers.

Anti-Cancer: Moringa olifera has been used in cancer treatment. A study showed that consumption of leaves & fruit extract can reduce the growth of tumor in mice (Purwal et al, .2010). Various extracts of seeds & leaves showed anti tumor activity in-vitro tests. Cancer tests are very expensive and have side effects. Moringa has anti cancer agents are natural, safe and reliable. The anti cancer activity of this plant is by inhibiting proliferation through apoptosis.

Other Properties: Ethanolic extract of Moringa leaves reduced 73.3% fertility problems

Conclusion: Moringa oleifera is a commonly utilised and well-studied plant. The medicinal characteristics documented in this review support the drumstick tree's therapeutic potential. The medicinal properties seem to be quite outstanding. However, there are a few areas that have yet to be investigated. There is very little knowledge on the chemical constituents of this plant's roots. The development of promising pharmacological effects could be aided by further synthesis of the active principle.

Conflict of interest

There is no conflict of interest.

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User's Study Special Reference to Urdu Collection Swami Ramanand Teert Marathwada University Affiliated College Libraries of Nanded City

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Abstract

User studies can be checked with the help of one or more other evaluation method. Use study leads to more understanding of the scope, quality and quantity of collection. Use study can also be very helpful in weeding the collection. This paper highlights use and user's studies of Urdu collection in swami Ramanand Teerth Marathwada University affiliated college libraries of Nanded city.

Keywords: *Users Study, Collection Evaluation, Urdu Collection.*

Introduction:

Urdu language was developed in 11th century in the period of Mughal Sultanate. It is consider that the Urdu language is evolved from Persian and Turkish language. The name Urdu is came from the Turkish language's word for lashkar, Ordu. The famous poet of Urdu language Ghulam Hamadani Mushafi coined this term Urdu first in 1780. Urdu language is also known as the Lashkari language. This language is national laungauge of many countries and it is also recognized as regional language of different state of India. It is also spoken in different part of the world. In India Delhi, Bihar Uttar Pradesh, Maharashtra, Telangana State and many states people spoke Urdu With numerous Vocabulary Words, Phrases, with differet Tone of Speaking. This language is near about same as Hindi language except some words which are quite different. When we write urdu it is quite different as we write in Hindi, that's why, the people who Speak Hindi and Urdu can speak both language and understand but it's very difficult to Read or Write Urdu or Hindi if the people don't have knowledge of both language as reading and writing. The College libraries are the pivot in process of higher education. Educational system implemented successfully with the help of availability of all relevant material in a library.Dr. Shankar Dayal Sharma stated, a library is more important. Without library colleges or universities cannot do any function.[1] Swami Ramanad Teerth Marathwada University was set in the year 1958 at Nanded (Maharashtra) Latur, Usmanabad Hingoli District comes under this university. Nanded is an ancient city with great historical tradition & can well be described as the home of art, religion and literature. The last gurus of Sikh religion Gurudwara which lie in this region attract Pilgrims, tourist and visitors from different parts of the world.

Swami Ramanand Teerth MarathwadaUniversity affiliated colleges libraries

There are the libraries in the affiliated colleges of SRTMU Nanded, which the education, research workers and scholars depend upon for their reading material. At present these colleges has different departments of Education. Urdu depart is one of them. The total collection has been systematically developed covering all branches of knowledge. There are 77000+ books in Science College, 30000, books in K.R.M. Mahila mahavidhyalaya, 49868 books in N.S.B. College, 103723 books in People College, 53805 books in
P.N College, 139395 books in Yeshwant College, 5000 books in V.K. College. By the end of April, 2017.

Urdu Collection

Basically Urdu Language established in India as a language of military camp. The entire region surrounded by Marathwada has a story and vast literary culture. S.R.T.M.U affiliated colleges conducts Urdu classes B.A., B.Sc, B.com M.A in Urdu. Urdu collection present in Science college library 1280, K.R.M Mahila College library 400, N.S.B college library 1900, People college library 880, P.N college library 1813, Yeshwant college library 2618, V.K college library 350. The total collection of Urdu is 7241of these colleges. This collection is used by the students, Research Scholars and Urdu departments and also used by other Urdu knowing member of libraries.

User Studies

User studies indicate strength and weakness of collection effectiveness of collection. Lancaster stated that, the ultimate test of the quality of a library collection, however is the extent and mode of its uses.[2] Various methods are available for studying collection use pattern. A standard procedure of evaluation of collection through use has been suggested by ALA are as follows.

Circulation Studies. Survey of user's opinionIn house use studies.

Document Delivery test.Citation on studies.

In this paper there is various method of use of Urdu collection are explain by doing complete Survey of

user's opinion by questionnaire method. In these research evaluations of the collection was done by the opinions of the B.A., B.Sc, B.com
M.A and other Urdu knowing students, research scholars and faculty of Urdu departments through questionnaire.

Questionnaire

"Questionnaire is a document that contains a set o questions that answers are provided personally by the respondents." In questionnaire questions are printed in a definite order. Question usually sent by mail, hand to the respondent who expected to read and understand the question and reply to them.Some spaces provided for the purpose on the said form for giving answers o the questions by respondents.[3] Questionnaire is one of the most important useful techniques for data collection relating to users and their needs. In this method a questionnaire is sent, usually by post to the persons concerned with a request to answer the questions and return the questionnaire.[4] The questionnaire was prepared for finding out the needs of users in Urdu subject. After it has been modified they were distributed to the 100 users in person. In the questionnaire format all questions were close ended. Some questions were open for the users to express their views. The questionnaireswere distributed to the following categories.

Table No. 01 Distribution of Questionnaire

Categories	**No. of Respondents**	**Percentage**
Students	80	81.63
Teachers	12	12.24
Non teaching staff	6	06.12
Total	**98**	**100.00**

When questionnaire was distributed it can be observed from Table No. 01 that 81.63% were students who responded the questionnaire. 12.24% teachers are responded. 06.12% non teaching staff responded. This table further categorized in different categories as per the undergraduate and post graduate level response of the student, which are shown in Table No. 02

Table No. 2

Distribution of Questionnaire to the student

Categories	**No. of Respondents**	**Percentage**
B. A. I Urdu	50	51.02%
B.Sc Urdu	25	25.51%
B.com	13	13.26%
M.A Urdu	10	10.20%
Total	**98**	**100.00%**

The questionnaire was prepared in thefollowing parts.

1. General information.
2. About Library
3. Library collection.
4. Library Services.
5. Suggestions.

General Information:

In the beginning part of the questionnaire questions were asked related to basic information of the user's. Generally every questionnaire based on this pattern. First part related to user or respondent related question for their interest.

About Library

The term Library was frequently used as "collection of Books" and libraries as a keeper or guard of books. After collection of distributed questionnaire visiting frequency to the library was find out. The Data collected regarding this questionwas analyzed as per following Table No. 03

Table No. 03Different types of libraries have their own time schedule for users. In the questionnaire a question was asked related to opening and closing time of the libraries. The response which was obtained from the respondent was near about Eighty percent respondents were satisfied with the timings of library while only 20% respondents had given negative response to this question.

Types of Books Borrowed: After Analysis of responses of therespondent it will reveal that 40.18% of respondents used the text books, 16.32% used general books, and 81.63% of respondents used the

books prescribed in syllabus.

Availability of reading Material:

Different type of reading material is available in the library. Respondents were asked whether they get the desired material when they require the answer given by the users is shown in the Table No.04.

Frequency of Library Visit

Frequency	No. of respondents	Percentage
Daily	16	16.32%
Weekly	40	40.81%
Monthly	10	10.20%
Frequently	26	26.53%
Rarely	6	06.12%
Never	0	0.00%
Total	**98**	**100.00%**

Table No.03

indicates that 16.32% of the respondents visited library daily or weekly while 40.81% users visit library monthly was 10.20% and users visited frequently are about 26.53%, users who visited once or twice or rarely was 06.12%.

Layout and Library

Based on questionnaire distributed to the respondents the opinion of the respondents regarding layout of library, shows that 46.67% respondents opined about the layout of library, it was easy to follow while for 53.33% users it was inconvenient which means that for majority of users the layout of library is inconvenient.

Library Timings:

Library timing is very important for each person of the staff and student in the campus.Table No. 04 Availability of Reading Material

Frequency	No. of Respondents	Percentage
Mostly	60	61.22%
Sometimes	26	26.53%
None	12	12.24%
Total	**98**	**100.00%**

As per the table No.04

which shows the availability of reading material. 61.22% percent of the respondents could mostly get their desired material and 26.53% respondents got their materials sometimes only. 12.24% of the users got none of the desired materials.

Library Collection

The response regarding the library collection is near about same as the desired material need for the users. As per the table no. 04 it is same i.e. nearly 61.22% of respondents feel that library collection was good. However, in the opinion of 26.53% respondents regarding library collection were best while 12.24% respondents feel that the library collection is that much whichis required for the students needs. It was not good.

Library services

The analysis of respondents revealed that 95.00% respondents took the help of library staff for finding their required information while only 3.00% never took the help of library staff. A question was asked concerning the behavior of library staff, it was observed that 95.00% of the respondents were satisfied with the services offered by the library staff while only 3.00% respondents said that the staff was not helpful. In the questionnaire the question was asked to the respondents regarding getting the required book from library as "How do you get your required books from library"? The respondent gives their answers which were found that 26.53% respondents got the required book with the help of catalogue while 61.22% respondents got the books by the help of staff, and near about 12.24% respondents got the books direct from shelves. Hence it is concluded that the library staff was co- operative for majority of the respondents.

Suggestions Of Users:

In the final part of the questionnaire respondent were asked to give their suggestion for the improvement of the library collection. Most of the respondents were very frank in expressing their opinions and suggestions in regard to collectiondevelopment. Analysis of the answers revealed thatusers have suggested that books should be purchased according to the syllabus. Generally respondents have suggested that library should try to issue more than two books at a time for home lending per student so that it will be more helpful for study. Some respondents have suggested extending the period of loan of a book. Students should be oriented for the use of library. The library staff should be well trained as to know how to handle the users.

Conclusion:

Collection analyses make it possibleto verify total useful collection and collection development policies which have been adhered to in reality. Urdu collection is available in satisfied quantity in the senior college libraries of the university. The valuable responses show that such types of awareness programmes should be taken for both librarian and users regarding the use of collection available in the library.

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A Study of Agricultural Water Management for Sustainable Development

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Abstract: *-*

India is known as an agricultural country of villages. India's one third population directly and indirectly depends on agricultural sector and agriculture plays significant role in Indian economy. But present scenario shows that the Indian agricultural passing through difficult phase all over country. Due to the agriculture achieved adequate water because of pressure from rapid growth of population, industrialization, urbanization and climate change. The India has rapid population growth which is already suffering water, food and health facilities. The demand of food supply increase with the increase of population. This is indicates that increase use of water efficiency and improve water management. The economic growth of India is related with increased water consumption because of changes in water demand for food production. This had turn into the focus term water management. The water management is one of the most burning challenges in the 21th century. This paper focused the scope of agricultural water management concerns with the use of water are environmentally and economically beneficial and conservation of ecosystems. . In the India most of people live in the regions experience water stress and it will be increased day by day. To resolve these issue there are necessities of agricultural transformation through policy maker in India.

Key Words: *agricultural water management, climate change. Economic growth*

Introduction:-

Today, Indian economy known as developing economy and more depend on the agricultural sector. Therefore, we usually say agriculture is back bone of Indian economy. India having second largest population in the world and majority of population lived in villages all over the country. Agriculture is prime sector to supply sufficient food and employment of Indian people. Agriculture sector supplied not only food for increasing population but also raw material for the agro based industries. But the growths of industries are more than double than the agriculture sector. Today the agricultural sector provides 62 % direct and indirect employment and the 38 % by industrial sector. It is clearly shows that the rate of supply of employment by agriculture sector is more than double than the industrial sector. But day by day the role of agriculture sector in national income marked decreasing trend, due to the agriculture achieved adequate water because of pressure from rapid growth of population, industrialization, urbanization and climate change. The gamble of monsoon, inadequate irrigation insufficient and ineffective implementation of government policies are marked about them. With the increasing the small families the size of land holding decreases with more demand of agricultural water resource. There is need of effective water resource management. All above discussion shows that the Indian agricultural passing necessity of agricultural management all over country.

Objective:- The present study identifies to the valuable importance of Indian agriculture and its water management and addressed future policies relating sustainable water management.

Data Base and Methodology:- The present study is based primary and secondary data and observation method. The primary data obtained from observation. The secondary data obtained from report of national agriculture department, various journals and different websites.

Agricultural Water Management:-

The term agriculture water management has used in different manner. The agriculture water management helps to reduce unproductive water losses and improving crop productivity. The water management also helps to the improve crop production; reduce soil evaporation and understanding of requirement of water for the specific plant. We are having different type of sources of water resources including surface water from rainfall, ground water from well and tube well, Ice cap water from mountain pick, waste water from house hold waste and industrial waste water. We can use this water for drinking, cleaning, cooking, washing cloths and cars and bathing. Most of this, proportion of water used by agricultural activity like as watering plants and crops. With help of water management we reduce the unproductive losses of water and reuse of water for agricultural sustainable development.

Impotence of Agricultural Water Management: Today the population of world is growing rapidly. And the agricultural is main source of requirement food for the population. A high population growth rate turns into the serve food shortage. Therefore the possibility of increasing the supply of food with increasing agricultural production by using agricultural water management. If the crops are not optimally watered than the high yielding seeds and fertilizer fail to achieve their potential. The India accounts 4% of fresh water and 17% of world's population. The necessity of food led to increasing consumption of water. The

water management means irrigation management promotes proper growth of crops and maintaining the proper level of soil moisture. This is also helps to the reduce losses of water. This had resulted increasing crop production. All though the water management is play significant role in environmental as well as social changes.

Methods of Water Management:- The country India is poor in water resources due seasonal monsoon, high proportion of wastage water as well as poor management policies. India has 17% world's population, where as 4% of fresh water as well as receiving average 4000 billion cubic meters of rainfall. The lack of water storage dam, adequate infrastructure and low level of water management system are the major obstacles in the water management. However to improve land productivity with conservation of water following techniques are became significant.

1) Reduce soil erosion. 2) Harvesting of more proportion of rainwater. 3) Conservation of soil and water. 4) Water management to minimize water losses by evaporation. Recycle ground water. 5) Use of drip irrigation, sprinklers, reuse of water. 6) Organic Farming.

7) Watershed management. 8) Fallow best agricultural practices for better soil quality.

9) Reduce unproductive losses of water. 10) Rotate crops. 11) Construction of small dams. 12) Choose drought tolerant crops. 13) Install better water pipelines to reduce water likege. 14) Provide water literacy programme to among the farmers. 15) Recharge well and tube well. 16) Supporting policy by government.

Challenges in Water Management:- The water is the important resource of agriculture but it has not well managed in India. There are more challenges to apply agricultural water management in India.

1) Issue of global climate change. 2) The rain fed cultivation. 3) Small land holder's farmer. 4) Raising temperature. 5) Increasing Co_2 and green house gases. 6) Rising sea level.

7) Green house effects. 8) Sand mining and down worth water table.

9) Cultivation Method. 10) Annual variation in agriculture budget. 11) Shortage of electricity. 12) Lack of knowledge. 13) Poor infrastructure. 14) Water a sensitive issue. 15) Lack of supporting Government policy.

Conclusion:-

Today Indian agriculture has suffering difficult phase and this sector requires huge support and investment. Due to the distress of agricultural sector farmers has trapped in the badly suicide case. India facing water resource crises and several regions are experiencing water stress all over the country. If the agricultural water management does not apply in the country, it suffers under water scarcity. Therefore, there are necessities to taken significant steps to motivate farmers especially youth. By using education of agriculture we grow status of farmers. To achieve the goal there are need to develop agricultural sector more attractive. The Government provides favorable policies that encourage the agriculture sector to increase water use efficiency and help them in finding their passion the suicide will not help them in the next economic crisis and we don't know when the next crisis will hit the nation.

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Role of Library Professionals in Pandemic

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Abstract:

In every crisis, the role of the Library Professionals is the most important to serve the whole community through a digital platform. Library Professionals can provide E-contents, information links, to their target user. This paper discusses the various roles of library professionals during the pandemic situation like COVID-19. Further an attempt has also been made by author to give list of open access resources in COVID-19 pandemic. The present paper helps the Library Professionals to improve their skill that will help to perform their responsibility effectively in such pandemic situation.

Keywords: *COVID 19, E-Resources, Library Professional, Pandemic, Open Access Resources etc.*

Introduction:

Due to COVID-19 (Corona Virus Disease 2019), Government of India initially called a first nationwide lockdown for 21 days. Since then India has gone through four phases of lockdown [1st Phase: From 25th March to 14th April, 2020 (21 days), 2nd Phase: From 15th April to 3rd May, 2020 (19 days) and 3rd Phase: From 4th May to 17th May, 2020 (14 days)], 4th Phase: From 18th May to 31st May, 2020 (14 days). After that India has started unlocking with Unlock 1 from 1st June, 2020. At present second wave of COVID-19 results in again necessity of nationwide lockdown. But this time Govt. of India declare that the decision of lockdown should take at local level as per the condition. In second wave there is a partial lockdown enforced by local authority. During this pandemic situation all educational institutions are under suspension and have been compelled to carry out all the possible academic activities through online mode by using various technology driven applications like Google Classroom, Zoom meeting application, Cisco Webex application and other social media like WhatsApp, Facebook, etc. In every crisis, there is a need for providing access to information to its end users is a prime responsibility of the libraries and the library professionals. In this lockdown due to COVID-19, the academic libraries have to extend their services to their regular users by providing and disseminating information. In addition libraries have also supporting the researchers and also the public community by providing resources on COVID-19. In such situation, libraries have to play a major role for supporting the academic activities of the academic community by providing various resources to their users. In this pandemic situation, social media can play a crucial role for disseminating information and providing library services to the library users as well as to the public. As time does not wait for none, the libraries have been utilizing various social media tools like WhatsApp, Facebook, Twitter, etc. for disseminating information to their users.In USA during the lockdown period, "National Emergency Library" is developed by the Internet archive blogs which has a wide range of collection around 1.4 million e-books on its digital library platform.

Role of Library Professionals in a Pandemic:

1. Promote public health awareness regarding COVID-19:

Librarians should promote public health awareness by disseminating information related to preventive measures. The librarians have a responsibility to share evidence based information about the pandemic. In addition librarians should provide other useful information like histories from those who are recovering from this corona virus and advice on good, nutrition and lifestyle. In the age of social media, there is more possibility of spreading misinformation through different social media tools. Library professionals should try to control rumors and fake news by only sharing reliable information.

2. To support Research:

Librarians should support researchers, faculty, and medical staff by providing information regarding the latest developments regarding vaccination, diagnosis kits and relevant studies published in medical journals. All the well-known reputed publishers provide free access to articles relating to COVID-19 literature

3. To meet the core needs of regular library users:

During a pandemic situation library professionals should maintain core library services to meet core information needs of its regular users. Librarians have managed to provide virtual support to their users, such as provision of references, document delivery, literature searches and systematic reviews through platforms like Google Classroom, Google Hangouts, Skype or Zoom.

4. Support from publishers:

As the crisis comes the literature on COVID-19 is growing rapidly. Reputed publishers such as Elsevier, Oxford, Wiley, BMJ, Nature, Emerald and Cambridge provide free access to the latest literature on Corona

virus. Library professionals should share this information with medical staff, academics and researchers and also those who are interested in COVID-19 study.

5. To provide the details of E-learning platforms available:

During the lockdown period, most of the people were unable to move from one place to another place. The physical interface of Libraries already closed but the Library Professionals can provide various online digital platforms and collections where users can easily access their information. These online digital platform links can be shared either on organization websites or through social media platforms by creating students whatsapp group. Delhi Public Library provides the various links of the digital platform on its website. Library Users can easily access and take advantage of available e-resources like e-books, e-journals, and other open access e-resources.

6. Library Professionals can create a new app with freely available e-contents to access different resources on a single platform. Furthermore librarians also assist those people who are not familiar with digital tools and not able to use advanced technological tools.
7. To search, locate and restructure the freely available e-resources and to serve a different group of the community like researchers, students, scholars, readers, etc. by providing access to these e-resources.
8. To organize online training and skill development programs for faculty and students on how to access open access and closed access e-resources.
9. Library professionals should engage their user community through Social media and also organize the Reading Books challenge, Poster writing competitions, skill development program, etc. through digital platforms that have helped people to reduce their stress during the challenging time of this pandemic.
10. Library Professionals can publish all the information through Social Media Platforms regarding regulations and decisions undertaken by govt. time to time.
11. Library Professionals can provide Cloud-based Library Services, Authentication technologies: Remote Access, Electronic Resource Management System ERMs: CORAL, Discovery Services, Library Service Platform/ LibGuides /IRs, Advocating of OA resources, Marketing of Library Services through Blogs and other Social Networking tools.

Some Open Access Resources in COVID-19:

Following is the list of some best ICT initiatives (India and abroad) in COVID-19, with their access link:

1. National Digital Library https://ndl.iitkgp.ac.in/
2. SWAYAM Online Courses https://storage.googleapis.com/uniquecourses/online.html
3. National Knowledge Network https://nkn.gov.in/
4. NPTEL https://finptel.ac.in
5. InfoPort https://infoport.inflibnet.ac.in/
6. Talks to Teacher https://www.ted.com/playlists/182/talks_from_inspiring_teachers
7. A-VIEW http://aview.in/
8. Virtual Labs https://www.vlab.co.in/
9. FOSSEE https://fossee.in/
10. Spoken Tutorial https://spoken-tutorial.org/
11. e-Yantra https://www.e-yantra.org/
12. Oscar++ https:////www.it.iitb.ac.in/oscar/
13. E-Kalpa https://icar.org.in/content/e-kalpa
14. NCERT Text Books http://ncert.nic.in/textbook/textbook.htm
15. Directory of Open Access Books https://www.doabooks.org/
16. Directory of Open Access Journals https://doaj.org/
17. Open Knowledge Repository — World Bank https://openknowledge.worldbank.org/
18. UG/PG MOOCs http://ugcmoocs.inflibnet.ac.in/ugcmoocs/moocs_courses.php
19. e-PG Pathshala https://epgp.inflibnet.ac.in/
20. e-Content courseware in UG subjects http://cec.nic.in/cec/
21. SWAYAMPRABHA https://www.swayamprabha.gov.in
22. e-Shodh Sindhu https://ess.inflibnet.ac.in/
23. Vidwan https://vidwan.inflibnet.ac.in/
24. SNLTR https://www.nltr.org/
25. Oxford Open https://academic.oup.com/journals/pages/open_access
26. Cambridge University Press https://www.cambridge.org/core/what-we-publish/open-access
27. Science Direct Open Access Content https://www.sciencedirect.com/book/9781843342038/open-access

28. ILOSTAT https://ilostat.ilo.org/
29. Project Euclid https://projecteuclid.org/librarians/lib_oa
30. AidData https://www.aiddata.org/
31. Springer Open Journals https://www.springeropen.com/journals
32. Taylor & Francis Open Access https://www.tandfonline.com/openaccess
33. Open Access Thesis & Dissertations https://oatd.org/

Conclusion:

In the pandemic situation, the prime responsibility of the libraries and the library professionals is providing access to information to its end users. The academic libraries have to extend their services to their regular users by providing and disseminating information by providing various resources to their users. Further libraries have also supporting the researchers and also the public community by providing resources on COVID-19. An attempt has been made to know the various roles of library professionals during the pandemic situation like COVID-19. In addition author has also given list of some open access resources in COVID-19 pandemic. The present paper helps the Library Professionals to improve their skill that will help to perform their responsibility effectively in such pandemic situation.

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Interface of Environment

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Summary

Natural resources have been considered by many to be a preexisting endowment that is available for human exploitation. . Environment, for all of us, constitutes our immediate surroundings. Individuals, family, communities; religious, educational, economic and political institutions make our social environment. We are facing various environmental challenges. It is essential to get the country acquainted with these challenges so that their acts may be eco-friendly. Environment degradation has adversely affected the poor who depend upon the resources of their immediate surroundings. Thus, the challenge of poverty and the challenge environment degradation are two facets of the same challenge.

Objective

Since the environment is both physical and biological concept, it encompasses both the non living and living components of the planet earth. The natural resources in the form of matter and energy are of vital significance for the successful survival of all types of life onthe planet earth in general and for human being in particular. In fact all aspects of human society (social, cultural, political and economic) depend on resources. Mishandling of resources and negligence of the upkeep of the resources also affect the environment
adversely.

Introduction

No organism is sufficient unto itself. From the minute bacterium to the largest tree or whale, everything on the earth lives in and is dependent on an external environment. This environment includes all the external physical and biological factors that affect the organism. The relationship between an organism and its environment is mutual for just as the environment affects the organism. So the organism, in turn produces, changes in the environment. All the population of plant, animals in an area form a community. The population in a community falls into three broad classes: producers, consumers, and decomposers. The producers are the autotrophs, chiefly the green plants that convert the energy of sunlight into chemical energy and build inorganic substances into organic compounds. The consumers include the animals (herbivores and carnivores) which depend on plant and animals. The decomposers are the bacteria and fungi that break down organic remains into inorganic substances.

Natural resources

Natural resources are the earth's natural materials that sustain all species including human beings. They are goods and services produced by earth's natural processes, which support all life and all economies. There are no substitutes for many of the natural resources, such as air, water, and biodiversity. Humans depend for their needs, necessities, and wants on natural resources. Every product we use and produce is derived from one or more natural resources. As a result, our continued existence, as well as the lifestyle we maintain, is directly related to the abundance, availability, and quality of these raw materials, as well as our ability to obtain them.

Uses of resources and its impact on environment

Our health and the well being of the current and future generations are inextricably linked to the quality of our air, water, soils and biological resources. These resources are inseparable from our culture and inspire art and literature. Natural resources have an intrinsic value, that is, they are important for their own sake regardless of their economic value. The resources are fundamental base for the economic growth an development of human society but their withdrawal from the nature, mode of their uses by human being and their disposal have enormous adverse effect on the environment . It is thus, imperative to study the linkages between resource use and the environment so that proper management of resources, both effective resources and resources out of place (waste materials after use) and remedial measures of environmental pollution and degradation arising out of resource use and disposal of waste materials may be made possible. Two aspects of resources are of most concern to the present society and for the future generations which are available in the environment. They are Majority of the raw materials of the industries mainly metals have formed and accumulated over long period of time (millions of years) through exceedingly slow geological processes but they are being consumed at present at an alarming rate. This may result in low supply of certain key minerals or even in complete depletion. Thus arises the question of adequacy and inadequacy of certain key minerals which the present society must take note of. Withdrawal and use of minerals have immense impact upon the environment. For example, extraction of minerals creates pits and scars on the earth’s surface which ultimately causes surface collapse and subsidence. Certain industrial minerals, such as metals, become waste after their uses. The disposal; of such waste materials into water

and soil pollutes them and in few cases the resultant pollution becomes hazardous to human society and other organisms of biospheric eco- system. The second type of industrial resources includes fossil fuels such as mineral oil, natural gas and coal. These resources are also finite and have accumulated over a long period of time. These resources are being used at a very fast rate and there is very likelihood that we will run out of these resources within a few hundred years or even less. These resources are used for the supply of most of energy in the industrial, transport and domestic sectors. The combustion of mineral oils, natural gases and coal pollute the atmosphere. The very composition of the atmosphere in terms of natural gaseous composition is altered and modified which consequently affects the atmospheric processes. For example emission of carbon dioxide through' human volcanoes' (chimneys of factories) increases the concentration of CO_2 in the atmosphere which in turn increases the green house effect of the atmosphere resulting into riseoftemperature at the earth's surface and consequent changes in the radiation or heat balance of the earth. The use of petroleum in the operation of motor cars, trucks, rail engines and air craft's releases nitrogen oxides into the atmosphere which may deplete the ozone which is very vital for all types of life on the earth because depletion in ozone may allow ultraviolet solar rays to reach the earth' surface. This may result in the rise of temperature and thus alteration of terrestrial heat balance. The release of sulphur dioxide (SO_2) in to the air by combustion of fossil fuels causes acid rains. Influence of environment on mankind According to Kurt Levin, environment is of three types which influence the personality of an individual as under:

1. Physical Environment,
2. Social and Cultural Environment, and
3. Psychological Environment. These may be explained as under:

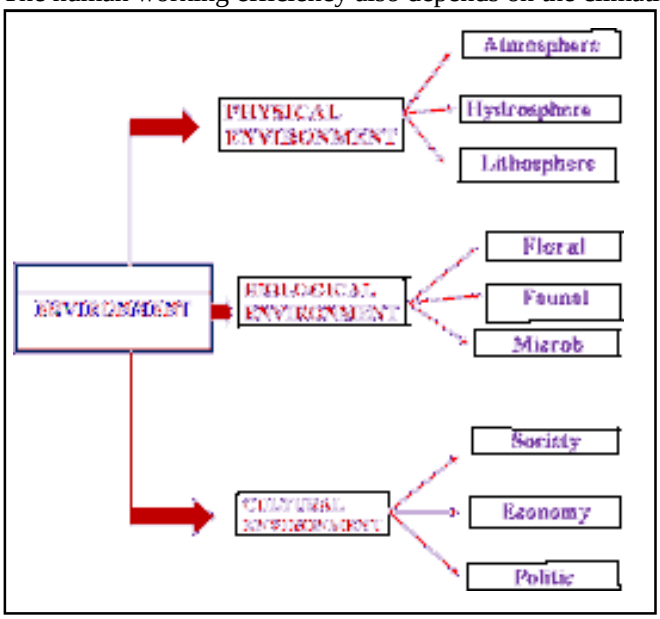
Physical Environment

Physical environment, refers to geographical climate and weather or physical conditions where in an individual lives. The human races are greatly influenced by the climate. Some examples are as under:

In the cold countries i.e. European countries the people are of white colour. Likewise, in Asian and African countries, that is, in hot countries people are of dark complexion.

The physique of an individual depends on climate conditions as the individual tries to adjust in his physical environment.

The human working efficiency also depends on the climatic conditions.



Classification of environment

Social Environment

Social Environment includes an individual's social, economic and political condition wherein he lives. The moral, cultural and emotional forces influence the life and nature of individual behavior. Society may be classified into two categories as under: An open society is very conductive for the individual development.

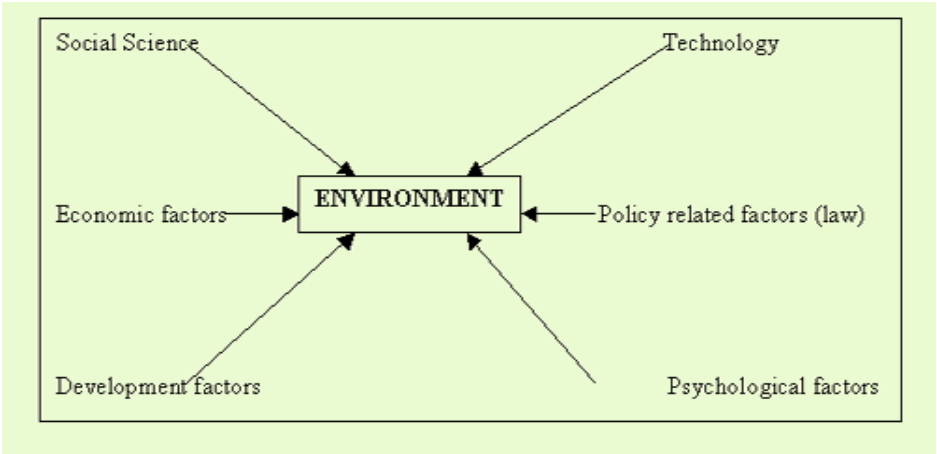
A closed society (evil traditions) is not very conductive for the development.

Psychological Environment

Although physical and social environment are common to the individual in a specific Situation, yet every individual has his own psychological environment, in which he lives. Kurt Lewin has used the term 'life

space' for explaining psychological environment.. If a person is unable to overcome the barriers, he can either get frustrated or completed to change his goal for a new psychological environment. But adopting this mechanism, the individual is helped in his adjustment to the environment. The following figure shows the various factors like social science, economic factors, development factors, technology, policy related factors and psychological factors influencing on environment.

Influencing factors on environment



Is environment changing?

Yes. Earth resources are utilized and sometimes misused for the industrial enhancement, economic development, to eradicate poverty and to improve the standard. In this process even new substances are introduced into the air, water and soils, and these new substances are the result of human activities and natural calamities. The most dangerous radioactive substance spewed into the atmosphere by nuclear explosions. Though it is essential in some respect, these dangerous radioactive substances fall on the earth's surface under the impact of precipitation and enters into the soils and thereafter they are circulated into the plants. Plants, animals and microorganisms are inter-dependent on each other and on the environment for their basic necessities like air, water and nutrients. These interdependencies lead to interactions within organisms and the environment. An ecosystem is a community of organisms involved in a dynamic network of biological, chemical and physical interactions between themselves and with the non-living components. Such interactions sustain the system and allow it to respond to changing conditions. An ecosystem includes the various life forms and also the non-living components, like the air, soil, rocks, water, etc., Mishandling of resources and negligence of the upkeep of the resources also affect the environment adversely. The social, cultural and natural environments for all of us, constitutes our immediate surroundings. Individuals, family, communities; religious, educational economic and political institutions make our social environment. These institutions are broadest organizers of individuals. The values, traditions, norms, customs, arts, history, folklore, practiced and followed by individuals, who are unified by race, ethnicity, language, nationality, or religion makes up the socio-cultural environment. Our environment also consists of plant and animal life; air, water, soil, landforms and climate, all constitute the natural environment. Human-made structures like roads, buildings, bridges, industries, parks, etc., constitute the built environment or human-made environment.

Interface of environment with resources

Variable factors in the environment The physical factors in the environment may vary extensively. Temperature, light, humidity and air currents change not only from time to time but also from place to place. An organism is able to adapt its physical environment in all respects. The different races of man show adaptations to the different temperatures of the regions in which they evolved. The nature of the soil, barometric pressure, tides, and a host of other factors are all major environmental factors for some organisms. The physical environment and its variables are of utmost importance to all living things, for it is the ultimate life giving source to them. Environment and resources have interrelationships. The natural resources endowment in the earth is limited. Physical, biological and cultural environment is totally controlled by resources. The unplanned exploitation of natural resources lead to pollution of all types and degraded environment seriously affect the health of all living things on earth. The study of Environment has become significant because it is a treasury of resources. For the very survival of mankind the environmental resources should be well conserved. There are some challenges before us, for the cordial interface of environment and resources. Some of these challenges are as under:

Growing Population

Though the population is considered as an important resource, the growth of world population and production combined with unsustainable consumption patterns, places increasingly severe stress on the life-supporting capacities of our planet. These interactive processes affect the use land, water, air, energy and other resources. Human needs can be fulfilled from the biosphere provided that its capacities for renewals are not impaired. Population of over thousands of millions is growing at 2.11 per cent every year. Over 17 million people are added each year. It puts considerable pressure on its natural resources and reduces the gains of development. Hence, the greatest challenge before us is to limit the population growth. Although population control does automatically lead to development, yet the development leads to a decrease in population growth rates.

Poverty

The poverty and environmental degradation has a nexus between them. The vast majority of our people are directly dependent on the natural resources of the country for their basic needs of food, fuel shelter and fodder. About 40% of our people are still below the poverty line. Environment degradation has adversely affected the poor who depend upon the resources of their immediate surroundings. Thus, the challenge of poverty and the challenge environment degradation are two facets of the same challenge. The population growth is essentially a function of poverty. Because, to the very poor, every child is an earner and helper and global concerns have little relevance for him.

Agricultural Growth

The people must be acquainted with the methods to sustain and increase agricultural growth with damaging the environment. High yielding verities have caused soil salinity and damage to physical structure of soil.

Development and Forests

Forests serve catchments for the rivers. With increasing demand of water, plan to harness the mighty river through large irrigation projects were made. Certainly, these would submerge forests; displace local people, damage flora and fauna.. These areas are to be brought back under vegetative cover. We must recognize the role of these people in restoring and conserving forests. The strategies for the joint management of forests should be evolved in a well planned way.

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Drought and Farmers Suicides

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Abstract

Farmer's suicides are the burning issue in Indian economy. Especially in Maharashtra this problem became the headache of government because lakhs of farmers makes suicides in last few years. Especially after 1991 the government accepts the LPG (Liberalization, Privatization, and Globalization) policy. Other reasons are also responsible for farmer's suicides such as low rain fall, no rain fall, more rain fall, drought, pricing policy, increased prices of fertilizers, pesticides, labourer's wages, family expenses, etc. Indebtness is the main reasons of farmer's suicides in Maharashtra. To take poison, throat/ noose, to jump in well, to jump on tall place, to jump below railway, are some of the way of making suicides to finish the life. Many farmers use these ways for making suicides. They went in depression due to indebtness and make the suicides. So this problem became the headache of government, society and policy makers.

Key words *:- Suicides, LPG, rain fall, indebtness, farmers.*

Introduction

India is an agrarian economy. Most of the rural population depends upon agriculture and related activities for employment. Agriculture is the backbone and life blood of rural economy. It is the largest sector in India for giving employment to people. No other sector gives this large type of employment to rural people. But this sector has gone from a very adverse situation from last few years. There are various reasons for this adverse situation. Most of the land depends upon monsoon, there were no other permanent source for water to agriculture. Day by day pesticides, fertilizers, seeds, labour wages, expenses of family on daily needs, illness, marriage ceremony in family were increases but the income from crop were very less. Farmers produce the goods and their prices were decided in market who purchases it. So pricing policy is another reason for less income of farmers because prices are not fixed on production cost. Every farmers production cost were different. So production cost was more than the market price of agriculture goods. So agriculture business was run in loss, because expenses were more than income. Due to this reason most of the farmers were not ready to cultivate their land when they get another source of income, they leave their land. Government makes less provision in its budget for agriculture development year after year.

Objectives:

1) To study the reasons of farmers suicides .
2) To study the problems of agriculture.
3) To study why the income of farmers decreases day by day.
4) Year after year government makes less provision for agriculture in its budget.
5) To study why most of the farmers did not do supportive business.
6) To study the relation between drought and farmers suicides.

Hypothesis:

1) Last few years farmers make suicides due to less income and indebtness.
2) Last few years agriculture sector has gone from an adverse situation.
3) Income of farmers decreased day by day.

Research Methodology:

For writing this research paper primary and secondary sources of data were used. In primary data discussion with farmers in Latur district were made. In secondary sources of data books, journals, internet was used. Drought may be classified in to two groups : 1) Wet drought, 2) Dry drought. When rain fall were more than necessity then crops were not come up, it is called wet drought. When rainfall were very less or no rainfall then crops were not come up is called dry drought. Drought is one of the important and major reason for farmers suicides. There were three seasons in India i.e. monsoon, summer, winter. In monsoon first season were started i.e. called kharip and second season is called rabbi, which is started in November/December. Due to any reason in these two season crops in agriculture were not grown / come up then it is called drought. When drought came then farmers did not get any income. So for fulfilling the family and other needs they get the help of borrowing from money lenders on interest. There is a close relation between drought and farmers suicides. When drought come up farmers make suicides due to no income because they unable to meet their family needs. They take the help of borrowing. When farmers unable to refund the debt. Then they choose the way of suicides. The agriculture is totally depends upon monsoon in Maharashtra. There is no permanent source of water for agriculture. Majority of the farmers in

the region did not do the supportive business. So they totally depend upon agriculture income. When asked to farmers for supportive business then they said the supportive business did not affordable to them. Less income and more expenses is the situation in supportive business. From fifth five year plan government make less and less provision in its budget for agriculture development. Let us see the figures:

S.No.	5 Year Plan	Expenses
1	5^{t} (1974-79)	13%
2	6^{t} (1980-85)	6%
3	7^{t} (1985-90)	6%
4	8^{t} (1992-97)	6%
5	9^{t} (1997-02)	3%
6	10^{t} (2002-07)	4%

Source: Economy of Maharashtra, Dr. Mangala Jungle ,first edition 2008

The above figures says that in every five year plan from fifth to tenth less provision were made for agriculture development in governments budget, where as population were increase at a faster rate and they depend upon agriculture for employment. According to the report of census 2001 out of total working population 59% population depends upon agriculture where as in America 2 to 3 %, in Australia 6%, and in France 7% working population depends upon agriculture for employment. It means in India majority of the population depends upon agriculture and related activities for employment. According to the discussion with farmers due to malapropos rainfall, less rainfall or no rainfall, increased prices of seeds, pesticides, fertilizers, labourers wages, pricing policy of goods, the income of farmers decreases. This is the problems of agriculture in India. The main reason of farmers suicides is indebtness. Due to less income or no income from griculture. When they were unable to satisfy the needs of family and agriculture expenses they take the help of borrowing from others. When interest and borrowed principle amount he did not pay in time or unable to pay then they choose the way of suicides. After 2000rainfall is very less or drought situation is there then farmers did not get any income. So their budgets were collapse. So they take money on interest and become indebtness. Farmers income decreases year after year due to less rainfall, drought, flood or any other natural calamities and pricing policy of agriculture goods etc. There are many problems faced by farmers such as problem of water, pricing of agriculture goods, increased prices of seeds, fertilizers, pesticides, increased rates of labour wages, electricity problem etc.

Conclusion :

Drought and farmers suicides are very much related to each other. Due to drought farmers makes suicides because in that situation farmers did not meet their needs due to no income or less income. From 1995 to 2007, 150000 farmers makes suicides in India, out of them 36000 suicides was in Maharashtra. Indebtness is the main reason of farmers suicides in Maharashtra and indebtness were come due to drought situation. So to overcome this problems of farmers suicides government start the project of joining the rivers to permanent source of water, to give 24 hours electricity to agriculture, to control over prices of seeds, fertilizers, pesticides, etc. Prices of goods will be fixed on production cost, make provision in govt. budget, give loan to farmers at less interests, etc. are some of the measures taken by government to stop the farmers suicides.

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Indian Education System and Online Education In Covid 19

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Abstract

Indian education system is on the verge of development, it requires stimulation in proper direction at both the urban and rural area. Basically, in rural areas, there is urgent requirement to boost education. In such situation of education system, for controlling and minimising the severe impact of COVID 19, government imposed nation wise lockdown in March, 2020. Education system has been greatly affected due to this lockdown. This paper aims to analyse the positive and negative impacts of COVID 19 on Indian Education System. There is need of hour to innovate and implement alternative education system. This paper has suggested some ways to cope up with the pandemic situation and draw the best results from this situation.

Keywords: *Online Education, Covid 19, New normal*

Introduction

Indian Government imposed the nationwide lockdown and it has had a tremendous impact on the education system of the country, especially for students from rural areas. Pandemic has been a challenge to educational institutions. Due to COVID 19, all educational activities are hampered to a great extent and there is great amount of confusion like postponement or delay in exams, late start of academic sessions, confusion in result declaration and admission, and so on. The structure of the Indian education system has had a profound effect on learning methods, teaching techniques and assessment methods, resulting in changes in online learning and a greater focus on virtual learning to meet goals and objectives. But few schools and universities were able to adopt such practices and low-income private and government schools became ineligible to adopt such practices and as a result closed down. This pandemic has opened doors to innovative methods of teaching and learning. The positive side of this pandemic on education is acceleration in the adoption of digital technologies in transmission of knowledge, moved towards blended learning and encouraged teachers and students to become techno savvy.

Objectives of the Study

The overall objective of this study is to analyse the Impact of COVID-19 on Indian Education System. In particular, this study will analyse:

1. To study the positive impact of COVID 19 on Indian education system.
2. To analyse the negative impact of COVID 19 on Indian Education System.
3. To highlight the role played by teachers and students through online education.
4. To put some effective suggestions for effective teaching learning process.

Methodology of the Study- various journals, articles, reports published by national and international bodies relating to impact of pandemic COVID 19 are used to collect data and information in this study. Information is also collected from various authentic websites which provides the information relating to impact of COVID-19 on educational system.

Impact Of Covid 19 On Indian Education System - Both teachers and students face many difficulties while learning online. Lack of basic amenities at home, external deviations during education, and family disruption were major issues. Educational institutions also noted support barriers such as budgets for the purchase of advanced technology, lack of training, lack of technical support, & lack of clarity and direction. Teachers also had to face technical difficulties. Difficulties were grouped due to lack of technical support. These include a lack of technical infrastructure, limited awareness of online teaching platforms, security issues. Teachers' personal problems, including lack of technical knowledge, course integration with technology, are preoccupied with their online learning. In addition to creating digital infrastructure, teachers should be trained to use this system to provide authentic and uninterrupted education to students. The successful distribution of education is also a question because learning in colleges is different from those schools. The same education cannot be applied at every level at the digital level.

Positive Impact Of Covid 19 On Education System- Although the outbreak of COVID 19 has had a number of negative effects on education, educational institutions in India have embraced the challenge and sought to provide uninterrupted support to students due to this pandemic. The Indian education system got a chance to change from the traditional system to the new era. The following factors can be considered as positive results.

1. Efficient use of electronic media for sharing information Learning materials are easily shared among students and related questions are solved through different social media like e-mail, SMS, phone call and Whats App or Facebook. It has given worldwide exposure to students and teachers for sharing knowledge.

2. Increment in use of Learning Management Systems-The use of learning management system by educational institutions became a big demand. This opened up a huge opportunity for companies that have developed and strengthened learning management systems to use educational institutions.

3. Shift towards of Blended Learning - COVID 19 has increased the use of digital technology for education. Educational institutions turned to mixed education. It encourages all teachers and students to acquire more knowledge of technology. New ways of sending and evaluating the study provided great opportunities for major changes in the field of curriculum development and pedagogy. It also gives access to a large number of learning ponds at a time.

4. High Demand for Open and Distance Learning (ODL) - During lockdown, most of the students prefer ODL mode because it provides learning opportunities from a variety of resources and through customized learning according to their needs.

5. Increase the use of soft copy material for learning - In the COVID 19 pandemic situation, students could not collect hard copies of the study material and therefore the habit of using soft copy material has been increased.

6. Enhancement in collaborative work - There is a new invention in the education system that is collaborative teaching and learning. Professors / teachers from all over the world can also collaborate to benefit each other.

Negative Impact of Covid-19 on Education System according to UNICEF, the Covid-19 pandemic has battered education systems around the world, affecting close to 90 per cent of the world's student population. In India, over 1.5 million schools closed down due to the pandemic, affecting 286 million children from pre-primary to secondary levels Education sector has tackled many challenges while COVID 19 pandemic. It has faced many negative impacts on education system and few of them are mentioned here

- 1. Unprepared teachers and students for online education Before the COVID 19 lockdown in India, no one could have guessed that the face of Indian educational institutions could change so much. Schools that never allowed students to carry electronic gadgets were converted into learning centers for online classes. As both teachers and students become familiar with this new general introduction, it is certainly more challenging for teachers to deal with this situation.

2. Blockage in educational activities Classes have been postponed and examinations at various levels have been postponed. Various boards have already postponed the annual exams and entrance tests. Admission process delayed. Due to the persistence of the lockdown, almost all the months of the entire academic year 2020-21 were lost to the students which is further deteriorating the situation of academic continuity and making it difficult for the students to resume schooling.

3. Inability of parents to provide assistance to their wards

Some educated parents are able to guide their children but some may not have the sufficient level of education and due to financial constraints also they cannot provide all the facilities.

4. Increases the economic gap between students

Many students have limited or no access to the Internet and many students cannot support computers, laptops or mobile phones in their homes, teaching online can create a digital divide among students. Lockdown has hit Poor students in India are reportedly unable to access online education. Thus the teaching-learning method during COVID 19 during can widen the gap between rich / poor and urban/rural.

5. Disruption in Global Higher Education

The pandemic has significantly disrupted higher education across the country The number of Indian students enrolled in many foreign universities, especially in the most affected countries, is now leaving those countries and if this situation continues, the demand for international higher education will decrease significantly.

6. Reduction in Employment Opportunities Abroad

Many Indians may have lost their jobs abroad and returned home due to COVID 19 pandemic. Therefore, new students entering the job market soon may have difficulty finding suitable employment. Many students may not have already gotten a job through a campus interviews. They could not join for their jobs due to lockdown.

Suggestions

1. Around the world, Indian traditional knowledge is renowned for its scientific innovations, values and benefits for developing sustainable technologies and medicines. This knowledge system in different fields should be integrated with the current mainstream higher education system.
2. Government and educational institutions should plan to continue educational activities while maintaining social distance. 30-40% of students and teachers can go to school in two shifts every day for educational activities following the guidelines of COVID 19.

3. The urgent need of hour is the access to technology and the internet. The digital capacity and the necessary infrastructure to reach out to the most remote and poorest communities is essential for students to continue their education during epidemics. Public funds need to be deployed to bridge the gap between the Internet and students to continue learning digitally. State Governments / Private Institutions should launch new ideas and innovations in online education.
4. Higher educational institutions should establish the quality guarantee mechanisms and quality benchmarks for online learning programs for making rapid growth of the online learning platform.
5. Government should develop a creative strategy to ensure that all children have sustainable access to education during pandemic. Indian policies need to include diverse individuals from different backgrounds, including remote sections, neglected and minority groups, for effective delivery.
6. The corrective actions should be taken by government for job offers, research projects, and internship programs.
7. Some key issues related to distance learning strategies such as availability and access to digital devices with internet connectivity, need for safe learning locations, capacity building for teachers, families and students to operate and navigate digital devices and engaging lesson plans for students with disabilities and other neglected groups were addressed by the government.

Conclusion

Online Education is a buzz word in COVID 19 pandemic. As per the recent report by the global educational network, the Indian Internet infrastructure is not yet ready to support the change. According to a 2019 government survey, only 24 percent of households have access to the Internet. In rural India, the number is very low, with only 4 per cent of households have internet access. The NITI Commission's report of 2018 mentioned that 55000 villages in India did not have mobile network access According to a survey conducted by the Ministry of Rural Development in 2017-18, more than 36 per cent of schools in India are without electricity. The emphasis on technology-driven education has deprived many of the disadvantaged and prevented them from continuing their studies. Other stakeholders are also facing the similar difficulties. Teachers are not always trained and equipped to transition to online teaching. With e-learning becoming the "new normal", education authorities have taken steps to make the digitization of education easier and more affordable for all. To improve connectivity, the central government is heavily banking on the BharatNet project, which aims to provide broadband to 2,500 gram panchayats across the country through optic fiber. Taking advantage of online education, the availability of electricity is a significant challenge. According to a recent survey conducted by the Ministry of Rural Development in 2011-18-11, only 47% of Indian households get electricity for more than 12 hours and more than 36% of schools in India run without electricity. This suggests that while students with a well-to-do family make it easy for them to move to remote education, students from disadvantaged backgrounds are less likely to adapt to inefficiency and conditions due to lack of technology or low education. Their parents' guide them through technology-savvy applications. The biggest challenge facing students and teachers is the lack of technical infrastructure and internet connectivity across India.

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Impact of COVID-19 Pandemic on MSME Sector

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Abstract:

The Corona virus disease (COVID-19) has affected all over the glob adversely India is not an exception for it. Global economy has crashed after the outbreak of this virus in 2019 whole world has stopped all economic and Industrial activities of world were stuck in the complete lockdown situation. India also suffering from different economic problems the complete lockdown in India were declared and the developing economy has to suffer a lot in this pandemic situation. In present study the impact of COVID-19 pandemic on micro, small and Medium enterprises has been studied. As we know that the second largest employment generation (11Crores) in India is from MSME sector. Where as in 2017-18 this sector contributed about 48.56% share in Indian export of the same year. This study deals with the impact of pandemic on this sector. Contribution of MSME in GDP is about 30%. This study aims to find out the current position of MSME sector in the economic development and the role of government in lifting this sector in post pandemic crisis.

Key words: *COVID-19, MSME, Economic Development*

Introduction:

The Micro Small and Medium Enterprises in the country are playing an important role in the economic development and increasing export of India in the financial year 2017-18 the share of MSME sector in all export was about 48.56%. almost equals to large scale industries. One of the characteristic which separates this sector from large scale is the ability of employment generation. Today it is a second largest source of employment in India although the large scale industries also generate more employment opportunities but this sector is having larger number to count. The outbreak of coronavirus in china which suddenly affected most of the countries in the world and India was not an exception for this. The only way to avoid this virus is not to be in connection with the affected person. In India where the majority of population lives in rural area where the medical facilities also not available it was tough to control the spread of this virus thus the Prime Minister Shri Narendra Modi has announced complete lockdown in whole India from 24th March to the 14th March. Which further extended as the situation was being worst in entire world and India too. This complete lockdown was sudden shock for the new and small enterprises as they are having less working capital and the large amount of capital is borrowed capital hence the problems started arising in front of these businesses. The role of government and the baking and financial institution in lifting these businesses is most important.

Statement of problem:

The current situation where all businesses faced no work and no production situation majority of the businesses were completely locked down whereas the businesses dealing in essential goods were open. All the enterprises were locked down hence the researcher trying to find out the impact of this COVID-19 pandemic on MSME sector. The researcher has chosen only MSME sector because the large scale industries has large capital as well as profit with them whereas the selected sector has less capital and profit so they suffer in any pandemic like situation.

Objectives of the study:

1. To study the contribution of MSME sector in GDP before the pandemic and after.
2. To find out impact of COVID-19 on MSME
3. To find ways to recover the adverse impact

Hypothesis of the study:

1. There is significant impact of COVID-19 on MSME sector
2. There is no significant difference between contribution of MSME sector in GDP before and after the pandemic

Research Methodology:

Present study is based on the empirical research method and the data collected for the research is secondary data from authentic data reports.

Definition of MSME

Classification	Micro	Small	Medium
Manufacturing Enterprises and Enterprises rendering Services	Investment in Plant and Machinery or Equipment: Not more than Rs.1 crore and Annual Turnover ; not more than Rs. 5 crore	Investment in Plant and Machinery or Equipment: Not more than Rs.10 crore and Annual Turnover ; not more than Rs. 50 crore	Investment in Plant and Machinery or Equipment: Not more than Rs.50 crore and Annual Turnover ; not more than Rs. 250 crore

(source: Ministry Of Micro, Small And Medium Enterprises Notification New Delhi, the 1st June, 2020)

Contribution of MSME in GDP:

The MSME sector is popularly known as the backbone of Indian economy as it contributes not only in employment generation but also it contributes in country's export the contribution in export is roughly 50%. Whereas there are about 11 crore employees are working under this sector. 6000 different products are produced under MSME's.

Figures in Rs. Crores adjusted for FISIM at current prices						
year	total MSME GVA	Growth (%)	total GVA	share of MSME in GVA (%)	All India GDP	share of MSME in All India GDP (%)
2014-15	3658196	--	11504279	31.80	12467959	29.34
2015-16	4059660	10.97	12574499	32.28	13771874	29.48
2016-17	4502129	10.90	13965200	32.24	15391669	29.25
2017-18	5086493	12.98	15513122	32.79	17098304	29.75
2018-19	5741765	12.88	17139962	33.50	18971237	30.27

(Source: Central Statistics Office (CSO), Ministry of Statistics and Programme Implementation)

As per the above table the contribution of MSME in the all India GDP is increasingly reached 30.27 in the financial year 2018-19. In the year 2014-15 it was 29.34 it means the contribution of this sector is always remarkable. In the recent financial year after the effect of COVID-19 the contribution has decline by few percentage it's still a better number, i.e. 29% which is looking smaller digit than previous but as per the situation this is one of the perfect figures.

Impact of COVID-19 on MSME:

The concept of complete lockdown has thrown many small businesses into a big financial crisis where they are finding no way to come out. A survey conducted by Dun and Bradstreet under the title of "Impact of Covid-19 on Small Businesses in India and the Way Ahead" they had 250 respondents from different cities of India where the respondent was chosen as 50-50 that is 50% of manufacturing units and 50% service business. They found that around 82% business are suffering from the pandemic situation and the actions taken by the government about industrial production. Under this survey the basic three problems of this sector has been revealed as these units already do not have greater capital there is a big challenge to overcome this problem in an efficient manner and continue the business as it was. There were 72% respondents of their survey still have a hope to recover within a year. second problem or challenge is to increasing the productivity of the business. Businesses facing challenge about productivity as the cost of production and the raw material has reached to peak its huge problem of increasing productivity. the development of e-commerce in this pandemic the suffering business who were earlier dealing with challenges to go online. The market targeting is more difficult for them.

Conclusion:

The impact of COVID-19 on MSME sector is remarkable as the 82% businesses are suffering from the pandemic. There is one good sign of covering early is the contribution to GDP is not dropped whether this worst condition is appeared. The MSME plays an important role in economic development of India. Government of India is also supporting this sector by providing different schemes and financial supports For pulling MSME's out of this situration is important as its survival is affecting the survival of many other businesses as these are the supplyers of parts and semi finished goods to the large scale industries. The employment generated through this sector is far greater than the other except agriculture.

Findings:

1. There are about 11 crore employment opportunities created by the MSME'sector.
2. The contribution of this sector in export is about 48.56% of whole export of India.
3. Contribution of MSME in all India GDP in year 2021 is 29%
4. There are 82% businesses who are suffering from pandemic.
5. About 42% businesses facing challenge of accessing market after the pendemic
6. There are about 37% businesses finding challenging to improve the productivity.
7. 34% businesses facing challenge of raising new finance for the business.

Suggestions:

1. Government has to provide financial assistance to the businesses having good previous record.
2. Businesses has to cut their cost and increase the profitability
3. Businesses should choose to go online to eliminate the middleman commission
4. Government should create a platform where all these businesses can sell their product easily without any commission. Which will help them recovering fast.

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Antibacterial Potential of Khair Plant on MDR Bacteria

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Abstract

It is estimated that about 80 % of the rural population in developing Asian nation depend on home care and traditional medicine for major therapies. Plants are the most important and rich source of medicine as it produces different types of bioactive compound. Streptococcus mutans is Gram positive, spherical shaped, alpha hemolytic, facultative anaerobic bacterium. It is a part of normal flora of oral cavity and is a most common cause of dental caries as it produces acid which carry out erosion of tooth enamel. Bacteria become antibiotic resistant by different ways. R-plasmid often contains genes for resistance to different antibiotics. Plasmid can be transferred between bacterial cells in a population. Patent suffering from antibiotic resistant strain fail to respond antibiotic treatment. So there is a continuous demand of new drug. This problem of drug resistance could overcome by herbal drugs. So the demand of herbal products as therapeutic agents is increasing all over the world. In the present study antibacterial activity of Khair plant was studied against antibiotic resistant Streptococcus mutans isolated from dental caries. Isolation and identification of Streptococcus mutans was done by morphological, cultural characteristics and standard biochemical tests. Antibiotic susceptibility test of the clinical isolates was done by using modified Kirby-Bauer disc diffusion method in accordance with the guidelines of the clinical & laboratory standards institute. Interpretation of resistance was based on the NCCLS criteria. The antibacterial activity of aqueous and solvent plant extract was tested by agar well diffusion method. The most common pattern of multiple drug resistance of isolates of Streptococcus mutans observed was ciprofloxacin-rifamycin-ampicillin-penicillin-vancomycin-gentamycin. It was found that methanol extract of plant showed highest antibacterial activity against Streptococcus mutans followed by ethanol extract. The aqueous plant extract showed lowest antimicrobial activity.

Keywords: *Antimicrobial activity, Agar well diffusion, Disc diffusion method, Multi- drug resistant, Plant extracts, Streptococcus mutans.*

Introduction

The oral cavity contains a wide variety of bactria, but only *Streptococcus mutans, Lactobacillus acidophilus, Actinomyces viscosus, Nocardia* spp cause dental caries. *Streptococcus mutans* is closely associated with caries [12,22]. *Streptococcus mutans* is Gram positive, spherical shaped bacterium. It is alpha hemolytic, facultative anaerobic and is a part of normal flora of oral cavity. It can metabolize carbohydrates and are considered to be the principle etiological agent of dental caries. It has a polysaccharide coat (glycocalyx) that allows it to stick on teeth and also damage heart valves [1]. Dental caries is considered as a major public health problem globally due to its high prevalence and significant social impact. The WHO reports 60-90% of school children worldwide have experienced caries, with the disease being the most prevalent in Asian and Latin American countries [18]. *Streptococcus mutans* have the ability to produce the lactic acid which causes dental caries. *Streptococcus mutans* is more prevalent in dental caries subjects than *Streptococcus sobrinus* in mouth [8]. The acids produced by bacteria can cause a fall in pH, which can lead to an increase of enamel solubility that is dental caries. [6, 9, 21]. Due to indiscriminate use of antibiotics has led to an increase in antibiotic resistance among microorganisms [2, 16]. By different ways bacteria become resistant to antibiotic. R-plasmid often contains genes for resistance to several antibiotics [7]. Plasmid can be transferred between bacterial cells in a population [16].

Khair (*Acacia catechu)* belongs to the family *Mimosaceae*. In English it is called as cutch tree and in Hindi it is called as khair. It is used for many diseases [3]. An antimicrobial can be defined as an agent that causes the death or inhibit the growth of microorganisms with the least damage to the host cells [20] . Plants have been used for centuries as a remeady for different diseases[13]. In India earliest references of curative properties of plants appear in Rig-Veda which is said to be written between 3500 to 1600 B. C. The rural population in different parts of the world is more disposed to traditional way of treatment [11, 14]. About 80 % of the rural population in developing Asian nation depends on home care and traditional medicine for major therapies [10]. The problem of drug resistance could overcome by herbal drugs. In the present work an attempt was made to isolate antibiotic resistant *Streptococcus mutans* from dental caries & to study effect of *Acacia catechu* bark extract on it.

Materials and Methods

Isolation of antibiotic resistant *Streptococcus mutans*

Streptococcus mutans was isolated from dental caries by using specific media- MSA, MSBA & Blood agar. Isolates of *Streptococcus mutans* were identified by using morphological, cultural characters & biochemical tests. Antibiotic susceptibility testing was done by Kirby-Bauer's disk diffusion method [4] for drug susceptibility according to National Committee for Clinical Laboratory standards (NCCLS) [17]. The Muller Hinton agar plates were spreaded with isolates of *Streptococcus mutans*. This was then impregnated with antibiotic discs. Plates were incubated at 37 ºC for 24 hrs. Antibiotics used in this study were ampicillin(10mcg); Chloramphenicol(30mcg); Ciprofloxacin(5mcg); Clindamycin(2mcg); Gentamycin(10mcg); Kanamycin(30mcg); Penicillin-G (10U); Rifamycin (5mcg); Tetracycline(30mcg) and Vancomycin(30mcg) procured from Hi-Media Laboratories, Mumbai

Preparation of aqueous and solvent *Acacia catechu* bark extract - Fresh and good quality of bark of *Acacia catechu* was collected from Sangamner area. It was cut into small pieces and crushed in fine powder by domestic grinder. Aqueous extract of it (5% w/v) was prepared. Also ethanol and methanol extract of bark were prepared separately. It was tested by using agar well diffusion method.

Antibacterial testing of bark extract- The suspension of isolates of *Streptococcus mutans* was thoroughly mixed with sterile molten nutrient agar and poured into sterile petri plates under aseptic conditions. After solidification, plates were used for making of well by using sterile cork borer. 0.5 ml of single plant extract was added in each well. After proper diffusion plates were kept at 37 ºC for 24 hrs. Zones of inhibition were measured in millimeter & recorded.

Result and Discussion

Isolates of *Streptococcus mutans* were isolated from the samples of dental caries by using MSA, MSBA media and identified according to morphological, cultural characters & biochemical tests. Hemolytic pinpoint colonies were developed on blood agar under anaerobic condition. Isolates of *Streptococcus mutans* were Gram-positive, non motile, spherical shaped, catalase –ve, oxidase -ve, sorbitol +ve, , mannitol +ve, sucrose +ve & growth in 4% NaCl +ve. [1, 5, 15, 17]. Ten isolates of *Streptococcus mutans* showed antibiotic resistance to one or more antibiotic. The most common pattern of multiple drug resistance of isolates of *Streptococcus mutans* observed was ciprofloxacin-rifamycin-ampicillin-penicillin-vancomycin-gentamycin.

Table 1: Percent resistance of *Streptococcus mutans* isolates against individual antibiotic

Sr. No.	Antibiotics	No of isolate showing resistance	Percent resistance
1.	Ampicillin(10mcg)	07	70
2.	Chloramphenicol(30mcg)	00	00
3.	Ciprofloxacin(5mcg)	09	90
4.	Clindamycin(2mcg)	00	00
5.	Gentamycin(10mcg),	01	10
6.	Kanamycin(30mcg)	00	00
7.	Penicillin G(10U)	05	50
8.	Rifamycin (5mcg),	08	80
9.	Tetracycline(30mcg)	00	00
10.	Vancomycin(30mcg)	03	30

The MAR index of each isolate was calculated by using following formula:

$$\text{MAR Index} = \frac{\text{No. of Antibiotics to which the isolate was resistant}}{\text{Total no. of antibiotics tested}}$$

The antibacterial activity ofplant extract on isolates of *Streptococcus mutans* was studied, zone of diameter were measured in millimeter & noted. The study was performed in duplicates for all samples.

Table 2: Antibacterial activity of plant extract on isolates of *Streptococcus mutans*

Sr. No	Isolate of *S. mutans*	Antibacterial activity of *Acacia catechu* bark extract		
		Aqueous	Ethanol	Methanol
1.	ISM01	-	++	+++
2.	ISM02	+	+	++
3.	ISM03	-	++	++

4.	ISM04	-	+	+
5.	ISM05	+	++	+++
6.	ISM06	-	-	++
7.	ISM07	-	+	-
8.	ISM08	+	++	+++
9.	ISM09	-	+	+
10.	ISM10	+	++	+++

(--: no antimicrobial activity, +: antimicrobial activity)

It was found that methanol extract of plant showed highest antibacterial activity against *Streptococcus mutans* followed by ethanol extract. The aqueous plant extract showed least antimicrobial activity. The antibacterial activity increases with the increase in concentration of plant extract. *Acacia catechu* is a medicinal plant used for different purposes. The bark of this plant is antibacterial and antifungal in nature [19]. The indiscriminate use of antibiotics has led to an increase in antibiotic resistance among microorganisms. Hence plants can be used for treatment of infections caused by antibiotic resistant bacteria.

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Spatio-Temporal Analysis of Immigration in Pune District of Maharashtra (2001 To 2011)

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Abstract:

Migration is the most decisive factor affecting the size of the population in recent times. besides this the change in the total population of a region occurs due to three factors: birth rate, death rate and migration. Migration is a key factor in determining the size and structure of the population. The main causes of migration are industrialization and rapid urbanization. In recent times, the flow of migrants from rural areas to the urban areas has increased due to pull factors such as employment opportunities and education. Pune district has lot of opportunities for employment and education as well as a good standard of living. So a great number of people migrate to Pune from surrounding regions. This rapidly growing population due to migration has been changing the socio-economic character of the district. Thus, it is very necessary to study the immigration pattern in Pune district as well as its causes and effects. In the present study, the immigration in Pune district has been analysed through a spatio-temporal perspective for one decade i.e. from 2001 to 2011.

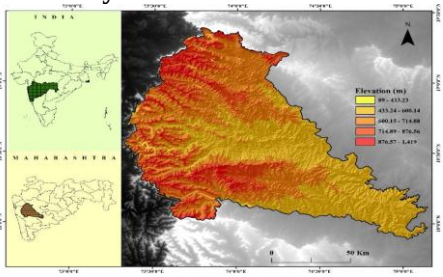
Key Words: *Migration, immigration, spatio-temporal analysis, employment.*

Introduction:

There are three components which are important for causing a change in the human population. The change in population can be positive or negative. This change occurs in population, due to three factors: birth rate, death rate and migration. Migration redistributes the population and it is a key factor in determining the size and structure of the population. In the past, due to some inevitable reasons, human migration took place. The main causes of migration are natural disasters, industrialization and urbanization. The two types of migration are immigration and emigration. There are two important reasons for any type of migration (Edward, 2001)(Keith, 1993). The first factor is disorder element (Push Factor) and second one is attraction factor (Pull Factor). (Dorigo, 1983) (Kine, 2003). In the developing world, migration from the rural areas to the urban areas is the leading trend. It has been seen in recent times that the flow of migrants from rural areas to the urban areas has increased due to pull factors such as employment opportunities and education. Population exploded in the last 50 years in India. Due to the abundant growth of the population (Demeny, 2003), the population has increased in large numbers in Bihar, Rajasthan, Uttar Pradesh, Madhya Pradesh, Maharashtra and other states. Due to the abundant growth of the population and the inadequate scope of employment opportunities, the migrations from these states to other states are becoming exceptionally large. Movement of people from other states of India to Maharashtra state is observed on a large scale. (Michael, 1985) (Clark,1825). The immigration of migrants to Pune, Mumbai, Nasik and Kolhapur, in the western parts of Maharashtra is in very large numbers (lewontin, 1972). The migration of people from other states of India to Maharashtra is similar to that within Maharashtra, and it is being noticed more in Pune district of Maharashtra (Larry, 1962). Through this research paper, the researcher has tried to analyse the immigration in the Pune district from 2001 and 2011. The number of immigrants coming to Pune District from other Districts of Maharashtra State increased by more than 11 lakhs from 14,01,498 in 2001 to 25,21,927 in 2011. Maximum immigrants in Pune District were from the surrounding Solapur District followed by Ahmednagar District, Satara District and Greater Mumbai. The percentage share of immigrants coming to Pune District from Latur and Hingoli Districts has increased significantly from 2001 to 2011. The percentage share of immigrants coming to Pune District from Greater Mumbai, Ahmednagar, Jalgaon and Solapur Districts has decreased significantly from 2001 to 2011.

Study Region: Pune district is located between 17° 54' N and 19° 24' N latitudes and 73° 19' E and 75° 10' E longitudes (Fig. 1). The district has a vast geographical area of 15,642 sq. km. with a total population of 94,29,408. Pune district is bounded by five districts: Ahmednagar district in the northeast and east, Solapur district in southeast, Satara district in the south, Raigad district in the west, and Thane district in the northwest. Pune is the second-largest district in the state and covers 5.10% of the total geographical area of the state. The shape of the Pune district is roughly triangular. Pune district is located in western Maharashtra bordered by the Sahyadri Mountains in its west. Administratively, the district is divided into 14 Tehsils. These are Junnar, Ambegaon, Shirur, Khed, Mawal, Mulshi, Haveli, Pune City, Daund, Purandhar, Velhe, Bhor, Baramati, and Indapur. Pune city is the administrative headquarters of the district. There are around 1,866 villages in the district. The general slope in the district is towards the south-east direction. In the Pune district, there are two Municipal Corporations namely Pune and Pimpri Chinchwad, and thirty five town centers in the 14 Tehsils.

Fig. 1: Location Map of the Study Area



Objectives: In the present paper, the internal migration in Maharashtra state with special reference to Pune district has been analysed using the 2001 and 2011 Census data. In this research work, the immigration of people from other districts of Maharashtra to Pune district has been analysed in detail. The aims and objectives of the present study are:

1. To analyse the volume of in migration or immigration in Pune district from other districts of Maharashtra state.
2. To identify and analyse the changes in the number of immigrants coming to Pune district from other districts of Maharashtra state from 2001 to 2011.

Hypothesis

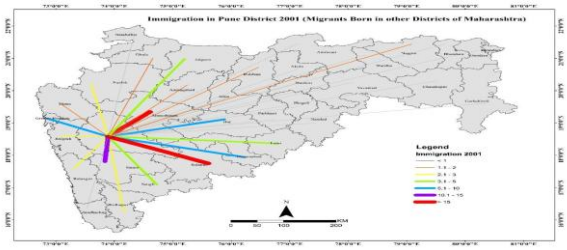
1. Pune district has the highest rate of immigration from various districts of Maharashtra.
2. Pune district has the highest number of immigrants from neighboring districts.

Database And Methodology: The present work is based on secondary data analysis. Researcher has used Census Handbook data of 2001 and 2011. All relevant published and unpublished records have been considered. All the secondary data have been collected from District Census Handbook, Gazetteer, District Statistical Abstracts, Socio-economic Abstracts and records of villages. Besides this, the required data and information have been collected from various books and journals. The analysis and interpretation of data has been done from the geographical point of view. The data has been organised into tables with the help of computer software. The processed data has been represented using specific cartographic techniques such as bar graphs and flow maps. ArcGIS software and Microsoft Excel have been used for map and graph presentation. All the processed data as well as graphs and maps have been interpreted.

Data Analysis:

Pune District in Migration - Immigrants Born in Other Districts of the State (2001): During 2001, Pune District had 14,01,498 immigrants or in migrants who were born in other Districts of Maharashtra State. The number of male immigrants in Pune District who were born in other Districts of Maharashtra State were 6,78,211 or 48.39%. The number of female immigrants in Pune District who were born in other Districts of Maharashtra State were 7,23,287 or 51.61%. The proportion of female immigrants in Pune District from other Districts of the State was 3% more than male immigrants. Largest number of immigrants in Pune District (more than 50%) were from the surrounding Solapur District (2,39,577 or 17.1%) followed by Ahmednagar District (2,25,594 or 16.1%), Satara District (1,55,571 or 11.1%) and Greater Mumbai (1,19,896 or 8.55%).The number of immigrants in Pune District who were from Beed, Osmanabad and Sangli Districts were also significantly high. The number of immigrants in Pune District who belonged to Nashik, Latur, Jalgaon, Kolhapur, Ratnagiri, Raigarh, Thane and Aurangabad were moderately high. The number of immigrants in Pune District who were born in Districts located at a considerable distance from Pune such as Dhule, Nagpur, Buldhana, Parbhani, Jalna, Akola, Amravati, Nanded and Sindhudurg were moderately low. The number of immigrants in Pune District who were from the far-flung areas of the State such as Vidarbha (Gadchiroli, Gondia, Bhandara, Chandrapur, Washim, Wardha and Yavatmal), North Maharashtra (Nandurbar) and Marathwada (Hingoli) were significantly less.

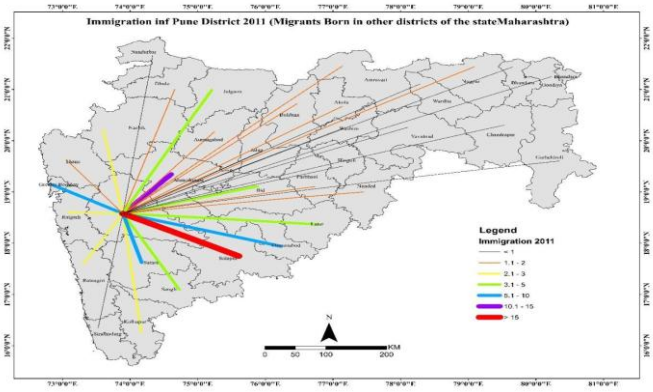
Fig. 2: Pune District In Migration - Immigrants Born in Other Districts of the State (2001)



Pune District In Migration - Immigrants Born in Other Districts of the State (2011):

During 2011, Pune District had 25,21,927 immigrants or in migrants who were born in other Districts of Maharashtra State. The number of male immigrants in Pune District who were born in other Districts of Maharashtra State were 12,42,519 or 49.27%. The number of female immigrants in Pune District who were born in other Districts of Maharashtra State were 12,79,408 or 50.73%. The proportion of female immigrants in Pune District from other Districts of the State was about 1.5% more than male immigrants. Maximum immigrants in Pune District (more than 46%) were from the surrounding Solapur District (3,78,856 or 15.02%) followed by Ahmednagar District (3,46,536 or 13.74%), Satara District (2,42,023 or 9.6%) and Mumbai (1,99,268 or 7.9%).The number of immigrants in Pune District who were from Osmanabad, Beed, Latur, Jalgaon and Sangli Districts were also significantly high and accounted for more than 27% of immigrants in Pune District who were born in other Districts of the State. The number of immigrants in Pune District who belonged to Nashik, Kolhapur, Ratnagiri, Raigarh and Thane were moderately high.The number of immigrants in Pune District who were born in Districts located at a considerable distance from Pune such as Buldhana, Nanded, Aurangabad, Parbhani, Dhule, Nagpur, Amravati, Akola, Yavatmal, Jalna, Sindhudurg and Washim were moderately low. The number of immigrants in Pune District who were from the far flung areas of the State such as Vidarbha (Gadchiroli, Gondia, Bhandara, Chandrapur and Wardha), North Maharashtra (Nandurbar) and Marathwada (Hingoli) were significantly less. During 2011, around 5% immigrants in Pune District were unclassifiable.

Fig. 3: Pune District in Migration - Immigrants Born in Other Districts of the State (2011)



Comparative Study of Migration

Table 1: Comparative Analysis of Pune District Immigration (Migrants Born in other Districts of the Maharashtra State) 2001-2011

Sr. No.	Name of District	2001			2011		
		Total %	Male %	Female %	Total %	Male %	Female %
1	Solapur	17.09	46.85	53.15	15.02	48.17	51.83
2	Ahmednagar	16.1	45.3	54.7	13.74	45.75	54.25
3	Satara	11.1	44.07	55.93	9.6	46.71	53.29
4	Greater Mumbai	8.55	43.64	56.36	0.35	56.48	43.52
5	Beed	6.61	52.29	47.71	4.93	52.25	47.75
6	Osmanabad	6.18	53.42	46.58	5.94	53.43	46.57
7	Sangli	3.71	51.33	48.67	3.5	51.81	48.19
8	Latur	3.35	55.45	44.55	7.9	44.38	55.62
9	Jalgaon	3.14	54.3	45.7	0.79	51.65	48.35
10	Nashik	2.98	45.6	54.4	2.86	45.83	54.17
11	Kolhapur	2.82	51.03	48.97	4.22	53.76	46.24
12	Ratnagiri	2.71	52.8	47.2	2.09	51.81	48.19
13	Raigarh	2.33	46.67	53.33	2.03	46.19	53.81
14	Thane	1.88	42.59	57.41	1.99	43.41	56.59
15	Aurangabad	1.61	48.28	51.72	1.52	47.74	52.26
16	Dhule	1.37	53.63	46.37	1.38	52.89	47.11

17	Buldhana	1.08	57.12	42.88	1.57	56.62	43.38
18	Nagpur	1.02	50.22	49.78	1.2	49.72	50.28
19	Parbhani	0.91	54.35	45.65	1.4	52.47	47.53
20	Amravati	0.84	57.33	42.67	1.12	55.69	44.31
21	Jalna	0.83	51.41	48.59	2.74	51.53	48.47
22	Akola	0.82	54.25	45.75	1.06	54.42	45.58
23	Nanded	0.72	54.42	45.58	1.54	54.6	45.4
24	Sindhudurg	0.71	54.32	45.68	0.55	53.69	46.31
25	Yavatmal	0.52	54.59	45.41	0.79	55.48	44.52
26	Wardha	0.25	53.37	46.63	0.29	53.6	46.4
27	Nandurbar	0.17	58.12	41.88	0.27	55.06	44.94
28	Washim	0.15	57.16	42.84	0.41	57.79	42.21
29	Chandrapur	0.13	55.42	44.58	0.22	55.25	44.75
30	Bhandara	0.1	56.72	43.28	0.14	57.41	42.59
31	Hingoli	0.1	57.8	42.2	3.61	54.35	45.65
32	Gondia	0.06	65.03	34.97	0.12	63.87	36.13
33	Gadchiroli	0.05	58.58	41.42	0.03	62.23	37.77
34	Mumbai – Suburban	0	45.95	54.05	0.11	44.43	55.57
	Total	**100**	**48.39**	**51.61**	**100**	**49.27**	**50.73**

Source: Migration Data, Census Handbook of India Data - 2001 and 2011

The comparative analysis of Pune District Immigration (Migrants Born in other Districts of the Maharashtra State) from 2001 to 2011 shows that the percentage share of immigrants coming to Pune District from twenty Districts of Maharashtra has increased more or less considerably. These Districts are Latur, Hingoli, Jalna, Kolhapur, Nanded, Buldhana, Parbhani, Amravati, Yavatmal, Washim, Akola, Nagpur, Thane, Mumbai – Suburban, Nandurbar, Chandrapur, Gondia, Bhandara, Wardha and Dhule. The percentage share of immigrants coming to Pune District from Latur and Hingoli Districts has increased significantly by 4.55% and 3.51% respectively. The percentage share of immigrants coming to Pune District from Jalna and Kolhapur Districts has also increased considerably by 1.9% and 1.4% respectively. The percentage share of immigrants coming to Pune District from fourteen Districts of Maharashtra has decreased more or less considerably. These Districts are Greater Mumbai, Ahmednagar, Jalgaon, Solapur, Beed, Satara, Ratnagiri, Raigarh, Osmanabad, Sangli, Sindhudurg, Nashik, Aurangabad and Gadchiroli. The percentage share of immigrants coming to Pune District from Greater Mumbai, Ahmednagar, Jalgaon and Solapur Districts has decreased significantly by 8.2%, 2.36%, 2.35% and 2.07% respectively. The percentage share of immigrants coming to Pune District from Beed and Satara Districts has also decreased by 1.68% and 1.5% respectively.

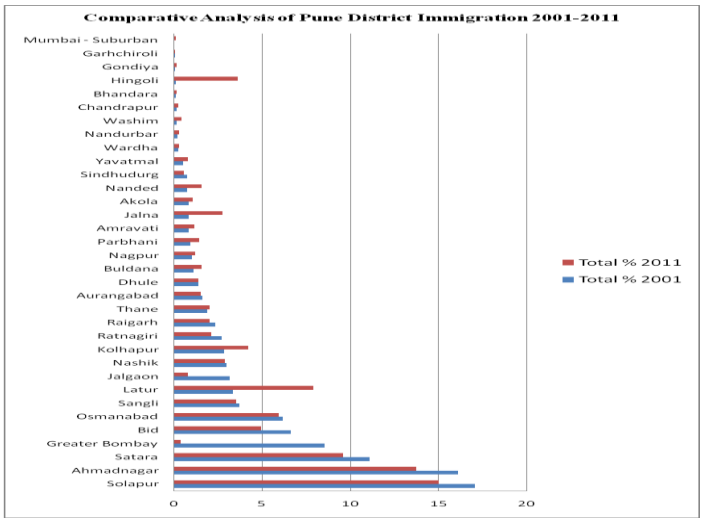


Fig. 4: Comparative Analysis of Pune District Immigration (Migrants Born in other Districts of the Maharashtra State) 2001-2011

Results And Findings:

The number of immigrants coming to Pune District from other Districts of Maharashtra State increased by more than 11 lakhs from 14,01,498 in 2001 to 25,21,927 in 2011. Maximum immigrants in Pune District were from the surrounding Solapur District followed by Ahmednagar District, Satara District and Greater Mumbai. The percentage share of immigrants coming to Pune District from Latur and Hingoli Districts has increased significantly by 4.55% and 3.51% respectively from 2001 to 2011. The percentage

share of immigrants coming to Pune District from Greater Mumbai, Ahmednagar, Jalgaon and Solapur Districts has decreased significantly by 8.2%, 2.36%, 2.35% and 2.07% respectively from 2001 to 2011.

Pune district situated in the western part of Maharashtra is blessed with good amount of annual rainfall, abundant amount of water resources, well developed transport network and number of industries. Pune City and Pimpri Chinchwad Municipal Corporation have a particularly good educational facilities, medical facilities, and job opportunities that attract the people, towards this highly developed region. Pune city and surrounding areas like Chakan, Khed, Pimpri, Chinchwad, Bhosari, Sanaswadi, Ranjangaon, Jejuri and Baramati have industrial parks. These places have incredibly excellent job opportunities. As there are many business and job opportunities available in Pune and adjoining areas, many people from other districts of Maharashtra state come to live and settle in Pune district. If this flow of migrants continues in the future, the population growth in Pune district will be very rapid. The stress of this population growth will come on all the resources and facilities. Therefore, it is necessary to study the migration phenomenon and its causes. In Pune district, most of the immigration occurs in the urban areas from other districts of Maharashtra.

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Indian Legal Framework of Environmental Impact Assessment: A Critical Study

Dr.Dnayneshwar P. Chouri

Abstract

Environmental Impact Assessment (EIA) is a planning tool generally accepted as an integral component of decision making in Sustainable Development. The rapid growth of population, improvements in standards of living and concomitant growth of infrastructure have altered the environment, sometimes beyond its power of resilience. These changes have resulted in ecological crisis and have become a matter of grave concern to managers and decision makers throughout the world. The issues both at national and global levels are focusing concern of nodal agencies (Regulatory Departments, Ministries and Boards) to support sustainable development and curb and restrain such acts which tend to produce adverse impacts on living conditions of human, animals, plants and geographical environment. In this paper an attempt has been made to highlight the importance EIA. More particularly the legal framework of India has been analyzed with specific reference to New EIA Notification 2020 Draft.

Keywords: *EIA, Notification, Clearance, health, projects, Public, Exemptions and environment*

Introduction

Human well-being is closely connected to environmental sustainability. As a result, all forms of human development such as building infrastructure (i.e., roads and pipelines, mines, and tourism facilities etc.) have an impact on the surrounding natural environment and vice versa. This is evident when we consider the results of large-scale development like open-pit mines, hotels for thousands of people and large hydroelectric dams that often have irreversible impacts on the environment and the livelihoods of people because of large-scale deforestation, excessive water use, habitat destruction and resettlement. The growing acceptance of sustainable development as an over-arching policy goal has stimulated interest in assessing the impact of particular interventions on sustainable development at aggregate, sectoral or project levels.[1] Environmental Impact Assessment (EIA) is a process of evaluating the likely environmental impacts of a proposed project or development, taking into account inter-related socio-economic, cultural and human-health impacts, both beneficial and adverse.[2] The objective of environmental impact assessment is to offer information to decision makers concerning matters that may be brought about as a result of decisions relating to a new project, program, plan or policy. Environmental impact assessment must realize decision-making based on the inputted information including potentially important factors and it must be beneficial for both the proponent and the citizens. Environmental impact assessment is not a procedure for preventing actions with significant environmental impacts from being implemented. Rather the intention is that project actions are authorized in the full knowledge of their environmental impacts.[3]

Environmental Impact Assessment: Meaning

The most useful tool for understanding and managing the risks and impacts of a particular project is EIA. The term EIA describes a procedure that must be followed for certain types of projects before they can be given 'development consent'. The procedure is a means of drawing together, in a systematic way, an assessment of a project's likely significant environmental effects. The emphasis in EIA is on a systematic, holistic, and multidisciplinary assessment of the potential impacts of specific projects on the environment.[4] UNEP defines Environmental Impact Assessment (EIA) as a tool used to identify the environmental, social and economic impacts of a project prior to decision-making. It aims to predict environmental impacts at an early stage in project planning and design, find ways and means to reduce adverse impacts, shape projects to suit the local environment and present the predictions and options to decision-makers.[5] Environment Impact Assessment or EIA can be defined as the study to predict the effect of a proposed activity/project

[1] Philip Juma Barasa, Environmental Impact Assessment – General Procedures, Presented at SDG Short Course I on Exploration and Development of Geothermal Resources, organized by UNU-GTP, GDC and KenGen, at Lake Bogoria and Lake Naivasha, Kenya, Nov. 10-31, 2016, Available @ https://rafhladan.is/bitstream/handle/10802/14461/UNU-GTP-SC-23-0804.pdf?sequence=1

[2] Environmental Impact Assessment, Available @ https://www.drishtiias.com/to-the-points/paper3/environmental-impact-assessment-1

[3] What is Environmental Impact Assessment? Available @ https://www.cbd.int/impact/whatis.shtml

[4] Philip Juma Barasa, Environmental Impact Assessment – General Procedures, Presented at SDG Short Course I on Exploration and Development of Geothermal Resources, organized by UNU-GTP, GDC and KenGen, at Lake Bogoria and Lake Naivasha, Kenya, Nov. 10-31, 2016, Available @ https://rafhladan.is/bitstream/handle/10802/14461/UNU-GTP-SC-23-0804.pdf?sequence=1

[5] Environmental Impact Assessment, Available @ https://www.drishtiias.com/to-the-points/paper3/environmental-impact-assessment-1

on the environment.[6] The purpose of an EIA is to determine the potential environmental, social, and health effects of a proposed development, so that those who take the decisions in developing the project and in authorising the project are informed about the likely consequences of their decisions before they take those decisions and are thereby more accountable.[7] A decision making tool, EIA compares various alternatives for a project and seeks to identify the one which represents the best combination of economic and environmental costs and benefits.[8] The U.S. National Environment Policy Act (NEPA), 1970 underlines the need of EIA for recognition of profound impact of man's activity on the inter relations of all components of natural environment.

Introduction to Environmental Impact Assessment (EIA)

Indian Perspective of Environmental Impact Assessment

The concept of EIA has its roots in the US. Embracing the neoliberal policies in the 1970s, the US passed environmental laws to include scientific assessment and public participation while taking important environmental decisions. In India, the EIA process was founded by the enactment of the National Environmental Policy Act, 1970. Most of the nations in the world have implemented EIA.[9] The foundation of environmental impact assessment (EIA) in India was first laid in 1976-77 when the Planning Commission asked the then Department of Science and Technology (DST) to examine all the river-valley projects from an environmental angle. This was subsequently extended to cover those projects, which required an approval from the Public Investment Board. However, these were administrative decisions, and didn't have the legislative support. To fill this gap, the Government of India enacted the Environment Protection Act (EPA) on 23rd May 1986. To achieve the objectives of this act, one of the decisions that were taken was to make EIA statutory. On 27 January 1994, the Union Ministry of Environment and Forests (MoEF), Government of India, under the Environmental Protection Act of 1986, promulgated an EIA notification making Environmental Clearance (EC) mandatory for any expansion or modernization activity or for setting up new projects listed in Schedule 1 of the notification. Since then there have been many amendments made in the EIA notification of 1994.[10] The responsibility for translating the concern for the environment into concrete action lies primarily with the Ministry of Environment and Forests (MOEF).

The Environmental Impact Assessment Notification 1994

The first full legislative requirements for EIA were contained in The Environmental Impact Assessment Notification 1994 which was published as a draft in January 1994, reviewed in May 1994, and enacted under the Environment (Protection) Act of 1986.[11] The objective of the Notification was to emphasize for more sustainable industrialization process in the country after giving due consideration to environmental, social and economic factors. For doing so, the notification imposed restrictions and legalities on setting up, modernizing or expanding any project (new or already existing) or proposal without getting an environmental clearance from the government.[12]

The Environmental Impact Assessment Notification 2006

The new EIA notification was introduced by the Ministry of Environment and Forests (MoEF) on September 14, 2006. The major difference in the New EIA Notification, 2006 from the earlier version of 1994 is its attempt to decentralize power to the State Governments. As per the new notification, significant number of projects will go to the state govt. for getting clearance depending on its size/capacity/area. For this, the notification has made a provision to form an expert panel, the State Environment Appraisal

[6] Understanding EIA, Centre for Science and Environment, Available @ https://www.cseindia.org/understanding-eia-383

[7] Introduction to Environmental Impact Assessment (EIA), Available @ https://www.soas.ac.uk/cedep-demos/000_P507_EA_K3736-Demo/unit1/page_08.htm

[8] Centre for Science and Environment, Available @ https://www.cseindia.org/understanding-eia-383

[9] Web Desk, Explained: What is EIA 2020? How does it water down the existing policy?, Available @ https://www.theweek.in/news/biz-tech/2020/08/10/explained-what-is-eia-2020-how-does-it-water-down-the-existing-policy.html

[10] Devarshi Tathagat & Dr. Ramesh D. Dod, The Inception and Evolution of EIA and Environmental Clearance Process – Laying Emphasis on Sustainable Development and Construction, Int. Journal of Engineering Research and Applications, ISSN : 2248-9622, Vol. 5, Issue 3, (Part -2) March 2015, pp.23

[11] Will Banham and Douglas Brew, A review of the development of environmental impact assessment in India, Project Appraisal, volume 11, number 3, September 1996, pages 195-202, Beech Tree Publishing, 10 Watford Close, Guildford, Surrey GUI 2EP, England. Available @ https://www.tandfonline.com/doi/pdf/10.1080/02688867.1996.9727540

[12] Devarshi Tathagat & Dr. Ramesh D. Dod, *Supra* note 10, pp.24

Committees at the State level (SEAC) headed by a chairperson. This is a good attempt to reduce the burden on the Central Government and consequent delays which used to be a big problem.[13] The system created by the 2006 Notification is far from perfect. Over the last 15 years, there have been quality issues with respect to EIA reports, several procedural lapses during public hearings and a poor track record with respect to post clearance monitoring and compliance. The 2006 Notification had also undergone several changes over the years. There have been exemptions from public consultations given to certain categories of projects, increase in the validity period of an EC and even attempts to streamline and quicken the process of granting ECs. Despite that, the 2006 Notification has continued to be used by project affected people and non-governmental organisations in order to reduce the social and environmental costs of projects.[14]

The New Environmental Impact Assessment Notification 2020 Draft

The Union Ministry of Environment, Forest and Climate Change has proposed a new Draft Notification of the EIA to amend the EIA Notification 2006 with an aim to increase the production and availability of a few drugs. The draft EIA Notification 2020 has been released to invite comments from public regarding it.[15]

Some Important Highlights of New Draft EIA, 2020

1. The notification defines three categories of projects namely A, B1 and B2 founded on the social and economical impact and geographical extent of these impacts.
2. The notification envisages two kinds of approval – prior environment clearance (EC) with the approval of expert committees and environmental permission or provision (EP) without the approval of expert committees.
3. Almost 40 different projects such as clay and sand extraction or digging well or foundations of buildings, solar thermal power plants and common effluent treatment plants are exempted from prior EC or prior EP.
4. Several projects such as all B2 projects, irrigation, production of halogens, chemical fertilisers, acids manufacturing, biomedical waste treatment facilities, building construction and area development, elevated roads and flyovers, highways or expressways are exempted from public consultation.[16]
5. The new draft notification expands the list of projects that are exempted from public scrutiny like the work related to the modernization of irrigation projects, plant constructions, mining activities, inland waterways, widening of national highways etc. This list also includes projects that deal with laying pipelines and the offshore projects within 12 nautical miles.
6. The draft EIA relaxes the stringency in public consultation by reducing it to 20 days from the current 30-days' time period and also the post-environment clearance monitoring system.
7. Further, the new notification deviates much from the older one by extending the time allotted for compliance report submission. The promoter is now free to take a year to submit the report - a climb down from the previously stipulated six-month period.[17]

The EIA new draft 2020 is criticised on various issues. The EIA new draft 2020 allows post-facto clearance. This means that even if a project has come up without environment safeguards or without getting environment clearances, it could carry out operation under the provision of the new draft EIA 2020. There are also two crucial ways in which the new draft endeavours to take power away from communities. First, it reduces the space available for public participation, thereby abandoning public trust. The second

[13] *Ibid*, P.25

[14] Debayan Gupta, Sampada Nayak & others, The Draft EIA Notification 2020: Reduced Regulations and Increased
Exemptions, Centre for Policy Research-Namati Environmental Justice Program, Available @ https://cprindia.org/sites/default/files/Reduced%20Regulations%20and%20Increased%20Exemptions_Part%20I_30.07.pdf

[15] Rupali Pruthi, EIA Notification 2020 Draft: What is Environment Impact Assessment; Key Changes & Issues in New EIA, Available @ https://www.jagranjosh.com/current-affairs/eia-notification-2020-draft-what-is-environment-impact-assessment-key-changes-issues-in-new-eia-1596705170-1

[16] Sara Suresh, Explained: The Curious Case of India's Draft EIA Notification 2020, Available @ https://www.thequint.com/explainers/explained-the-curious-case-of-india-draft-environment-impact-assessment-notification-2020#read-more

[17] Cp Rajendran, New Notification Makes It Clear That Govt Sees EIA As a Hindrance, Available @ https://www.thequint.com/voices/opinion/opinion-environment-new-notification-waters-down-environment-impact-assessment-norms-in-india#read-more

way in which this proposal tries to curtail rights of the communities by legalising projects that have already caused a great deal of harm and have been operating without approvals from the EIA.[18]

The draft notification gives numerous exemptions to industries from being appraised by an expert committee or from public consultation and reduces the timelines for the clearance process adversely impacting its rigour and methodology. With post-clearance compliance as well, the frequency for compliance reporting has been reduced, indicating that the regulations have been streamlined with the project proponent's interest in mind. These changes run the risk of relegating the EIA process into a mere administrative procedural formality, pushing priorities of industrial growth over environmental protection.[19]

Conclusion

The EIA certainly has a crucial role to play in addressing environmental issues surrounding project development and especially power projects. The integration of environment into development planning is the most important tool in achieving sustainable development. Environmental protection and economic development must thus be dealt with in an integrated manner. The EIA framework is supposed to be a tool to ensure a balance between environmental protection, human rights, and economic development. Government approach to ensure the above mentioned goals through EIA can be seen in the various EIA notifications. The new draft EIA 2020 assured that it will strive to strike a balance between the environmental and developmental concerns. However there are many concerns and issues in the new draft EIA 2020 that needs to be resolved at the preliminary stage itself to make it effective to ensure the adequate protection to the environment or the rights of the people affected.

[18] Abhijit Mohanty, Why draft EIA 2020 needs a revaluation, Available @ https://www.downtoearth.org.in/blog/environment/why-draft-eia-2020-needs-a-revaluation-72148

[19] Vidya Viswanathan, The Draft EIA 2020 notification and everything that is wrong with it, Available @ https://en.gaonconnection.com/the-draft-eia-2020-notification-and-everything-that-is-wrong-with-it/

Problems in Translation

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There is a close kinship among communication, language and translation. Generally speaking communication is sharing of information or intelligence. The most common medium of communication is language .Besides, non-linguistic ways such as kinetics of body , symbols, codesand signals are also employed to steer forth communication. But in present paper I argue on how linguistic communication is channelized by translation. Translation, from the very beginning, has been a form of communicating thoughts among various people, cultures and countries. The translator, before being a ³writer´ as such, is primarily a ³message conveyor.´

In most cases, translation is to be understood as the process whereby a message expressed in a specific source language is linguistically transformed in order to be understood by readers in the target language essentially consists of conveying the meaning expressed by the original writer. Heforms a bridge between two languages- the source language and the target language. He is a true conveyor and interpreter of the message. The honesty and fidelity of the translation depends on how much proximity the translator has with both languages. Even the trivial slip in understanding either of the languages makes communication ineffective and meaningless. Translating consists inproducing in receptor language the closest natural equivalent to the message of the source languagefirst in meaning and secondly in style.´ Thus the translator has to take care of meaning and style in order to make communication naturaland palatabe. In this way a translator acts in two capacity first as decoder and secondly as recorder who understands the text and then interprets it to the receiver in its true spirit. Thus he is the real facilitator of communication. While defining the togetherness of communication and translation it is pertinent to quote Gadamer's views, who never thought communication as, ³passing of information from one person to another´ but as ³some subject matter´ becoming ³mutuallyaccessible for two or more people.´

He also stated that ³invented systems of artificial communication are never languages. For artificial languages, such as secret languages or systems of mathematical symbols, have no basis in a community of language or life.´ He also added that our verbal world should not be conceived as a barrier to knowledge, but rather than something embracing everything, ³always open to every possible insight´, although ³languageas language can be contrasted with every other act of communication.´ Translation = Communication: Everyone knows, for instance, that legal translation leaves little room for adaptation and rewriting. Similarly, when it comes to translating insurance contracts, style-relatedconcerns are not paramount to the translating process; what the end reader needs is a translated text that is faithful to the source text in meaning, regardlessof stylistic prowess from the translator. Yet, in a number of cases, the translator faces texts which are to be used within a process of ³active communication´ and the impact of which often dependson the very wording of the original text. In these specific cases, the translator sometimes finds it necessary to reconsider the original wording in order to both better understand the source text (thisalso sometimes occurs in plain technical texts) and be able to render it in the target language. Thisis the moment when the translator becomes an active link in the communication chain, the moment when his/her communication skills are called upon to enhance the effect of the original message. The translation process here becomes twofold: firstly, the translator needs to detect potential discrepancies and flaws in the original text and understand the meaning they intend to convey. Todo this, the translator often needs to contact the writer of the text to be translated (or any other person who is familiar with the contents of the text) in order to clarify the ambiguities he has come across. Secondly, once this first part of the work is over, the translator will undo the syntactic structure of the original text and then formulate the corresponding message in the target language,thus giving the original text added value in terms of both wording and impact. It is important to stress that this work will always be carried out in cooperation with the original writer, so that the translator can make sure the translated message corresponds to the meaning the writer originally intended to convey; remember, the translator is essentially a message conveyor, not an author. The art of translation has always been complex and flummoxing as it involves the matrix of two languages- the one source language and the other target language. It is not only difficult but impossible also to make perfect balance between the two. Hence every translation can only be anapproximation,´ no translation can reproduce the original perfectly.´

It (The original) involves mind and soul of the writer at the particular moment of time, context and circumstances that disappears in the translation. A translator works hard to reach the originalbut in doing so he either adds something superfluous to it (the original) or drops (from the original)something essential. Most of the translations have problems of exactitude in emotions, meaning and context to the original text-both linguistically and culturally. These two factors separate the thinking plains of the writer and the translator to a great extent and thus make them poles apart. This chasm further widens in the translation of a literary work. A translator tries to evoke an emotional experience in the reader through the translation similar to one created by the author of the original. Thus, he strives for the three way balance of emotion, form and content. Apart from this, a translator faces two fold problems-the one dealing with the choice of text for translation andnon-availability of translations of the same text already done and the second linguistic and non- linguistic. These problems cover the areas of

meaning, style, tone, technique and overall effect. In the words of Catford, " Translation as a space is always unidirectional: it is always performed in a given direction: from a Source Language (SL) into a Target Language (TL).. Translation may be defined as follows: the replacement of textual material in one language (SL) by equivalent textual materialin another language (TL). The central problem of Translation practice is that of finding TL translation equivalents" Genuinely speaking, a translator chooses the text for translation keeping in mind the universality of the text and the author. Another significant criterion in the choice of a work for translation is its artistic worth, social relevance of a work and popularity of the writer. If the work has already been translated the translator has to work as a translation- critic and in case of finding it difficult he decides to translate afresh striking off the errors of earlier translators. On the other hand non- availability of the translation of the text compounds the problems of the translator as he has to work in a vacuum. The problem of translation between the target language and source language lies on two fronts "first in terms of meaning and the second in terms of style."

The problem of style can be dealt in with the style of language and the style of author. The formermeans the peculiar stylistic structure of each language, which is closest to that in another languageand the latter, the selection of individual author from the general stylistic structure of a language. In translation, the former aspect of style should be taken as a wider term to indicate the peculiarities of stylistic structure of each language. Style in the context of translation, can be defined as a structure of phonology, word, morphology and syntax of source language, which are contrastive to those of target language. Stylistic problems in translation occur mainly because of the difference in the stylistic structure of source and target languages. It means that stylistic problems in translation should be studied with the help of contrastive stylistic analysis of source language andtarget language. Nida divides stylistic problems of translation into four levels- Phonological, lexical, morphological and syntactic."

Phonological Factors - In Translation, from one language to another, phonological factor, play a vital role. Every language has its own phonological system. A translator will have to be aware of phonological system of both the languages - the source language and the target language. The slight lapse will change the pronunciation of one word into another. Special care should be taken in the pronunciation of proper nouns. They should bear diacritical marks to ensure correct pronunciation and it happens with other words also where there is a danger of homophonous words. These diacritical marks may create problem to the readers in understanding the accurate implication of these marks. Lexical Factors - It pertains to the words or vocabulary of language. Every lexical form is connected in two directions with grammatical forms. But in translation it hasits deep impact. The accuracy of translation depends on the understanding of the meaning given in the source language. A translator will have to be very intelligent in brining the suggestive meaning of the source sentence into the target sentence. Sentence is the prime basis of meaning and not the word,the word becomes meaningful only when it is used in sentence. The meaning of a word depends upon its use in the sentence, its context, etymology, appropriateness, time and place, association, contrast, gender, collocation its power of expression the meaning, the speaker and the tone. A literal translation cannot communicate the exact meaning of the original. Words of one language,many times, do not find their parallels in other language. While translating such words, a translator will have to find out the meaningful equivalent words to convey the exact meaning of the original. Idiomatic phrases create lot of problems to the translator. for example " os yky & ihys gks x;sA "A literal translation would be they became red and pale. While it should be translated as " They burst into anger". Combined words, too, create problem to the translator for example "uhyh&uhyh""can not be translated as "blue-blue." "pk;&ok;" means "tea". Regional words also pose a lot of problem before a translator.

Morphological Factors - At the morphological level, there are a number of problems for a translator. These problems are mainly brought out because of different morphological structures in languages. No two languages have the same morphological structure. This create problem in finding out the equivalent words while translating from one language to the other. Apart from this,there are other problems also that are related to verb morphology : compound verb formation, tenses and other aspects. In Hindi, we generally make use of complex verbal formations made up of nouns and verbs. But while translating to English these complex verbal formations are translated into simple verbs. The translator, however, if he has once gained the conviction that it is impossible to translate old thought into modern speech, without doing some violence either to the one or to the other, will hardly hesitate in his choice between two evils. He will prefer to do some violence to language rather than to misrepresent old thoughts by clothing them in words which do not fit them. "9 **Conclusion:**

In this paper my aim was to discuss the various problematic zones of translation and how they affect the course of communication if they are not taken care ofproperly by the translator keeping in mind the flavour of both languages- the source and the targetlanguage.

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1. Nida. Language, Structure and Translation (California : Stanford University Press, 1975), p.43.
2. H.G.Gadamer.Truth and Method(Continuum International)3. Ibid,p.443.

Restoration and Conservation of Mukteshwar Lake, Ausa, Latur District (M.S.) India

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Abstract

Water is the primary requirement of life and probably the most essential requirement for social growth and economic development. Water shortages are becoming more widespread every year and competition between different uses is increasing at an alarming rate and aquatic ecosystems are being irreversibly disturbed due to increased anthropogenic activities. Continuous water is withdrawn and consumed for human uses, there is growing concern about whether the depleted water supply to lakes, rivers, estuarine ecosystems, and associated wetlands is adequate to maintain healthy functioning of these ecosystems. A layout plan for a lake is designed for both recreational activities and maintains ecological integrity for long term restoration and sustainability. To get better management of these resources requires thorough understanding of the functioning of the ecosystems, and also sufficient planning, financial resources, and community participation. The Mukteshwar Lake played an important part in the development of Ausa Municipal Council. This Lake is only used for domestic purpose.

Keywords*: Mukteshwar Lake, Restoration, Conservation.*

Introduction:

Lakes supplies water for drinking, irrigation, industry, and dilution of pollutants, hydroelectric power, transportation, recreation, aquaculture, and aesthetic enjoyment. These benefits are impaired by exploitation of lakes and the lands of their catchments because human effects on lakes are growing, concern increases that lake ecosystem services are in danger. Conservation studies of lake ecosystem processes have increased in spatial and disciplinary scope during the past century. Scientific study from the view of lakes as bounded systems, defined by the land-water interface, limnologists recognize that lakes must be understood in the landscape context of their catchment. Water pollutants and airborne pollutants and stratospheric ozone depletion connect lakes to perturbations of the global environment. Conceptual process of development has not kept pace with changes in the processes that alter and control lakes. Ecosystem ecology has a rich understanding of the physical, chemical, and biotic processes of lakes and their watersheds. There is a growing concept for the processes that explain heterogeneity among lakes in regional landscapes, regional effects of atmospheric deposition of contaminants in lakes, and the potential effects of global climate change on lakes. However, there is lack of conceptual framework for understanding the interactions of people and lakes. In present context sustainable restoration of lakes must address the social and economic, as well as biotic and chemical, causes of lake degradation. The lake ends up becoming dumping yard of solid waste due to which the ground water recharge reduces. This further result in foul smell, mosquito breeding as well as, degrading water quality, and encroachment takes place resulting low death of the lake. Such loss of lakes in urban areas results in reduced ground water recharge, more frequent floods, water logging, etc, creating hazards.

Methodology The present study carried out between June 2019 to May 2020 from Mukteshwar Lake of Ausa, Latur district (MS) India. Temperature, pH of water samples was measured in the field immediately after collection with help of thermometer, conductometer and pH meter. Other physic-chemical parameters were analysed in the laboratory and all other parameters were analysed by titration methods outlined in standard methods (2002). The freshwater fishes, birds, mammals and plants were identified up to species level using standard keys and books.

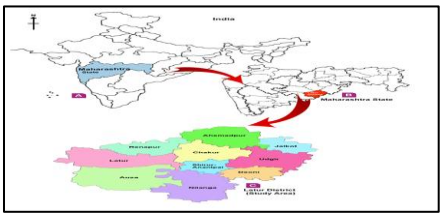

Figure 1: Latur District

Components Of Lakes Conservation

Innovative methodologies

Conservation of lake requires reconstruction of the physical conditions; chemical adjustment of both the soil and water; biological manipulation, reintroduction of native flora and fauna etc.

The interpretation of existing trends and scenarios in the process of conservation of lake presented in this report is based on interactions with limited key players, namely government stakeholders, developers

involved in similar projects and personnel involved in the field work. Hence, they are indicative of the situations prevalent at the time of conducting the study.

Importance of lake conservation Lakes are ecologically precious water bodies. Conservation and development of these invaluable, traditional water bodies are of paramount importance. Due to rapid urbanization and industrialization, the majority of these lakes have now come either under encroachment or have lost their original characteristics

Groundwater: Groundwater is the major source of drinking water in rural areas of Maharashtra. Groundwater levels are declining at alarming rate in the state and are considered as critical due to over exploitation. Factors such as population pressure, discharge of effluents and addition of agricultural chemicals into water bodies have contributed to deterioration of water quality, depletion of water levels and unhygienic sanitation.

Domestic and agriculture use: The lake stores rainwater and ensure supply for domestic use and agriculture. Also, they help in recharging groundwater. In Cities, which are enjoying perennial river sources and high rainfall, the lakes serve as flood cushions, act as a resource recovery area, releasing nitrogen, inactivating phosphates, removing toxins and treating waste water.

Lakes as Tourist and Recreation Locations: People feel relaxed around water as symbolized by the expression "water and greenery". People use lakeshores for talking walks and other recreation and other sports activities such as boating and fishing.

Lakes as Biodiversity Conservation: Human should conserve biodiversity because of its benefit for example services and biological resources which are essential to live our life on earth. However, it also provides spiritual benefits as well as social benefit.

Key issues causing degradation of lakes

Pollution -For the last two decades, there has been an explosive increase in the urban population without corresponding expansion of civic facilities such as adequate infrastructure for the disposal of waste. Hence, as more and more people are migrating to cities the urban civic services are becoming less adequate. As a result, almost all urban water bodies in India are suffering because of pollution and are us ed for disposing untreated local sewage and solid waste, and in many cases the water bodies have been ultimately turned into landfills.

Encroachment- Encroachment is another major threat to waterbodies particularly in urban areas. As more people are migrating to cities the availability of land is getting scarce. Hence, these urban water bodies are no more acknowledged for their ecosystem services but as real estate. The dumping of solid waste, sewage discharge, and construction of new buildings such as a railway stations and a new road have shrunk this wetland to a great extent.

Eutrophication - Primarily being lentic water systems, lakes are almost closed ecosystems. Hence, a large part of the substances that enter in the lakes become a permanent part of the system as only a part of that can be removed depending on the water exchange system. As a result, the entry of nutrients through raw sewage become the part of lake system and cause various destructive changes in the waterbody such as prolific growth of aquatic weeds in lakes and ponds that ultimately disturb and kill the ecology of the waterbody.

Siltation- Water flowing into a lake brings silt. Increased deforestation loosens the top soil, which finds its way into lakes. Some of the silt is washed out when the lake overflows. However, the outflow of silt does not always match the inflow and silt settles at the bottom of the lake.

Types of Investigation carried out:

Location and History Ausa is a town with a municipal council in Latur District in the state of Maharashtra. It is also the headquarters for Ausa Tahsil. Ausa is "C Class" Municipal Council. The Samta Nagar Lake is one of the oldest lake in Ausa Tahsil, The Lake is situated at periphery of the town. It comes under the administration of Ausa Municipal council. It is at an average elevation of about 634 m (2,080 ft). Ausa town is situated about 22 km away from Latur. The city is 650 years old. In the period of Hazari 1014 Malik Amber, Ausa was known as Amrapur. There is a famous fort known as Bhoikote Fort in the city which is having an area of 25 acres. There are ancient temples in the city Such as Nath Temple, Mukteshwar Temple, Gopalpur, Shriram temple, Jain temple and seven Hanuman temples around the city. Historical Jama Masjid plays religious and historical importance.

Topography The Ausa town is situated at 18.15° North latitude & 76.30° longitude to the East, in Latur District. It has an average elevation of 634 meters (2080 feet). Geologically, whole area is covered by the Deccan Trap Basalt.It is situated on Latur -Osmanabad national Highway no.67. There are three manmade lakes found in the vicinity of Ausa town i.e Mukteshwar Lake, Samta Nagar Lake and JAMAL Nagar

Lake. The town is at a distance of around 22 Km at south of Latur. Regular bus services from Latur connects Ausa town. Among the major circle's villages are Ujani, Bhada, Lamjana, Killari and Matola.

Usage: At present, this lake is not used for drinking and agricultural proposes. It is used for washing clothes, cattle and vehicles. It is also observed that Municipal solid waste is dumped into the lake. At the North-West corner of the lake poultry waste was observed.

Climate including rainfall Climate of Ausa is characterized by a hot summer and general dryness throughout the year except during south -west monsoon season. December is the coldest month and maximum temperature at about 18°C and minimum temperature at about 13.9°C. May is the hottest month of the year & the maximum temperature is 39.6°C and minimum is 22°C. Maximum rainfall is confined to South-West Monsoon. The average rainfall of last 10 years in this area is about 723.1mm.

Factor influencing degradation of lake

1. **Global climate change:** Climate change will affect our land and water resources, and our economy; these profound impacts have obvious resource management and policy implications. Globally, researchers have been investigating the impacts of future climate change on lake and freshwater ecosystems for over two decades, and several comprehensive reports.
2. **Invasive species:** The floating plants *Azolla cristata* and *Alternanthera philoxerodies* (alligator weed) have further impacted human well-being. Negative impacts can be particularly severe when caused by floating aquatic plants, which can reduce access to freshwater for extraction and navigation, reduce the harvest of fish and other resources, and change water cycling and chemistry.
3. **Anthropogenic stress:** This Lake is degrading in the process of various anthropogenic activities and population pressures leading to unplanned urbanization and expansion due to direct discharge of effluents and unregulated dumping of solid wastes.
4. **Agriculture:** Farming practices, including use of fertilizers rich in nitrogen and phosphorous, deposit increased amounts of these nutrients in the soil. Run-off from farm causes eutrophication in this water body.
5. **Sewage:** Direct discharge of sewage from domestic source is not connected to any treatment plant and it eventually make its way into this water body.

Need for Conservation The purpose of Lake in the present times is that of a water body providing food and shelter to aquatic flora and fauna along with avian fauna. It also used to be water supplying body for Ausa few hundred years ago. But now this lake is merely a stagnant body of water. Therefore, this strategy of conservation will play a significant role in recharge and maintenance of ground water table. They have a great recreational potential in the form of water sports, boating etc.

Table 1: Annual Rainfall (mm) Data of Latur district (2010-2019)

Sr. no.	Year	Rainfall (in mm)
1	2019	725.33
2	2018	819.63
3	2017	772.84
4	2016	1116.59
5	2015	413.00
6	2014	432.93
7	2013	762.06
8	2012	721.55
9	2011	946.50
10	2010	526.00

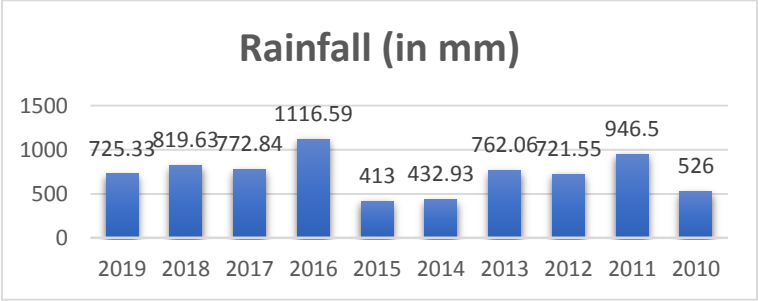

Figure 2: Annual Rainfall (mm) Data (2010-2019)

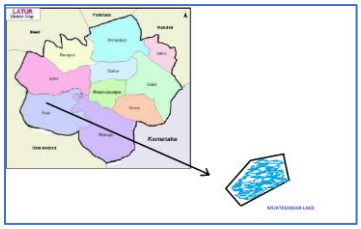

Figure 3: Mukteshwar Lake In Ausa Tahsil

Scope of the Report

This report is primarily oriented toward reflecting current conditions, reclassification of lake, formulate resource use objectives, propose facilities and actions. It reflects the status of Lake and outline future plans.

Figure 4: Photographs of Mukteshwar Lake

Water quality of the Lake: Ten water samples were collected from the Lake. Five locations had variation in readings and four were repetitive. The table below presents the details of Water Quality:

Sr. no.	Test parameters	Location A (East)	Location B (West)	Location C(South)	Location D(North)	Location E(Middle)	BIS Specification 10500:2012	
							Desirable limits	Possible limits
1.	Temperature	25	32	28	27	26	--	--
2.	Odour	--	--	--	--	--	Agreeable	Agreeable
3.	pH value	7.76	7.23	7.6	7.72	7.24	6.5 to 8.5	No relaxation
4.	Chlorides (Cl)	67	98	104	65	186	250	1000
5.	Total hardness (as $CaCO_3$)	94	98	107	104	103	200	600
6.	Alkalinity (as $CaCO_3$)	115	123	144	109	156	200	600

Table 2: Physico-chemical Water quality of the Mukteshwar Lake

Flora and Fauna

1 Flora: The flora of Mukteshwar Lake includes the vegetation which grows along the periphery of the Lake as well as the aquatic plant species. The trees found near the lake are mainly useful species such as Peepal tree (*Ficus Religiosa*), Neem (*Azadirachta indica)*, Babul (Acacia nilotica), Tamarind, Karanj, Dram stick etc. Exotic species such as Eucalyptus spp. Is found in the periphery of the Lake.

Local biologist and expert visited MukteshwarLake and the surrounding area. Weed species like Hydrilla (*Hydrilla verticillata*), *Typha anagustata*, Indian goose grass, *Ipomoea*, *Eichhornia* etc. were observed in the lake vicinity.

Figure 5: Aquatic flora of Mukteshwar lake

Fauna:

Terrestrial Fauna: Domestic animals commonly reared in this region include cows, buffaloes, goats, sheep etc. Large numbers of stray pigs and dogs can also be seen in the town.

Figure 6: Animals found in surrounding area

Avi Fauna: Experts visited the fake twice in a day (once early morning and evening) and found bird species like Indian pond heron, little ringed plover, Cormorant (Pan Kavala), kingfisher, crane, Pan kombadi, Blue heron too were observed in the area.

Figure 7: Bird species of Mukteshwar lake

Aquatic Fauna: The water of the lake had many diverse forms of phytoplankton, zooplankton, aquatic insects, crustaceans, amphibians, reptiles and mollusks. All in one life stage or another were an integral part of the food chain, necessary to sustain Lake Ecosystem. The food supply of the fishes was supplemented also by numerous terrestrial forms, particularly during periods of rainfall or strong winds. Maintenance of good water quality (relatively free of inorganic or organic pollutants) was also necessary for the well-being of the diverse aquatic populations but it was not taken care of. Anthropological interventions with natural ecosystem affected the aquatic fauna and it started depleting. After discussion with a licensed fisherman of this lake experts found that aquatic species like Silver belley, Scart, Rohu, Mirgal, Catla, Maral, Black crab, Black turtle etc. were found in the lake.

Figure 8: Aquatic fauna of Mukteshwar lake

Results And Discussions: Environmental & Social impact of lake restoration: Each lake is unique, and each management process is as complex as the concerns it addresses. But the ecological, social, and economic benefits of a well-managed lake can span generations. Effective, long-term lake conservation plan is a complex undertaking that must deal with sociology as well as biology. The decision to restore or protect a particular lake has to be based on a thorough study of the lake, its watershed, and the commitment of time and money necessary for long-term management. The study recommends that all lakes be assessed for their chemical and physical properties and measures to be taken to restore lakes by local governance.

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Application of Nanofertilizer for Sustainable Agriculture Development

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Abstract:

The increasing food demand as a result of the rising global population has prompted the large-scale use of fertilizers, pesticides, herbicides and fungicides etc. As a result of resource constraints and low use efficiency of fertilizers and high use of chemicals, the cost to the farmer is increasing dramatically. Nanotechnology offers great potential of solution to use fertilizer production with the desired chemical composition, improve the nutrient use efficiency that may reduce environmental impact, and boost the plant productivity with soil quality. Furthermore, controlled release and targeted delivery of nanoscale active ingredients can realize the potential of sustainable and precision agriculture. The present article concludes that the application of nanofertilizers for the sustainable development of agriculture. It is largely contributing to the growth and development of agricultural and horticultural crop in future. It provides the sustainability to agriculture.

Keywords: *Nano, Nanofertilizer, Sustainability, Agriculture, Nanoparticles etc*

Introduction:

Fertilizers have been used for the past many years in agriculture for the benefit of farmers to have high yield. Traditional fertilizers are expensive as well as harmful to human beings and the environment. Therefore, there is a need for developing environment-friendly fertilizers having high nutrient value as well as compatibility with soil and environment. Nanotechnology plays a significant role in promoting agriculture and agricultural products. Agriculture and food industry aims for the sustainability and the protection of agricultural products, including crops for human and livestock. It helps in the manufacturing of innovative agrochemicals and novel delivery mechanisms to enhance crop production and decrease the use of chemical fertilizers and pesticides. It acts as an important tool in agriculture to improve crop growth, yield, and quality parameters with increased nutrient use efficiency, reduced wastage of fertilizers and cost of cultivation(1-3).

Nanotechnology is a field of research and innovation concerned with building 'things' - generally, materials and devices - on the scale of atoms and molecules. A nanometre is one-billionth of a metre: ten times the diameter of a hydrogen atom. The diameter of a human hair is, on average, 80,000 nanometres (4). There are lots of applications of nanotechnology as shown in fig.1.

The rapid growth in the world population has increased the demand from the agricultural sector, making researchers wary of the overuse of chemical fertilizers by farmers. Nanofertilizers have emerged as a promising alternative that ensures high crop production and soil restoration. **Nanofertilizers** are being prepared by encapsulating plant nutrients into nanomaterials, employing thin coating of nanomaterials on plant nutrients, and delivering in the form of nano-sized emulsions (5-7).

These nanostructures have shown slow degradation and controlled release of active ingredient for long time. Because of the limitation in arable lands and water resources, the development of agriculture sector is only possible by increasing resources use efficiency with minimum damage to production bed through effective use of modern technologies (8). These nano-agro-formulations increase nutrient use efficiency, reduce soil toxicity, minimize the potential negative effects associated with over dosage, and reduce the frequency of the application (9).

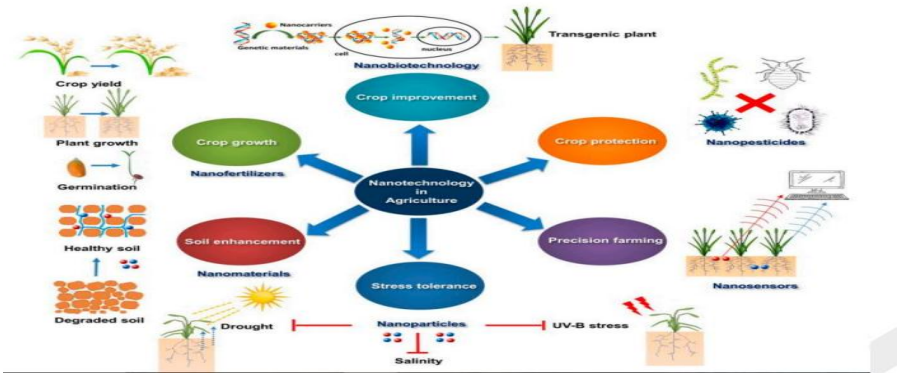

Fig. 1 Applications of nanotechnology in agriculture (24)

The growing population and a narrowing cultivatable land base and water resources create the demand in agriculture for greater efficiency in food production. Natural or synthetic fertilizers are utilized in the soil–crop systems to fulfil the essential macronutrients and micronutrients nutrient requirement of the plants and boosting crop yield [10]. Farmers applied commercial fertilizers to crop plants for the last 50 years for optimum plant growth that maintain the balanced distribution of the three primary macronutrients such as nitrogen (N), phosphorous (P), and potassium (K) and three secondary macronutrients like Sulfur (S), magnesium (Mg), and calcium (Ca). However, micronutrients like selenium (Se), boron (B), molybdenum (Mo), manganese (Mn), chlorine (Cl), copper (Cu), iron (Fe), and Zinc (Zn) are needed in low amounts for plant growth. The primary macronutrients are required to apply externally due to their inadequate nature in soil [2]. The most used commercial fertilizers are urea, triple superphosphate (TSP), diammonium phosphate (DAP), single superphosphate (SSP), monoammonium phosphate (MAP), and nitrogen−phosphorous−potassium (NPK), which contain essential plant nutrients such as nitrogen, potassium, and phosphorus [11]. Nitrogen is the first and fore most required nutrient for crop plants among mineral nutrients that is the integrant of many enzymes and proteins and chlorophyll thus critical to vegetative growth of crops. The utilization efficiency of nitrogenous fertilizers is only 45–50%, and for phosphorous fertilizers is only 10–25% [12]. It has been reported as in early 1970, only 27 kg NPK ha−1 was needed for one ton of grain production, whereas in 2008 increased to 109 kg of NPK ha−1 to gain the same amount of production. The International Fertilizer Industry Association (IFIA) reported that world consumption of fertilizer has been rising sharply, and in the year 2016–2017, demand was projected to 192.8 Mt [13]. That runoff overdosing of chemical fertilizers leads to eutrophication in aquatic ecosystems, i.e. the growth of algal on the water surface due to the enriched nutrients on water, which make a barrier to oxygen supply to living organisms into water. Commonly, the utilization efficacy of mineral fertilizers or applied chemicals has remained below 30% [14]

Inefficient fertilizer management leads to environmental pollution, climate change, and economic consequences. For example, approximately half of the applied nitrogen fertilizer lost from agricultural fields to air, water, and other processes that lead to a negative impact on the environment like N-oxides release into the atmosphere thus being as greenhouse gases and lead global warming, and nitrates leached into marine ecosystems [15].

Why is the Use of NanoFertilizers Better than Conventional Fertilizers

The unique properties of nanoparticles, such as high sorption capacity, the increased surface to volume ratio, and controlledrelease kinetics to targeted sites, make them a potential plant growth enhancer. Because of these characteristic features, nanostructured fertilizers can be used as a smart delivery system of nutrients to the plant. Nanofertilizers are released very slowly in comparison to conventional fertilizers (16). This approach improves nutritional management, i.e., increasing the nutrient use efficiency and decreasing nutrient leaching into groundwater. Nanofertilizers are specifically designed to release active ingredients in response to biological demands and environmental stress. Scientists have further stated that nanofertilizers increase agricultural productivity by improving photosynthetic activity, seedling growth, rate of seed germination, nitrogen metabolism, and carbohydrate and protein synthesis (17).

Nanofertilizers:

For plant nutrition, sufficient amount of macro- and micronutrients is necessary, including carbon, oxygen, hydrogen, nitrogen, phosphorus, potassium, calcium, sulfur, and magnesium. Out of these, the first three are structural elements and extracted from the environment, while the remaining six are extracted from soil. Though all the macronutrients are important, yet primary macronutrients are consumed in higher quantities in comparison to secondary ones (18). These primary macronutrients (nitrogen, phosphorus, potassium) are considered fertilizer elements as the familiar "N-P-K" identified on fertilizer labels.

Advantages Of Nanofertilizers Over Conventional Mineral Fertilizers

Nanofertilizers offer lots of benefits for sustainable and eco-friendly crop production more. Some of the advantages are (4, 19);

1. Nanofertilizers lead to the absorption and utilization of efficient nutrients without higher losses.
2. Nanofertilizers reduce the risk of environmental pollution via reduce the losses of nutrients.
3. Comparatively nanofertilizers have higher diffusion and solubility than conventional synthetic fertilizers.
4. Nanofertilizers deliver nutrients gradually to crop plants in a controlled manner which is in total conflict with the spontaneous and rapid delivery of nutrients from chemical fertilizers.
5. Nanoparticles can be easily uptake into plants via nano-sized porous, and by molecular transporters as well as root exudates. Nanoparticles uptake higher nutrient by plants via using various ion channels.

6. Smaller amounts of nanofertilizers are enough to apply than synthetic fertilizers due to their small loss nutrient nature.
7. Polymer-coated fertilizers prevent premature contact with water and soil, and negligible loss of nutrients.
8. Nanofertilizers improve soil fertility and develop a feasible environment for microorganisms (20).

Mode of action of nanofertilizers in field:

Many facets of plant biology structures like the nutrient gateway to the plant and plant roots are on a nanometer scale. Plant cell walls have 5 to 20 nm diameters range pore. one to a few tens of nanometers pores in diameter have been detected in roots for ionic and molecular transport processes. However, nanofertilizers could uptake through these nano-scale pores, or uptake by complexation with root exudates or molecular transporters via new pores creation, or by the exploitation of ion channels endocytosis (21).

Researchers have stated that the plant root system, which is the gateway for the nutrients, is highly porous to nanomaterials (nanofertilizers) than conventional fertilizers. Stomatal openings in leaves are also reported to favor uptake of nanomaterials and their entry to leaves. Scientists have conducted experiments using the faba bean (*Vicia faba*), to determine the nanoparticle's efficiency to penetrate the plant system. They found that nanoparticles (43 nm in size) could penetrate leaf in large numbers compared to nanoparticles larger than 1.0 nm size. Nanofertilizers are also reported to deliver nutrients through plasmodesmata. Plasmodesmata are nanosized channels of approximately 50–60 nm size used to transport ions between cells. Carbon nanotubes and silica nanoparticles are useful tools for transporting and delivering cargoes (nutrients and other important biochemicals) to plants' target site (22). The uptake of nanofertilizer by plant is shown as in fig.2.

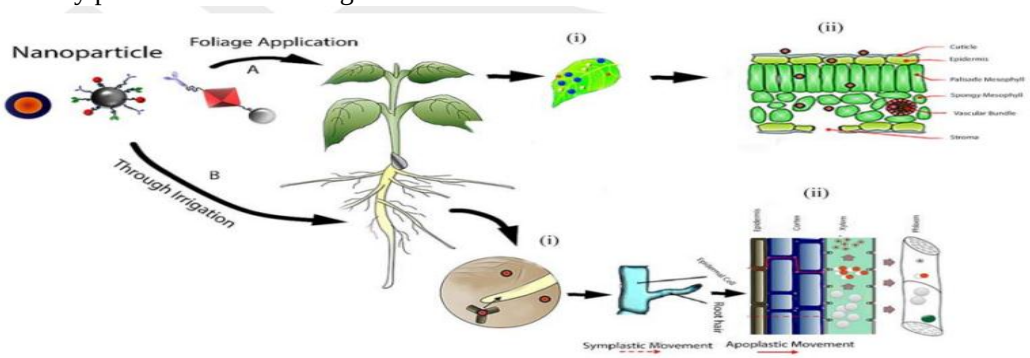

Fig.2 Uptake and translocation mechanisms of nanoparticles in a plant through leaf and roots (10)

Use of NanoFertilizers in Sustainable Crop Development

Group of scientists believe that zinc nanofertilizers are responsible for robust plant growth (shoot and root system) and increase the leaves' chlorophyll content. In a previous study, the amendment of zinc nanofertilizers significantly increased the yield of peanuts. These nanofertilizers also improve seed production of vegetables. Similarly, carbon nanotubes containing fertilizers were reported to decrease the days to germination. These nanofertilizers were also found to promote the development of plant root systems in rice seedlings. Nanofertilizers also reduce the crop cycle period and increase crop yield. For example, the amendment of nanoparticles carrying NPK (nitrogen, phosphorus, and potassium) to wheat showed an increase in grain yield and reduced the crop cycle of wheat by 40 days. Application of nanobiofertilizers has been studied to significantly improve the crop growth through the optimization of photosynthesis, nutrient absorption efficacy, higher photosynthate accumulation and nutrient translocation, enabling enhanced productivity as well as quality. One study has specifically reported the characteristic effect of nanobiofertilizers made via entrapment of biofertilizer (growth promoting bacteria) within Au and Ag NPs, wherein significantly higher crop growth was witnessed upon the administration of NPs with bacteria compared to those with the NPs alone. Nano structured fertilizer consisting of neem cake with PGPR provides efficacy toward promoting crop-harvest yields in several leguminous crops through an earlier and greater seed germination as well as effective delivery of doped nutrients (9,23).

Conclusion

Nanofertilizers are emerging as a promising alternative to chemical fertilizers in agriculture. Nanofertilizers may exert a positive role through slow nutrient releasing and it helps plant for increased in nutrient use efficiency. Nanofertilizers help to increase in tolerance to abiotic stress in several cases

Nanofertilizers are utilized alone or in conjunction with organic materials to efficiently boosting nutrients to crop plants while reducing environmental pollution via minimize nutrient loss and enhance the

higher absorption rate. Several types of research with different nanomaterials were recorded to enhance the root development, plant height, germination rate, number of roots, and fruits antioxidant and leaf chlorophyll contents. Smart nanofertilizers release nutrients as per the requirements of plants for sustainable crop production. Lastly, researchers and regulators should be responsible for the risk and limitation of nanofertilizer usage in order to take full advantage of nanofertilizers for sustainable crop production under changing climate while reducing the risk of causing environmental pollution.

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Corona Pandemic and its impact on Working Class in India

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Abstract:

Corona Pandemic adversely affected the economic life of the globe as well as India. It damaged the masses everywhere, but its worst victim is the working class. Indian working class consisting 90% belonging from unorganised sector faced the acute miserable situation. It has a long term disastrous impact on its livelihood, health and food security. Near about two crore jobs were lost from March 2020 to May 2021. The decrease of employment opportunities, informalisation of jobs, wage reduction, termination of workers etc. are the devastating impact of the pandemic and subsequent lockdowns. It violated the right to earn and live a dignified life of the working class. The absence of comprehensive policy toward the working class worsens the situation.

Introduction

A generation born after World War II does not experience a large-scale pandemic. After the Spanish Flu 1918-1920, as a human race, we are facing acute medical crises worldwide. A family member of Corona Virus i.e., Covid-19 originated from the animals' race and attack the human race. Its attack made a more drastic effect on the economy of the global capitalist system which is already under the severe nature of structural crises. The current pandemic affects extensively economics and damaged the masses everywhere resulted in wide inequality and huge human suffering. However, it profited a few mainly corporate. We are paying a heavy price of neglect of public health and education due to the policy of privatisation spark by LPG. The corporate centred policies resulted in huge inequality between masses due to which people are facing severe hardship. LPG policies resulted in widening inequalities and large-scale displacement, devastation and loss of life. We successfully tackling with TB, AIDS, Polio etc., but it did not have a socio-economic impact as of Corona. Indian working class suffered a lot in this pandemic period. The special character of the Indian economic sector is that its near about 90% workforce worked in the unorganised sector. Agriculture, self-employment and MSMEs are the main sources of employment. This paper is concerned with the impact of the Corona pandemic on workers.

Corona Pandemic and Unemployment

Global, as well as Indian economy, was already suffering from the crisis before the Corona pandemic. As per NSSO data, our employment rate already reaches 6.1 % in 2017-2018, a 45 years peak. The demonetisation decision of the government created a crash crunch and hugely shattered the informal sector. It resulted in the loss of millions of jobs and brought the economy to a grinding halt. Our economy entered a vicious cycle of stagnation after the implementation of GST. Demonetisation, GST and unscientific way of implementation of lock-down to deal with pandemic only exaggerated the crisis. The second wave of Corona devastated the job market on an unimaginable scale. The CMIE (Centre for Monitoring India Economy) publishes its report which shows that there is a loss of one crore jobs during the pandemic. In the first phase of lock-down hunger and unemployment spread more than the virus. Millions of jobs lost during the first phase never appear again. The workers who were re-employed found themselves in a precarious situation. The huge and unprecedented informalisation of jobs was the result. As per the State of Working India Report of Azim Premji University between 2019-2020, half of the salaried employees moved into informal work, either as self-employed (30%), casual wage (10%) or informal salaried (9%). As per the CMIE report, due to the impact of second-wave and lock-down 28.4 lakh jobs were lost in rural areas and 5.6 lakhs in cities. Because of unplanned lock-down, there has been a significant shift toward the agriculture sector which accounted for an increase of 9 million jobs. It produces unbearable stress on the agriculture sector which is already under a crisis for decades. The MSME sector which provided 11 crore jobs and contributed to one-third of GDP becomes the next victim. In May 2020 its productivity capacity decrease to 13% from 75% and on average only 44% of firms were capable to retain their workforce. The construction sector has faced its worst kind of crisis where 88 lakh construction workers lost their jobs. Whereas, near about 1.72 crore daily wagers lost their jobs and income. The job loss in other sectors such as manufacturing, hospitality and trade were 42 lakh, 40 lakh and 30lakh respectively. In many states, contractual workers like school teachers, scheme workers have not received payment during the lock-down period. CMIE report shows that between January and May 2021, 2.5 crores of existing jobs have been lost. This unemployment crisis leads the Indian working class toward the worst kind of livelihood issues.

Impacts of Corona Pandemic on Working Class

The crisis-ridden economy, undemocratic nature of the imposition of lock-down, unscientific nature of State response and breakdown of the public health system resulted in more than 5 lakh deaths of Indians during the pandemic. Lock-down on short notice of four hours in March 2020 created nationwide panic. We all experienced migrant workers journey from hundred km to thousand km on foot from metros to their respective states. After 10 days of the announcement of the lockdown, the government came with Pradhan Mantri Garib Kalyan Annan Yojna. Five-kilo rice/wheat and two-kilo channa for two months. It was not only insufficient but also disrespectful and fails to understand the ground reality. When you took away their right to earn through a dictatorial type of lock-down working class did not have money in their hand. In the second wave we all experienced shortage of oxygen, medicine, beds which resulted in more than 5 lakhs of death and our right to health being severely violated. In the absence of food security and lack of earnings, the working class is the prime victim of second wave disasters. The devasted economy and unscientific, callous nature of state response resulted in the following three tire impacts on the working class:

Impact on the health of workers

Workers mainly concentrated in slums and colonies with dense populations. The government has failed to take adequate preventive steps and workers were left largely neglected. The majority of employers failed to provide adequate safety measures including masks, sanitizer. No adequate facility of testing or access to health care in case of infection, was provided. Failure of the public health system affected the poorest section like workers. No accurate policy was framed about migrant workers who came back for work.

Impact on Wages and Livelihood

Because of unemployment, many workers households were hit badly. Several workers were contracted or affected with COVID which resulted in increasing their expenditure and inability to earn a livelihood. With extended lock-down, there is continuous loss or reduction of earning capacity. Self-employed and contractual workers are worst impacted. Pending wages in several sectors including the government sectors imposed hardship on employees and the same is also a critical issue of concern. There are overall crises in the employment sector that resulted in a decrease in work opportunities, wage reduction, cutting down of the number of workers. No specific allowances were paid for extra work. The majority of workers live in rented places therefore rent payment and loan repayment cause anxiety amongst them. Accommodation facilities provided by some employers do not match with the basic human needs.

Impact on Food Security

Pandemic and lock-down compel workers to compromise with their food security. Overall Inflation and increase price of vegetable, meat and groceries make difficult to workers household to access nutritious food. Severely inadequate ration provided by PDS has meant that households are not able to be entirely reliant on state assistance for food during the pandemic.

Conclusion

Corona Pandemic and irrational nature of lock-down devastated the Indian economy in an unprecedented manner. It increases the number of poor by 75 million in a short span. It increases informality and leads to a severe decline in earning capacity of the majority of workers. Women and young workers were the worst victims. The household was compelled to reduce their food security and borrowing and selling assets. The government's efforts were not sufficient to protect the livelihood of the working class. It not only failed to protect the right of livelihood but also failed to provide basic amenities during all periods of lockdown and continue doing so in face of an upcoming third wave. The lack of comprehensive policy toward working labour affects the life of the majority population of our country.

1. It is essential to take the following steps to protect the working masses survival:
2. Control inflation prices on essential commodities.
3. Increase employment opportunities.

The government must take proactive steps to ensure safe living conditions for workers. Intense testing exercise in workplaces. Public health infrastructure especially related to Covid must be improved. Universal free vaccination should be provided within a fixed period with priority to the working class. All Covid death amongst BPL families ought to be provided 10 lakh compensations. The government ensure that protective measures shall be followed and provide basic amenities at the workplace. Special camps and facilities shall be provided at slums, migrant workers colonies and areas of residence of workers. Medical facilities for workers must be provided free of cost.

Government must declare a Covid Compensation package for BPL families, the residence of slums and all workers (if the salary is below Rs. 20,000/-) and all other unorganised sector workers. Termination of worker strictly prohibited and mandate to pay full wages during the period of lockdown and take strict action against the employer if he fails to do so. Government must pass necessary orders on delayed payment of rent, loan repayment, loan waiver, waiver of electricity and water bills. The state government must declare special allowances to front line workers who worked under the Covid period. Special assistance must be provided to migrant workers.

Government must create a special ration kit and increase the quantum of ration to all persons in PDS shops without insistence on the ration card.

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A Study of Talent Management Practices implemented by Educational Institutions

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Abstract:

Every resource plays an important role in the success of organizational goals, but human resource is the most crucial one. Just recruiting the right person at the right time is not enough for the success of any organization but retaining that talent into an organization for a long time of period is the most important task. Talent Management is the concept of attracting, developing and retaining these resources for the accomplishment of organizations goals and objectives. Talent management focuses on improving the working ability of those human resources who have the capability to change the value of an organization at present or in the future. This research paper focuses on to know the different talent management practices, causes of employee turnover and different strategies to retain the employees. Educational institutions also wants to retain their talented workforce like private organizations because the expectations of parents and students from the educational institution is changing. It is becoming a challenging and competitive task for the educational institutions to provide quality education. This paper helps to explain how to manage and retain talent in education sector.

Keywords: Talent, Talent Management, Talent Retention, Education Sector, Employee Turnover

Introduction

Education Sector is one of the most protruding sector which affects over to all other sectors. Education system of India is changing from Gurukul system to Modern educational system. Education plays a significant role in bringing about social transform. In order to have the desired social change, a suitable system of education is required but the success of any educational system depends on the teachers. The teacher is measured to be revolving of any educational system. It is being progressively more recognized that the mind is the most effective of the various facilities with which mankind is brilliant and hence someone who is entrusted with fostering of minds is definitely a person of great importance. The parents are expecting quality education from the educational institutions to step up their child with international standards. Therefore, education has the tremendous growth and development from the recent past. The development of a nation is in the hands of youth and youth can be developed through classrooms, libraries, laboratories or field study and that can be possible only through educational institutions. Educational institutions are producing, creating and inculcating the highly skilled manpower required in the field of political, social or economic transformation. Industrialists or corporates are mainly focusing on the concept of talent management but now a days educational institutions are also focusing. Organizations performance and success depends upon their management. For retaining the talented person, proper measures should have to be taken by the administrator. In educational sector, the performance and success depends upon their teachers. Teacher is the backbone of every educational institution who develops and architect the society. The role of a teacher is to change the shape of the society and bring revolutionary changes so that the country will also get developed.

Talent

Talent is a combination of competence, commitment and contribution. A competent employee committed towards his/her work and contributing continuously for the achievement of organizational goals is treated as talented person. Therefore, talent is represented as skills, working ability, knowledge, intelligence, attitude, learning ability etc. According to McCartney and Worman, "Talent is defined as the one who can develop differences in the organizations performance either by their instant performance or contribution or by demonstrating the capabilities in the long time of period."

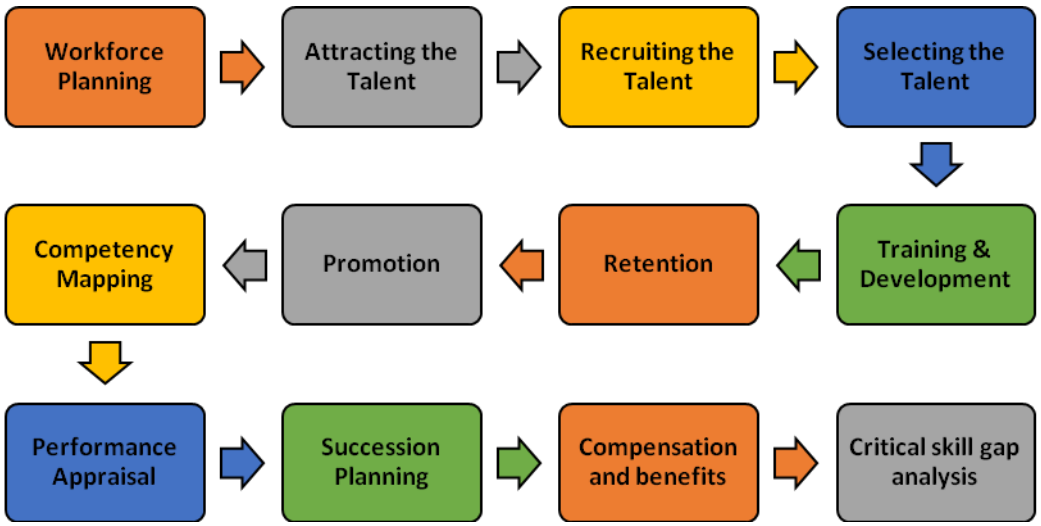
Talent Management

Talent Management is managing the ability, measuring the performance, competency and power of employees within an organization. To meet the current and future organizational needs, an approach was undertaken by the organization to attract, recruit, train, develop and the most important to retain that person for a long time of period. The organization is not only recruit the talented person but also explore the hidden qualities of that person and cherish them to get the desired outcome.

According to M. Armstrong, "Talent Management is the process that talented people are attracted, assessed, retained, motivated and developed in line with the needs of the organization."

According to B. Jamka, "Talent Management is the attraction, training, development and retention of the talents by creating favorable conditions for their development, so that they can work for the company's operation for a long time of period."

Talent Management Process



Objectives Of The Study

To understand the concept of Talent, Talent Management and its process
To know the different causes for employee turnover
To know the employee retention strategies

Data Collection

The data is collected through Primary and Secondary sources. Primary data is collected through the observation method. A keen analysis or observation taken over to the educational institutions, administrators and their employees. Secondary data was collected through different books, journals, websites, e-journals etc.

Limitations Of The Study

A study is limited to higher educational institutions only. A study is related to talent, talent management and practices of talent management only.

Conceptual Framework

Talent management is a systematic process of identifying, assessing, developing and retaining people with critical or overall knowledge, skills, ability and competencies. Competence, capability and talent are the human assets of the organization.

Importance Of Talent Management In Education Sector

The mission statement of the educational institution is not only providing an education to the students but also build their careers and that can be only possible through the talented workforce into an institution. Attracting talent, developing talent and retaining talent are the importance of Talent Management.

Causes Of Employee Turnover Into Education Sector

1. There are several reasons due to that fear and insecurity comes in the mind of employees into educational institutions. Some of them are as follows-
2. Work overload is the most common cause for stress. Institutions are over utilizing the capabilities of the employees and that's why employees feeling related to work is stressful.
3. Teacher Student ratio is also not following by the educational institutions. The guidelines given by AICTE or UGC must have to be followed but mostly the proportion of teacher student is not proper which affects over the mind of the teacher.
4. Job insecurity is also one of the cause due to that employees are working in a fearful working condition. The desired result or outcome cannot be possible if the working environment is not stress free.
5. The primary role of a teacher is to take lectures and teach students. But the additional burden of administrative work sideline the actual role of teacher. Therefore it also affects over the teaching methodology and productivity of a teacher.
6. Motivation and recognition of work are the functions of management. A good and motivative staff always benefits to the institution. Lack of motivation or improper recognition of work negatively impacts over the mind set of human resource.

7. Management has to motivate their staff for research and for that purpose related resources and financial assistance has to be provided by them. Insufficient resources and funding does not motivate the staff to develop.
8. Poor management techniques by the higher authority also creates negative feeling in the staff which is also one of the cause for employee turnover.

Employee Retention Strategy

1. Communication should be done properly, nobody should feel left out. The policies and programs must be communicated with everyone properly and feedback also has to be taken from them.
2. Institution has to select the right person at the right time who can work whole heartedly and give their best for the achievement of organizations goal.
3. Opportunities has to be created for the employees so that they can grab it for further growth and development. Developing new skills, acquiring new knowledge and creating interesting work is necessary to keep up-to-date time to time. If employees feel boring at work then they will lose interest.
4. Payment policies adopted by the colleges are as per the faculties' quality & potential. Salary hike is given after a specific interval by assessing their past performance.
5. Appreciation is the foremost element of quality of work life. It helps to motivate to the faculties and can raise the efficiency among the teachers'. Management always appreciates to their employees so that they work more efficiently.
6. Institution must focus on the welfare of the employees. When an employee feels that institution is giving enough time and efforts for providing welfare facilities to their employees, they will be motivated for quality work and they themselves feel happy.
7. Equal and fair treatment has to be given to all the employees. Partial or bias treatment with employees bifurcates employees into different groups. Emotional bonding must have to be created in between the employees.
8. Management must have to take their staff into policy framing and decision making so that they may get new ideas.
9. Training has to be provided by the institution to their employees. Training may include Faculty Development Programs, Teacher Orientation Programs, Induction programs of new entrant and informal meeting to discuss over different issues with the authority.

Recommendations

1. Transparent application system should be implemented under the selection committee. Fair selection of a candidate must have to be done by keeping aside a gender, caste or references. As per my observation, I noted that the system is not transparent at many higher educational institutions and many times there is a discrimination while selecting a candidate.
2. Selection has to be done on the basis of demo lecture, way of presentation, and knowledge about a particular concept, class control and explanation to asked queries. This is the most important recommendation to many institutes because just selecting a candidate by an interview is not enough. Teacher need to know how to explain the concepts, how to clarify the doubts and how to maintain the discipline.
3. Promotion should be totally depends upon the potential and ability of an employee. Fair judgment must have to be done from the superior authorities. Many times, promotions can be done on the basis of their relationship with the authorities which may adversely affects over the performing employee.
4. Working continuously is a stressful and boring job which might reduce the productivity so that institution has to provide different facilities to the employees to keep calm and relax. Employees are not recruited only for the sake of job but also administration has to focus on their mental health.
5. Higher authorities should have to spend more time in matters regarding talent management and how to retain the talented person into the institution. Retaining talented employee into an organization helps to achieve the organizational goals in a speedy way but I observed that some of the institutions are not focusing on talent management.
6. The policies of talent management should be properly conveyed towards staff so that they can work more efficiently to get properly measured. If employees are not aware about the policies framed by their superiors then they will not target to achieve that. Continuously doing the same work will affect on the mindset of the employees so authorities has to keep changing the style of working and keep them entertaining.
7. If there are any issues related to talent management then the authorities has to discuss in the meeting with management. Participative management always helps to create healthy environment.

Conclusion

From the above study, I conclude that talent management is an important task in every educational institutions and it can really help in identification of the talent, development and retention of that talent for its success and growth and to achieve the objectives of the institutions. Human resource is the most important part of every organization therefore that resource has to be handled with care. If educational institutions want to achieve their goals, they must have talented people. It is not an easy task to recruit and retain talented employees. Salary, work environment, training and development opportunities, job security and growth prospects are some of the important strategies to retain an employee. The future of any country is in the hands of youth and youth can be educated and grows with a proper direction showed by the teacher. Therefore, it is important to hire or select the talented person for the job. Money spent on Talent Management is not an expenditure, it is an investment for the future success and growth.

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Application of Remote Sensing & Gis in Watershed Development Policies & Planning

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Abstract:

A watershed is a natural topographical and hydrological entity that collectsand converges, all the rainwater falling on it to acommon outlet. Therefore it turns out to be an idealunit for management and sustainable developmentof its resources i.e. exploration, exploitation and conservation of these resources. Agriculturaldevelopment has become a major aspect in anywatershed management.Mapping prioritization of watersheds is the first step in implementation of agricultural interventions for sustainable development and livelihoods. This approach was appropriate for planning and disseminating technologies. This methodology can be improved and adopted for prioritizing watersheds productivity of land can be increased using improved technologies.GIS and Remote Sensing support us to giving cost effective and quicker analysis of various applications with accuracy for planning. It also provides a better perspective in the understanding of problem therefore helps planners evolve a better solution for sustainable development.

Keywords: *Remote Sensing, GIS, Application, Development, Planning.*

Introduction:

Remote sensing is the art and science of obtaining information or data regarding an object of phenomenon without being physical contact with an object or phenomenon under investigation. It is the instrumentation, methods and techniques to observe the surface of the earth at a distance to interpret the satellite data/images or numerical values obtained in order to get meaningful information of particular object or phenomenon. The recent technologies like GIS and Remote Sensing support us to giving cost effective and quicker analysis of various applicationswith accuracy for planning. It also provides a better perspective in the understanding of problem therefore helps planners evolve a better solution for sustainable development. The availability of high spatial resolution Images/data (5.8m, 1m) from satellites, the use of remote sensing has further got enhanced in recent years. Number of projects and studies carried out in the last couple of decades using remote sensing data from satellites such as LISS, Landsat, IRS, SPOT, ERS and aerial photos have proved the potential of remote sensing in natural resources survey, monitoring and management beyond doubt. Remote sensing has emerged as most useful tool for watershed prioritization, development monitoring and planning.Geographical Information System (GIS), helps in integration of spatial (map) and non-spatial (tabular etc) data digitally is also found to be very useful in watershed studies. GIS is an most effective tool for generation of digital database comprising different thematic maps (such as land use/cover, slope, landforms etc) and non-spatial data (such as information on crops, socio-economic data etc). Further integration of thematic and tabular data is done in GIS environment using various analysis techniques. GIS helps in arriving at alternate land use practices, selection of sites for water harvesting structures etc for a watershed by integrating thematic information (land use/cover, slope, drainage, soil etc;) with socioeconomic and other collateral information (like population, depth of weathering, well and crop inventory etc).

Watershed Prioritization:

The first and most important stage in any watershed planning and development Programme is prioritization of watersheds for development. Data gathered from Remote sensing platform provides information on parameters, which helps in prioritization of watersheds such as size & total area of the watershed, land use/cover, drainage, water bodies, geology, soil, land form, slope and erosion intensity. Using satellite data now it is possible (with the data from IKONOS-1m spatial resolution) to go up to1: 5000 scales starting from million scales or so (using data from IRS, Landsat, etc). Watersheds with area few hundreds of hectare i.e., micro-watersheds can also be studied and mapped in detail by satellite data itself. Remote sensing data provides detailed information on the land use/cover (crop, forest, wastelands, barren lands, grasslands etc.) of the watersheds, which is useful in prioritizing the watersheds. Geomorphic units and ground water prospects within the watershed and broad geology can also be derived using remote sensing data. However information on rainfall needs to be collected from conventional sources. Slope/contour information can be derived from satellite/aerial remote sensing data .Remote sensing datashows the watershed in totality along with the adjacent watersheds which helps in broadly prioritize by the way the land use/land cover is depicted, as normally a good watershed will have healthy vegetation.

GIS helps in integrating the information and prioritize the watersheds based on various decision criteria's. Any change in the criteria's and modification in the prioritization also can be done very efficiently using GIS. The digital database in GIS environment can be updated & retrieved easily.

Watershed Planning and Development:

Once the priority watersheds are identified, the next step is to planning the development measures for improving the condition of the watersheds. Watershed development includes adoption of soil conservation measures, water conservation measures, land resources alternate and land use practices, etc. Information on the natural resources and potential of watersheds can be assessed by integrating the thematic details on land use/cover, ground water prospects, drainage, surface water, soil, contour, slope, geology, transport network; settlement, etc. derived using remote sensing data in conjunction with conventional data and field observations. Suitable measures for development of watersheds Viz. water harvesting structures (check dams, nala bunds, contour bunds etc.), ground water conservation (well sites, recharge sites) alternate land use practices (agro horticulture, afforestation, multi-tier cropping, etc.), soil conservation measures (contour trenches, gully plugging etc.) are arrived at by integrating all the above information in GIS platform.

Watershed Monitoring:

Watershed development is not a new concept, number of watershed development programs were implemented and on-going in our state and country. Many state governments have separate watershed development departments; central Ministry of Rural Development & Dept. of Agriculture gives lot of importance to watershed management and development. Accordingly number of projects has been launched by central and state govt. agencies with the participation of different NGO's. Numbers of check dams, nala bunds and continuous contour trenches have been constructed; alternate land use practices have been adopted, but how to monitor the impact of implementation of these measures? Remote sensing is the best tool for monitoring the results of the implementation especially the change in land use/cover, water spread/water bodies, etc. Remote sensing data is found to be useful to assess (i) the status of change in cultivated, waste land, forest and plantation areas, (ii) new water bodies (iii) change in cropping system and (iv) soil conservation measures. Number of studies carried out has shown the utility of remote sensing data in watershed monitoring.

Conclusion:

The present paper gives the idea about the integrated use of Remote Sensing and GIS in watershed development planning. Studies carried out so far including different governmental and non-governmental organizations have proved beyond doubt that Remote Sensing is a powerful tool for watershed development planning and monitoring.Proper integration of remote sensing and conventional methods coupled with field observations yields best result.The potential of GIS andRemote Sensing technology is importantin watershed development. The use of GIS software helpful for preparation of drainage pattern, Digital Elevation Model, contour mapetc. The use of Remote Sensing and GIS technology ishelpful in village level micro level planning in soil erosion studyand surface runoff calculation. This technique is helpful to study thepre and post condition after the watershed development and prioritiesof watersheds for water conservation purpose.GIS database helps in better integration of data or information, modification of database, preparation of developmental plans and monitoring the impact of developmental measures. The spatial analysis of thematic information, which can be derived from remote sensing helps in the assessment of development plans before they are implemented.

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Geographical Study of Solar Energy Resources In India

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Abstract:

Sun is prime source of energy for the earth planet. On the sun surface, there is nuclear fusion in which hydrogen is converting into helium. It creates the solar radiation. When this radiation waves are coming on the earth surface it convert into the long wave radiation.It starts to generate the heat. Heat is energy; it has ability to do the work. Number of weather and atmospheric phenomena is form due to the solar radiation. In human activity solar energy is useful for the to run the different kinds of small equipment, water heater, in settlement building, as a domestic cooking, water purification, in agriculture ,horticulture and in transportation vehicle.Now a day it is more useful for the generation of electricity. Solar energy is clean energy. Today 13% of the world electricity is generated with the help of the solar radiation. In the coming next period, solar energy has more scope in the electricity field.These electricity is applied for local and global level.

Introduction:

Sun is star; because of it has ability to generate the heat and light. Sun is located in center of the solar family. As aaverage view, age of the sun is consider as 5.5billion year old. It is more elder than the earth planet. There is continuous process of nuclear is fusion is going on the surface of the sun. Solar constant of the earth surface is approximately 1.941 calories per minute per square centimeter.(Kopp, 2011)This energy has capacity to generate the heat energy. On the equatorial region has more heat than the polar region. This is effect of the angle of the solar rays. These solar rays has right angle on the equatorial region. There are number of Geographical factors are affecting on this solar energy distribution as the coastal area, height of the region, distance from the equatorial region. As we go equatorial region to the polar region, temperature become low as latitude values become high.This phenomenon is effecting of the weather element. Wind is product of different in solar radiation.(Huang Junling: McElroy, 2015) Man has apply this solar energy in the following activity as- Thermal energy, Water heating, for human settlement, cooking activity, domestic heating, water purification, for formation of salt,agriculture and urban planning, transportation and generation of electricity. Solar energy has develops special kinds of ecosystem in the earth biosphere.

Thermal Energy: Earth surface convert short wave radiation in to the long wave radiation and generate the heat energy.(Huang, 2015) This kind of process made the heating process on the earth surface, which is useful for the formation of wind energy. Solar radiation are effecting on the atmospheric pressure location on the geographical region. It also effecting on the rate of evaporation. Man has used this thermal energy in the number of domestic and other agriculture activity.The another minor uses of heat energy is water heating. According to the Frank Shuman, this solar energy has more capacity to generate the energy. It is unlimited power from the solar radiation. This energy is useful for commercial profit and upliftment of all kinds of human society and culture.(Shuman, 1916) On the basis of this thermal energy, earths climatic division and classified as Equatorial region, tropical region, temperate and polar region.

Water Heating Activity: With the help of special kinds of the heating equipment, there are water heaters. It converts the solar radiation into the heat. This technology is useful in the industrial activity for cleaning and processing purpose, It save lots of electrical energy and the fuel in settlement, hospital and the hostel. Israel, Cyprus and Greece nation are using more solar water heater. This system is supporting for most of 40% the houses. (Chiaro, 2007)

Human Habitation Activity: Shelter in one of basic need of human being. Building has a need of light and energy. Solar light save lot of electricity. Today by application of different types of technologyand geometrical arrangement of houses, lot of solar energy is applying. Now a day modern construction of the house made the energy audit as the maximum utilization of solar energy in regular day today activity.

Domestic Cooking Activity: Intensive sunlightcan be generating lots of heat power. This heat energy is applicable for the cooking activity. There are three kinds of solar cookers as box cooker, panel cookers and reflector cooker. In this equipment parabolic dishes are most effective to collect the solar heat energy. The cooking equipment has made by solar energy collection mechanism. This kind of technology is most applied for the tropical nation.

Water treatment plant Activity: Pure water is need for human health. With the help of solar light, Water can be made more pure. Man was very familiar for this treatment from the medieval period. The first reference, 16thcentury Arabian people was using solar light for the water treatment.Temprature of the water is most helping for the water from the micro- organism. In the developed nation, millions of people use this method for their daily drinking water.(USAID, 2008) Pure water is prime need of human health.

Solar Energy in Electricity Production: Solar energy can be use for generation of electricity. There are two mode of the solar electricity as photovoltaic and lenses or mirror method.Generation of solar energy plant is started form the 1980. Solar electricity has contributed 15% total global electricity. It has the 1.3 % growth rate.(Agency, 2014) Solar energy is new need of the world. It is eco-friendly sources of the electricity.

Solar Energy and Urban Planning: Solar radiation is effecting on the human settlement. Solar energy can be gives the light and temperature for the houses. It can be save lot of the electricity. That's why urban planner is applying the utilization model in his urban planning.

Agriculture and horticulture: Vegetation made the food with the help of photosynthesis. The modern greenhouses convert the solar energy into to the domestic activity and the other uses are as food processing and conservation activity. Solar dryer is useful for food grain conservation.

In the Transportation Network: Now a day there is shortage of the fuel. With the help of modern technology, solar energy is useful for transportation network. Burning of the coal and petroleum made the issues of global warming. Solar and wind energy is a source of green energy. This is a source of renewable energy. In the modern technology, motor vehicle, boat, airplane is working with the help of solarenergy.

Solar energy and fuel production: In the process of the solar chemical process, solar radiation is useful for derive the chemical reactions. By this process it made the artificial photosynthesis.(Wasielewki, 1992)Solar energy lot of scope in the tropical climatic zone

Solar energy and Energy storage Method: Thermal mass system can store solar energy. This is type of renewable themal energy. This electricity can be store by the battery and use as the need. In the tribal region this function is useful for the tribal zone upliftment. India is applying this technology for the rural and remote area development.

Solar energy and economic development: Solar energy is useful for the deployment and fuel. Industrial revolution was possible due to the coal element. Developed nation USA made commercial solar water heaters in began appearing in the 1890(Perlin, 1981)after, 2000 worldhad to use of maximum solar energy than the petroleum and coal energy sources.

Conclusion: Hence,Sun is prime source of heat and light on the earth surface. This solar radiation is spread all over the earth surface. China and USA is generating lot of electricity for the solar radiation. With the help of solar energy developing nation can be made progress as economic and social activity. In coming period, maximum instrument is run by solar energy. India is tropical climatic nation it has more scope in wind energy sector, carbon energy sources had made the issues of global warming. Now a day it a need to use the green energy sources. As a population growth and global demand of electricity, solar and wind energy has more scope in regional and rural development.

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A Critical Study Of Online Shopping In India

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Abstract
Technology plays important role not only in the industry but also in the day to day life of the human being. Everyone accept and adopt the technology. The online shopping means purchasing the goods and services over the internet. It is generally associated with buying or selling a product by using the internet as the platform. With the help of E-commerce web design, you get an opportunity to have your products and services available to consumers 24 hours. It is true that every coin has two sides one is advantages & another is disadvantages for the growing aspect of online shopping. We are required to overcoming the limitations and more focus with advantages. Consumers & internet users are responsible to keep our online healthy and safe, so that the online shopping can become more reliable & creditable in future.

Introduction:-

The present era is digital era. Almost all fields use the technology. It means marching towards physical to digital. During pandemic and post pandemic learnt lot. Technology plays important role not only in the industry but also in the day to day life of the human being. Everyone accept and adopt the technology. The online shopping means purchasing the goods and services over the internet. This trend is started since last two decades. There is bright future for online shopping. Tremendous use of internet in India provides greater prospects for online shopping. Despite of this, there are several factors affecting Indian consumer's online buying behavior. And if the online retailers make aware themselves about these factors they can further develop their prospects and converts potential consumers into active ones. In this research paper an effort has been made to find out the favorable circumstances to develop the online shopping of the products access easily and to know the hurdles for online shopping and highlights the problems while doing online transactions. An online shopping is a form of electronic commerce which allows consumers to directly buy goods or services from a seller over the internet using a web browser. Consumer find a product of interest by visiting the website of the retailer directly or by searching among alternative vendors using a purchase search engine, with the advent of internet technology, the nature of online shopping. Its evolution has been taking shape and turn dramatically. The internet is a powerful tool for doing the online shopping.

Objectives:-

1. To enlighten on the significance of online shopping
2. To study the limitations of online shopping

Research Methodology:-

The paper is descriptive in nature so the data required for the paper is secondary data. Secondary data were collected from various published and unpublished papers, journals, books, articles, reports, magazines and websites.

Significance of Online Shopping:-

The online shopping is the need of time, consumer, business and nation, now it wills compulsion in few years to use. Doing online transactions has become an integral part of life in the modern world. It is generally associated with buying or selling a product by using the internet as the platform. With the help of E-commerce web design, you get an opportunity to have your products and services available to consumers 24 hours. An online store is available all day every at all times, no matter what their schedule might be.

Convenience and Easiness:-

The best advantage of online shopping is convenience. It enables consumers to shop or do other transactions 24 hours a day, all year round, from almost any location. A Person can buy products from anywhere in the world at any time.

Time saving:-

A shopper saves a good amount of time by shopping online. In the metros and even in the smaller towns which are growing fast, the life of an average person has become very fast. He has very little time after his normal routine office schedule to go to the market and purchase even the daily needed items.

Wide variety of products:-

Large variety of goods accessible easily, without spending time and money by physical visits and searching in various shops such as traditional commerce. That is why online is important it brings to more variety by expending the boundaries of traditional commerce.

Price/Product comparison:-

Helps consumers to compare prices and product without having to move from one shop to another for comparing the benefits of the product, the shopper gets the benefit of comparing the features and cost analysis at one place. Most of the sites are providing this facility where in shopper can choose the product which exactly suits him

Global Access:-

Online shopping system is accessible by any one across the World Wide Web. An online web site helps the business to reach out to world-wide consumers in very low cost. Any business having just an internet connection can access online shopping system.

Stay open 24 hours:-

One of the most important benefits that online merchants can enjoy is store working timing at 24 hours to a day, 7 days a week and 365 days in a year. They never take a break, close down for the day or take public holidays.

Offers and discounts:-

The important benefit of online shopping is various offers; cashback scheme, free shipping, and discounts are available.

Availability of services:-

Online purchase platform provides various services to consumer such as financial services, legal services, and medical advice etc. from appropriate portals, which helps to consumers saving in times and money.

Improved customer interaction:-

Quick feedback and comment forms are main features to interact with customers. Establishing a functional interaction between the e-consumer and e-retailers to attract attention, assess, and experience, and also to provide enough confidence for a purchasing transaction at a distance. When sufficient support for these factors has been established, all product categories can in principle be handled electronically.

Faster buying procedure:-

E-retail means better and quick customer services. Online customer services make customer happier due to absence of intermediaries for buying products. So buying procedure will be fast and quick.

Easy transactions:-

Financial transactions through electronic fund transfer are very fast and can be done from any part of the world. E-retail puts the need for paperwork at minimum as most procedures are done electronically and also saves time for both e-retailer and e-consumer as it reduces manual business transaction.

Online payment options:-

In the online shopping different payment options are available payment can be paid by cash on delivery or online mode also. In the online mode of payment Net banking, Phone-pay, Google-pay or Mobile banking, etc.

Limitations of Online Shopping

Online shopping has become one of the most popular medium of transactions in the recent years, which provide the number of benefits to both buyer and sellers. However, online have some limitations, which have restricted the number of people to use this. These limitations are as below.

Security:-

One of the significant limitations of online is security. Security matter confuses customers especially about the integrity of the payment process. In an electronic environment where market needs, technology requirements, and *security* challenges change very rapidly, proactive risk-handling is essential. Unfortunately, no *matter* how strong your extranet defenses are, it is always possible that a new exploit could defeat your best efforts to *secure* the web.

Fear:-

In spite of popularity, people fear to operate in a paperless and faceless electronic world. There is doubt in the mind of people when it, comes to online shopping. This is because they cannot physically examine the product due to that number of people prefers shopping from physical stores.

Low awareness:-

One the important drawback of online is that the number peoples are still not aware of the internet either due to the lack of knowledgeable or trust. Many of people do not use the internet for financial transaction.

Delivery time:-

The delivery of the products takes tomes. In physical stores you get the products as soon as you buy it. But it doesn't happen in online business. This lag of time often discourages consumers. Delivery time can be in days or weeks which one cannot wait for. Supplier selection is extremely important in purchasing management to enhance quality, reduce *delivery time,* and to curtail purchasing cost.

Product suitability:-

In online shopping system a consumer have not possible to physical examinations of product, whether it is suitable or not. In many cases, the original product may not match with the picture or specification in the online site, which leads to discouraging effect on consumers.

Technical limitations:-

For establishing online shopping system in business requires advance technology platforms for better performance. Some limitations such as lack of proper domain, network and software issue. Which adversely affecting on the performance of online site.

Lack of personal touch:-

In online shopping one cannot touch or feel the product so it is difficult for the consumers to check the quality of a product. But in traditional models buyers can contact with the sales person. He can personally check product so number of people prefer to traditional method of buying. Online products cannot be touched, wear or sit on the products. So neither the consumer nor retailer is actual aware about the physical condition of the product.

High start-up cost:-

For applying the online shopping system in business require more advance technology of internet connections, hardware & software. It requires lot of money at primary state, which is not affordable to small organizations

Some products are difficult to shopping online:-

It is true that some of the products are not possible to purchase online like food, gold, spectacles and other which you required very customized one. Costly product such as jewellery is not possible to be available on the internet.

Fake websites:-

Fake websites can not only disgrace e-retail but bring bad name to e commerce also. Fraud: Concerns about misuse of financial and personal data is a great weakness in e-retail.

More shipping cost:-

Shipping cost increases if we order online. E-retail makes buying a *more* convenient experience but did not fully appreciate how much of an effect *shipping charges* can have on their bottom line.

Customer's satisfaction:-

There is no interaction between customer and the seller. Therefore the scope of convincing the customer does not exist. Many times customers prefer to buy the product by reaching personally to the market rather than purchasing through internet.

\Conclusion

It is true that every coin has two sides one is advantages & another is disadvantages for the growing aspect of online shopping. We are required to overcoming these limitations. We are consumer & internet users are responsible to keep our online healthy and safe, so that the online shopping can become more reliable & creditable in future. Online shopping is a web based platform where people can buy products through electronic medium, buying of products through online channels is increasing. There is no doubt in India there is a remarkable growth on online shopping in India there are many reason behind this, Whereas online purchase is easy there is no need to go physically at the shop. Consumers can order anytime and from anywhere which is easy and convenient. Therefore we can conclude that there will be bright future for online shopping and make the digital payments in India increase and unstoppable in coming years.

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Effects Of Exaggerated Advertisements On Customers

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Abstract:

In the recent past there is a rise in the misleading or false advertisement due to increased competition. In the market. In the marketing field where the customers expect to take informed decisions, accuracy should be maintained and full disclosure of all the product related information is expected. This paper aims to study the effect of exaggerated advertising, misleading information or deception and its impact on customers. Puffery is one of the various ways of advertisement. IT is a kind of advertisement where the marketer praise the item to be sold using superlative, exaggerations vaguely and generally stating no specific facts. This study shows how due to leading advertisements most of the customers are facing negative experience, how it affects audience and the way marketers and organizations are using their techniques to pressurize the customer to buy their product. It also put a light on how much the marketers and advertisers play with ethical values in their advertisements and till what extent they cheat the people in the society.

Keywords: - Advertisement, Exaggeration, Puffery, Marketing, Misleading
Gel Code: - M3, M31, M37.

Intoduction:

Over the years, puffery advertisements are used to often well used to sell products from household to consumer goods and services. According to H.G.Wells, "Advertising is legalized lying". There is no one denying that exaggeration is the essence of advertising. Puffery is generally defined as "publicity or acclaim that is full of undue or exaggerated praise." Marketers use puffery as a key marketing strategy which allows them to advertise their product as the "World's Most Effective" and what not. Basically puffery includes the statements that cant be measured or which clients would not take seriously. While exaggerating in the case of advertising, many ads try and make brands look bigger and more important than they actually are to the consumers, making the exaggeration hard to digest. Puffery can highlight the weakness of a competitor's product and it can also highlight the strengths of a seller's product. There is no denying that a exaggeration is the essence of advertising. Not that that is bad. In fact, for the lay consumer, exaggeration is what makes a lot of advertising barely tolerable. To safeguard against misleading advertisements and to ensure the truthfulness and honesty of representations and claims made by advertisements, several guidelines are given by the Advertising Standard Council of India.

Literature Review:

Actual facts go incomparably farther than superlative exaggeration towards convincing anyone of the truthfulness of a proposition (Daniel Strach,qtd by Armstrong,2010) Puffery is an accepted practice in marketing field. Marketers try various ways to differentiate products that customers see as having few real differences. As a result the temptation for marketers to make statements about products that are considered puffery has increased(Preston ,1998) .Radford (2004) complains that the use of puffery is a problem in the media in general as well as in advertising, " Meaningless words are not simply nuisance, they are a form of mental and visual clutter" (p.21). Exaggeration sometimes negatively affects not only consumers but advertiser's reputation too. Some ads are misleading, like Bayer Aspirin positioned as preferable to other brands but mostly containing … aspirin, other cause indirect harm like "cavity-fighting" chewing gums that contain sugar (Parboteeah & Cullen,2013) The Federal Trade Commission (FTC) has allowed marketers to use puffery because according to them puffery does not deceive reasonable consumers. FTC argues that reasonable consumers have the ability to differentiate between puffery and other types of information (Preston, 1996) Advertising to children is a special category, where exaggeration should be avoided in any shape or form. Even though in this area creativity is a must, exaggerated statements sound manipulative. Also, it is important to remember that children are especially sensitive to lies.(Gunter, Oates & Blades,2004) According to Aaker and Biel(2013), commercial which falls into exaggerated category assume that the viewers will understand the hyperbole, and that they will recognize and enjoy the exaggeration as an advertisement convention. Such ads imply that the metaphor or hyperbole would be understood by the audience and not taken literally.

Objectives Of The Study

The main objectives of this study are:

1. To study the exaggerated/ puffery advertisement of Indian Television.
2. To study the impact of exaggerated/ puffery advertisement on audience/ customers.

3. To study consumers opinion about exaggerated advertisements.
4. To study economic impact of exaggerated advertisement.

Methodology

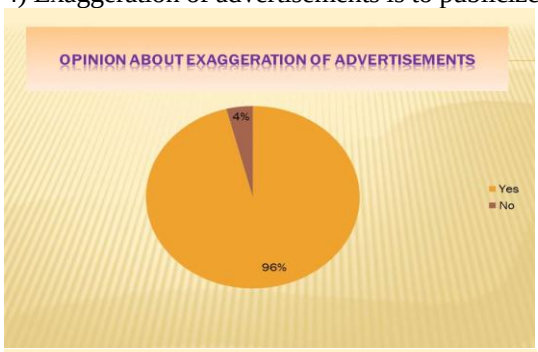
Both primary and secondary data source are used for the present study. A structured questionnaire is used to collect the responses from 100 customers on random basis in Latur city.

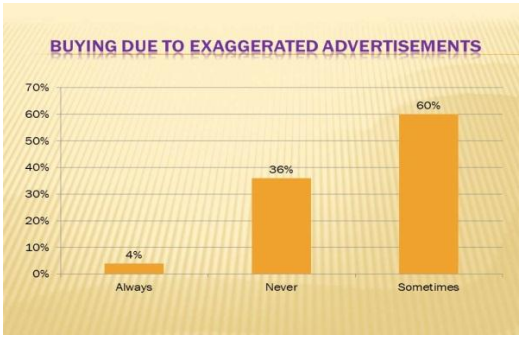
Primary Data: Data collected from 100 respondents with the help of structured questionnaire and observation.

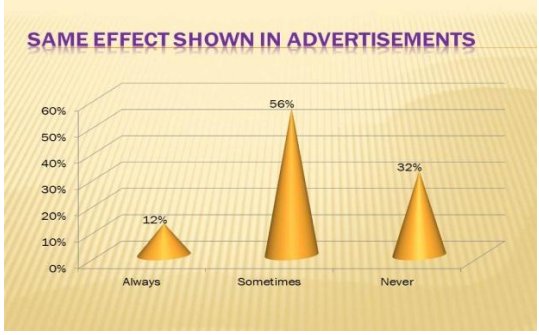
For accomplishing above mentioned objectives secondary data was collected. The necessary secondary data was collected through journals, magazines, Research paper, Internet and various published books.

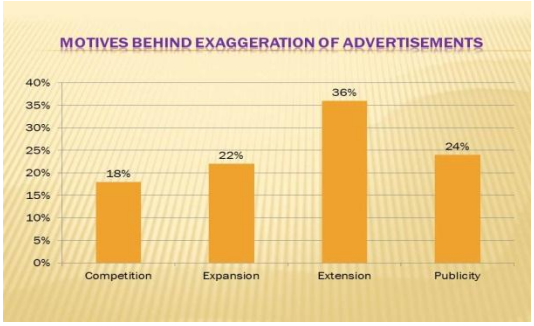
Hypothesis

1) Mostly advertisements are exaggerated.
2) Exaggeration of advertisements affects the goodwill of the business.
3) Only a few products seldom show same effect as per the advertisement.
4) Exaggeration of advertisements is to publicize the product.









The Study

There are innumerable instances where the exaggeration is actually way of target. Let's sample some ads that push the limits of acceptable exaggerations.

1) **Expressions (Greeting Card Brand):** This advertisement is for greeting card brand expressions. The man-of- the house is absent, and the rest of the family is missing him sorely. . So elderly parents, wife and assorted family members sit mournfully for a group photograph. Doorbell rings and postman delivers an Expressions greeting card from hubby dear. Needless to say, the entire family is suitably ecstatic, smiles get switched on and everyone poses cheerfully before the camera. Honestly, can one card so comprehensively compensate for a near one's absence?

2) **Close-up Curve**: - This advertisement is for toothbrush brand close-up curve. A young boy in a supermarket keeps running his hands surreptitiously over the toothbrush whenever there are girls in his near vicinity. The effect on the girls is quite 'electrifying', and has them squirming in surprise (yes, the guy even manages getting one girl's dress strap off her shoulder by ripping open the toothbrush pack!). The pay-off: 'Haathon mein yeh kamal to mooh mein?' Oh, please! There is nothing remotely inspiring about putting a toothbrush into the mouth

3) **L'Oreal India Private Ltd**: In this advertisement, celebrity Alia Bhatt is seen endorsing 'New Garnier Light Serum Complete Cream' wherein two of her friends in this advertisement have dark spots and dark skin and Alia Bhatt promises them that if they will use this Garnier serum cream, it will vanish in one week's time. Next in the advertisement we see Alia and her friends in all glamour and fair skin at a premiere. The advertisement's claim, "With new Garnier Light Complete...get three tones lighter skin sirf ekweek mein", was not substantiated, and is misleading by exaggeration.

4) **Sargam Tea**: This advertisement is for Sargam Tea Father is not prepared to send his young daughter to medical college in a faraway city. Daughter is disappointed, but trust the bhabi to offer father-in-law a nice cuppa. Father-in-law is mighty pleased, and bhabi gets him to send daughter to medical college. The cup that cheers stretched to impossible limits.
5) **Hindustan Unilever Limited Axe Deo**: This commercial is for Axe Deo. The frequency with which women fall on men in Axe advertisement is just insane.
6) **McDonald's** - Veg Maharaja Mac: The advertisement about McDonald's Burger which is big in size. The Maharaja Mac burger contains corn, chesses, double patty, cocktail sauce, jalapenos, and shredded onion lettuce between sesame buns. The advertisement claims that the burger big in sizes which take extra time to eat and got socialized but in actual it not so big and normal in size then appears in advertisement, vaguely showing in advertisement.
7) **Red Bull Energy Drink**: The advertisement about Red Bull Energy drink. People were stuck in traffic jam and trying to get rid from this traffic jam. A person took out the red bull from his car and drunk and flew into the sky to get rid from traffic jam. But he found traffic jam in sky too because it's not secrete anymore. The advertisement claims that Red Bull gives you so much energy that you got a wing and able to fly, which is superlatives, or exaggerations, vaguely and generally, stating no specific facts.
8**) Clinic plus Shampoo (Hindustan Unilever):** This advertisement is for clinic plus strong and long shampoo that it makes the hair strong and the hair will grow 3 cms longer in 3 months. How at all it is possible? It was found that the claim was exaggerated as it does not increase or stimulate hair growth from the root.

Advertisements	Puffery
Expressions (Greeting Card Brand)	One card so comprehensively compensate for a near one's absence?
Close-up Curve	'excitement in a toothbrush'
L'Oreal India Private Ltd	Not substantiated, and is misleading by exaggeration.
Sargam Tea	The cup that cheers stretched to impossible limits
Axe Deo	Irresistible
McDonald's - Veg Maharaja Mac	Size of Burger
Red Bull Energy Drink	Gives you wings
Clinic plus Shampoo	It does not increase or stimulate hair growth from the root.

The Impact Of Exaggerated/ Puffery Advertisement On Customers/ Audience
Following is the impact of Puffery advertisements on Audience:-
1) Puffery has generally been viewed as a form of poetic license or allowable exaggeration by the Audiences.
2) Consumers expect exaggeration or inflated claims in advertising; they recognize puffery and don't believe it and do not pay much heed to it.
3) Consumers may believe puffery and perceive such claims to be true.
4) Consumers may at times could not distinguish between a verifiable fact-based claim and puffery and tend to believe in both types of claims.
5) Puffery may lead to dissatisfaction to the Audience/consumer after using the product as it does not performed as per their expectations.
6) Exaggerated advertisements also lead to financial, psychological, monetary, social and physical loss to the Audience/ customers.
7) Customers question the accuracy and truthfulness of exaggerated advertisements.
8) In case if the customers loose the confidence in the company, their brand and their products they may file a case against such Advertisement.
9) Customers might spread negative publicity and negative word of mouth for the company as well as its products.

Findings
1) Maximum advertisements are getting exaggerated.
2) Very few products deliver exactly the similar effect as shown in advertisement.
3) The exaggeration of advertisement damages the goodwill of business.
4) The main reason behind the exaggeration of advertisement is to capture the huge market.

5) Exaggerated advertisements always misleads the consumers

Suggestions:

1) Marketers should avoid showing / telecasting exaggerated advertisements.

2) Instead of exaggerated advertisements company should focus on quality improvement.

3)Companies should attempt to achieve maximum customer satisfaction rather than exaggeration of advertisements.

4) Company should avoid deceive its prominent customers by exaggerated advertisements.

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Indian Legislative Measures To Biodiversity Conservation

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Abstract

The Earth's biological resources are vital to humanity's economic and social development and forms the basis of our sustainability. The developed countries, not rich in biogenetic resources but better equipped in research and development, makes use of the resources accessed from the developing countries and ensure top positions in development indices. Technological development paved way for the loss of biodiversity of our country during 21st century. Increased human intervention and exploitation resulted in environmental degradation. An increase in housing and infrastructure culminated in the clearing, deforestation and destruction of large pastures of forests land, which in turn had ill effects on agriculture. Legislations and policies for biodiversity conservation have been in existence even before we attained Independence, mainly in the form of forest legislations. A recent addition to the plethora of legal frameworks is the Intellectual Property laws ensuring environmental protection. The British enacted the Indian Forest Act of 1927, the main aim of which was to give the state the authority to commercially exploit the forests of the country. In 1950 India became Independent and the supreme law of the land, Indian Constitution, came into force on 26th January 1950 with no express provisions for the protection of biological diversity. And also, the Parliament enacted the Biological Diversity Act, 2002 for the purpose of preserving our biodiversity and ecosystem and is applicable to the whole of India. In India, despite these many legislations and frameworks being in place, their effective enforcement and biodiversity conservation is stillin its infancy.

Key Words: *Biological Diversity Conservation, Policies, legislations.*

Introduction

Biodiversity allude to the variety and variability of life among living organisms from all sources, which includes territorial, marine, aquatic ecosystems and ecological complexes. The Earth's biological resources are vital to humanity's economic and social development and forms the basis of our sustainability. The developed countries, not rich in biogenetic resources but better equipped in research and development, makes use of the resources accessed from the developing countries and ensure top positions in development indices. The fact that there are more than 20,000 species of ants, 3,00,000 species of beetles, 28,000 species of fishes and nearly 20,000 species of orchids[3] is hard to comprehend for most and the significance of the same is yet to be pondered in detail. It is crucial we recognise biological diversity as a global asset of tremendous value, both to present and future generations to equip ourselves for a better tomorrow. India which occupies 2.45% of the world's land area, has 16.8% of the world's population and contribute to 1.6% of the world's GDP is also one of the twelve mega diversity centres of the world. India boasts diverse types of climate, religion, geographical indications, culture and topography and holds the 10th position among the plant rich countries of the world. India also occupies 6th position in the rich biological diversity of flora and fauna overall in the world. Biodiversity promises and preserves a clean environment, i.e., fresh air, pure water and productive land. It stands for good forestry; fauna and flora and agriculture which depends on rich water. The economic and social strain created due to the loss of biodiversity is grave and the stark reality that Human beings would undoubtedly starve if not for plants, microorganisms and animals, the primary sources of our food, brings to light the immediate need for protecting the environment. Introducing strict, stringent legislations for the use of these species in a proper, non-intrusive manner and prohibition of exploitation will go a larger way as a first meaningful step towards biodiversity conservation. The government should also take measures to ensure that the enforcement of laws so introduced and those already in place, with respect to Biodiversity conservation, is also given importance. Amending the existing laws to introduce enhanced penalties and punishments, and conducting awareness classes at all levels are mandatory steps. Preservation of the flora and fauna in natural parks and sanctuaries have proved to be beneficial to preserve the biodiversity and more actions on that front is necessary. Mining, hunting and fishing activities have to be prohibited and penalised in areas where it is necessary and regulated in others.

Biodiversity Conservation In India

Legislations and policies for biodiversity conservation have been in existence even before we attained Independence, mainly in the form of forest legislations. Indian Constitution and Biodiversity Conservation

In 1950 India became Independent and the supreme law of the land, Indian Constitution, came into force on 26th January 1950 with no express provisions for the protection of biological diversity. This

shortcoming was rectified by means of Constitutional Amendments and Judicial Activism, to the extent that the Apex Court of the Country has recognised that a clean, pollution free environment and water are fundamental rights per se. The landmark Constitutional Amendment, 42nd Constitutional (Amendment) Act, 1976, added provisions for the protection of environment, forests, wild life and conservation of biodiversity. Article. 21 of the Indian Constitution says right to life includes right to live in a clean environment. It is obligatory on the part of the State to safeguard the interest of community by shielding ownership &control of material resources. The main provisions incorporated in our Constitution by the Amendment are Part IV- Directive Principles of the State Policy, Part IV-A Fundamental Duties and the List III (The Concurrent List) of the Seventh Schedule of the Constitution. Article 48(A) establishes that it is the duty of the state to protect and preserve the environment as well as biodiversity and to safeguard the forests and wild life of the country. The state is empowered to legislate to protect the same. It is the fundamental duty of every citizen in India, to protect and improve the natural environment including forests, lakes, rivers and wild life, and to have compassion for living creatures. The Concurrent list contains provisions for preserving biological diversity in Item no. 17 which deals with prevention of cruelty to animals, Item no. 17A - Forests, Item no. 17B Protection of wild animals and birds.

The modern era saw newer legislations introduced having undertones of environmental protection. The Patent Act which came into force in 1970 envisaged the protection of patent rights while conserving and protecting biological diversity. Section 25 provides the grounds of opposition to patents and s 25(1)(j) states that a patent could be opposed on the ground that complete specification does not disclose or wrongly mentions the source or geographical origin of the biological material used for the invention. The authority protects traditional knowledge by providing that an invention may also be opposed when the invention so far as claimed in any claim of the complete specification is anticipated having regard to the knowledge, oral or otherwise, available within any local or indigenous community in India or elsewhere.

Conclusion

In this redbrick scenario, the conservation of biodiversity is cardinal and requires urgent, prompt action. There have been many steps in the International area pressurising and emphasizing on the conservation of biodiversity, like Conventions (CBD), Protocols (like Cartagena protocol & Nagoya Protocol) etc., and the principles emerged under these initiatives have been adopted by many nation states. In India, despite these many legislations and frameworks being in place, their effective enforcement and biodiversity conservation is still in its infancy. The Biological Diversity Act prevents profit-sharing from the commercial use of the biological resources but fails to give more emphasis to conservation. Adequate measures should be adopted to ensurethat conservation is does not remain a fancy idea in the objectives of the Act but is successfully implemented. Our action plans should be based on the truth that conservation of biodiversity is the only way to preserve life on Earth.

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11. Article. 246, Seventh Schedule- concurrent list item no: 17, 17A, 17B https://www.mea .gov.in/Images/ pdf 1/S7.pdf
12. Section.25. Opposition to the patent.—(1) Where an application for a patent has been published but a patent has not been granted, any person may, in writing, represent by way of opposition to the Controller against the grant
13. Biological diversity' as defined under the Biological Diversity Act 2002 means the variability among living organisms from all sources and the ecological complexes of which they are part, and includes diversity within species or between species and of eco-systems.

Mycofloral Diversity In Soils Of *Cajanus Cajan* (Pigeon Pea) From Ghospuri, Ahmednagar (Maharashtra)

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Abstract

The study of Mycoflora of Cajanus cajan (Pigeon Pea) from two localities of Ghospuri area (Maharashtra) showed that rhizospheric soil was rich in mycoflora due to various exudates and leachates by the roots in the soil compared to the non-rhizosperic soils. A total of 42 fungal species with 33 uncommon and 8 common species were identified. The most common genera were Aspergillus, Fusarium, Penicillium and Trichoderma. The sorensen index showed 36 to 41% similarity index between the two soil types. They help in decomposition of organic matter in soil and help in the growth of the plants.

Introduction:

The Pigeon pea (*Cajanus cajan* L. Millisp.) is an important pulse crop of India commonly known as tur or Arhar or Red gram. It is one of the Kharif crops grown in various states of India. India ranks highest in area of production of Red gram (Pigeon pea- Technical Note-2016-17). Maharashtra state is the highest producer of Pigeon pea (30% of total national productivity). The sowing season of the crop is between June -July every year. The harvesting starts after 120 days upto 190 days of sowing depending on the normal maturity time of different cultivars. The soil includes two different types of regions- rhizosphere (RS) (near the root region) and the non- rhizosphere (NRS) (away from the roots).The rhizospheric fungi are in close association with the plants and their inter relationship with the plants is one of the essential requisite for the well being of the plant. Characterization of the soil mycoflora will help an agriculturist to improve various agricultural techniques (Ravi Nayak Patlavath et.al. 2019). The present study area is fields of *Cajanus cajan* in Ghospuri village of Ahmednagar district (Maharashtra). The village is situated in Nagar tehsil of Ahmednagar district. (Gazette of Ahmednagar district). It is situated 23 kms away from the sub district headquarter nagar taluka and 18 kms away from the district headquarters, Ahmednagar. The total geopgraphical area of the village is 2990 hectares. The commonly cultivated crops in the region are oil seeds like groundnut, Castor, Linseed, Soybean Safflower, sunflower, niger etc., pulse crops like pigeon pea, gram, horse gram, Moth bean, Mung bean etc. and Millets like Jowar, bajra, maize & cereal crops like wheat. In the present investigation, *Cajanus* fields of two different locations from Ghospuri were selected for study.The localities showed variation in soil type and topography. The first selected location of *Cajanus* fields was a hilly regions in Ghospuri called Tembi and second location was near Ahmednagar - Manmad railway line called Mohol. The rhizosphere and the non rhizosphere soil were collected and studied in view to isolate, enumerate and identify the soil fungi associated with the plant roots and the comparison between two fields and their soil types.

Material & Methods:

Collection of Soil samples : Rhizosphere and the non rhizosphere samples of Cajanus cajan (Pigeon pea) were collected randomly from 5 different locations of Tembi & Mohol of Ghospuri area during the month of October 2020 because by this time, the growth of the plant had reached the flowering stage and the soil is dry enough to collect the samples.The rhizospheric soil samples were collected from near the roots, (3-4 inches deep). The non- rhizosphere soil was collected from the nearby locality, away from the influence of the roots.

Study of pH: The pH pf the soil samples was studied using the pH paper and pH indicator.

Preparation of Soil suspension: The collected soil samples were dried and mixed. 1% of streptomycin/ Penicillin was added in the soil sample to avoid bacterial contamination. I0 gm of soil sample was dissolved in 100 ml Distilled water and was used for preparing the soil suspension . Using the dilution plate method (Waksman, 1916), serial dilutions of 10^{-1} (one ml previous suspension in 9 ml D.W.), 10^{-2}, 10^{-3} were prepared for inoculation on the medium.

Preparation of medium: The common medium like Potato Dextrose Agar (PDA), Malt Extract Agar (MA), Czapek's Dox Agar (CzA) were prepared with pH 4 and 5. The soil suspension was inoculated on the plates by the pour plate method.

Incubation : The plates were incubated at room temperature (30-35oC) for 4-7 days.

Identification: The identification of fungal flora on the plates was done on the basis of macroscopic and microscopic observations.

a. Colony characters
b. Colony colour

c. Morphological characters.
d. Microscopic observation of the mycelium.
e. Sporulation pattern.

For microscopic observations, the mycelium was transferred on the glass slide, stained with cotton blue and mounted in lactophenol. The micro photographs where taken with the help of digital camera . The fungal species were identified and listed using the handbook of soil fungi (Nagmani et. el 2006).

Comparative studies: The comparison between the rhizospheric and non-rhizospheric soils was done through microscopic identification of fungi, spore count in RS and NRS and using sorensen index of similarity.

$$IS = \frac{2C}{A+B} \times 100$$

Where A= number of fungi in rhizosphere soil.
B= number of fungi in non-rhizospheric soil.
C= Common fungi in rhizosphere and non-rhizosphere soil.

The study of colonies was done using the following Method : the number of colonies appearing on dilution plates are counted, averaged and multiplied by the dilution factor to determine the number of colony forming units (CFU/G or mm) of the sample.

$$Number\ of\ Colony\ forming\ units\ per\ gm\ of\ soil = \frac{Number\ of\ colonies\ (average\ of\ replicates\ \times dilution\ factor}{Dry\ weight\ of\ soil}$$

Results And Discussion

1. The present investigation dealt with comparative study of the rhizospheric and non-rhizospheric soil samples collected from two different localities of *Cajanus cajan* of Ghospuri village of Ahmednagar District.
2. The pH of soil from Tembi locality was 5 while from Mohol locality was 5.5 . The soils were found to be acidic.
3. A Total of 42 different fungi were recorded from rhizosphere and non-rhizosphere soils of both the localities (Table-I). Most of the identified fungi were belonging to class- Deuteromycotina and few were from class- Ascomycotina. The number of common and uncommon species of soil fungi were recorded in both the localities.
4. The most common fungi recorded from rhizosphere and Non rhizosphere soil of Tembhi were *Alternaria alternata, Aspergillus niger, Cunnimghamella vericillata, Curvularia lunata, Emericella, Humicola grisea, Pacilomyces variotii* and *Rhizopus stolonifer*. Five species of *Aspergillus*, Two species of *Cladosporium and Fusarium*, Three species of *Penicillium* along with one species of each *Trichoderma, Phoma, Sordaria, Torula nd Verticillium* were recorded from Rhizosphere soil of *Cajanus cajan* from Tembhi. Three uncommon species were recorded in Non-rhizosphere soil which included *Fusarium moniliformae*, *Penicillium commune* and *Cleocladium* species.The majority of the fungi present in rhizosphere were soil decomposers like *Aspergillus, Fusarium Cladosporium* etc. Similar results in rhizosphere soils of *Cajanus cajan* were recorded by Patlavath *et.al.* 2019 from Gujarat state.

1. Total number of 33 species of soil fungi were recorded in the rhizosphere of *Cajanus cajan crop field of Mohol locality.* Out of 33 species, 8 species were common in both rhizosphere and non rhizosphere soil and remaining were uncommon fungi . The common fungi included *Alternaria alternata, Aspergillus niger, Curvularia lunata, Fusarium oxysporum, Humicola grisea, Pacilomyces variotii, Rhizopus stolonifer and Sordaria fumicola.* Uncommon fungi included 6 species of *Aspergillus*, 2 species of *Cladosporium, 3 species of Penicillim*, 2 species of *Cladosporium* & *Trhichoderma* and 1 species of each *Colletotrichum, Emericella, Colletotrichum, Fusarium, Gilmaniella, Helminthosporium, Neocosmospora, Phoma, Sclerotium* and *Verticillium species* . The non rhizosphere soil recorded the species of *Cunninghamiella, Pythium* and *Torula* .

2. The more number of Soil fungi in rhizosphere soil of *Cajanus cajan* from Mohol Locality indicates hizospheric soil was rich in fungi due to various exudates and leachates by the roots in the soil compared to the non-rhizosperic soils. It also helps in decomposition of organic matter much faster than the non rhizospheric soils. In our investigation more number species of *Penicillium, Rhizopus and Trichoderma* were recorded in rhizosphere soils of both the localities Similar results were obtained by Jalender V a&

Gachande B. D (2011) and Patlavath *et.al* (2019) while working on comparative studies on rhizosphere and nonrhizosphere soils of *Cajanus cajan*.

3. The sorensen index of similarity showed that Mohol locality had 36% similarity while the Tembi locality had 41% similarity of species between two types of soils.

Table : I Fungal Colony Units / gm of soil

Sr. No	Name of the Fungi	Tembhi		Mohol	
		RS	NRS	RS	NRS
1.	*Alternaria alternata*	2×10^2	1×10^3	3×10^2	1×10^2
2.	*Alternaria humicola*	---	----	1×10^3	----
3.	*Aspergillus avamori*	---	----	2×10^2	-----
4.	*Aspergillus flavipus*	2×10^2	------	4×10^2	2×10^2
5.	*Aspergillus flavus*	3×10^3	1×10^3	3×10^2	-----
6.	*Aspergillus fumigatus*	---	----	3×10^2	-----
7.	*Aspergillus niger*	3×10^2	1.8×10^2	4×10^2	4×10^2
8.	*Aspergillus ochraceous*	2×10^2	---	----	----
9.	*Aspergillus oryzae*	9×10^2	5×10^2	2×10^2	4×10^2
10.	*Aspergillus wentii*	4×10^2	------	----	-------
11.	*Cladosporium herbarum*	6×10^2	------	1×10^2	2×10^3
12.	*Cladosporium oxysporum*	1×10^2	1×10^2	2×10^2	1×10^2
13.	*Colletotrichum dematium*	2×10^3	-------	1×10^3	------
14.	*Cunnighamella verticillata*	1×10^4	1×10^2	------	2×10^2
15.	*Curvularia lunata*	2×10^2	6×10^2	4×10^2	2×10^2
16.	*Emericella*	7×10^2	2×10^4	3×10^2	------
17.	*Eurotium*	$1X\ 10^2$	1×10^2	1×10^2	1×10^2
18.	*Fusarium oxysporum*	6×10^2	3×10^2	4×10^2	4×10^2
19.	*Fusarium moniliformae*	---	1×10^2	1×10^2	---
20.	*Fusarium rosae*	2×10^2	------	-----	-----
21.	*Fusarium solani*		----		-----
22.	*Gilmaniella humicola*	6×10^2	-----	3×10^2	1×10^2
23.	*Gleocladium species*	---	2×10^3	----	----
24.	*Helminthosporium nodulosum*	----	-------	3×10^2	-----
25.	*Humicola grisea*	2×10^2	1×10^4	1×10^2	1×10^2
26.	*Neocosmospora vasinfecta*	-----	-------	2×10^2	------
27.	*Pacilomyces variotii*	4×10^2	2×10^2	1×10^2	1×10^4
28.	*Penicillium chrysogenum*	2×10^2	1×10^3	3×10^2	4×10^2
29.	*Penicillium cummune*	-----	1×10^2	-----	----
30.	*Penicillium degetatum*		---	---	---
31.	*Penicillium glabrum*	---	---	2×10^3	---
32.	*Penicillium etalicum*	----	----		---

33.	*Penicillium notatum*	1×10^3	-------	1×10^2	------
34.	*Phoma glomerata*	1×10^2	--------	1×10^2	------
35.	*Pythiun debaryanum*	---	----	---	1×10^2
36.	*Rhizopus stolonifer*	$5x\ 10^2$	$2x\ 10^2$	2×10^2	$4\ x10^2$
37.	*Sclerotium rolfsii*	-----	-------	$3\ x10^2$	------
38.	*Sordaria fumicola*	3×10^3	2×10^2	2×10^2	1×10^2
39.	*Torula caligans*	1×10^2	-----	-----	$3\ x10^2$
40.	*Trichoderma koninjii*	--	---		-----
41.	*Trichoderma viridae*	4×10^2	1×10^2	$2\ x10^2$	1×10^2
42.	*Verticillium Species*	1×10^4	1×10^2	$1\ x10^2$	1×10^2

4. The root exudates and root leachates help to enrich the soil mycoflora.
5. More diverse occurrence of fungal species indicate rich composition of soil inhibitors that help in better decomposition of organic matter and help in plant growth.
6. The study will help researchers to carry out further investigations regarding relationship between soil environment and plant growth.

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Nutritional and Nutraceutical significance of finger millet (*Eleusine coracana* L.Gaertn): A Review.

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Abstract

Finger millet (Eleusine coracanaL. Gaertn),one of the minor and oldest cereal grains in the Indian sub-continent. It is important staple food in India for people of low income group because of its ability to survive in less fertile soil,resistance to pest and diseases, drought resistance and require short growing season where other crops gives poor yield. Nutritionally it is rich in calcium, dietary fiber, phytates, proteins, minerals and phenolics. Other cereal crops provide food security but crop like Finger millet provide nutritional security. These nutritional properties are also associated with some health benefits as it hasanti-diabetic, anti-tumerogenic, atherosclerogenic effects, antioxidant and antimicrobial properties.It is specially recommended as wholesome food for diabetic patients and regular consumption of finger millet is known to reduce the risk of diabetes mellitus and gastrointestinal tract disorders because of its high fiber content. It is also well documented that Phenolic constituents in finger millet were found to inhibit cataract effectively due to its strong inhibitory effects on aldose reductaseactivity. Finger millet crop has good nutraceutical and pharmaceutical values but still this crop is not well explore as compared to other cereals such as rice, wheat, maize, etc. This review deals with nutritional and nutraceutical importance of Finger millet so that it helps the population of new era to make it a novel crop for future generation.

Keywords: *Finger millet, Nutritional values and Nutraceuticalsignificance*

Introduction:

Finger millet (*Eleusinecoracana* L. Gaertn), is commonly known as ragi and mandua (India), kaddo (Nepal), koracan (France), dagussa, tokuso, barankiya (Ethopia), bulo (Uganda), finger millet, African millet, koracan (England), wimbi, mugimbi (Kenya), njera, mazhovole (Zimbabwe), kambale, lupoko, mawale,amale, bule (Zambia) (Pragya Singh & Rita S. R. 2012), mwimbi, mbege (Tanzania) and kurakkan (Sri Lanka) (Amos Ouma Onyango 2016). It is one of the minor cereals belong to family Poaceaeof the class monocotyledonae. This cereal is native of Ethiopia (Shiihii S.U. et. Al. 2011) but also grown widely in various regions of Africa and India where it consume as a staple food by a large segment of population with the people of low income group. In India it is grown in the states of Karnataka, Tamil Nadu, Andra Pradesh, Maharashtra and parts of North India including tarai regions of Himalaya (Vijayakumari j. mushtari B.J.,2003). In India Karnataka is the leading producer of finger millet accounting to 58% of its global production, finger millet ranks fourth in worldamong other millets after sorghum, pearl millet and foxtail milletin importance (UpadhyayaH.D. et.al.2007). The seeds of finger millet are with a seed coat of light brown to brick red colored consumed in the form of flour and the whole meal is utilized in the preparation of traditional foods such as porridge,dumpling, puddings, pancakes, biscuits, bread and other snacks (P.B.Devi et.al.2014, J.H. Hulseet.al.1980), roti (Indian bread), papad, fermented product such as idli, dosa, noodles and vermicelli, malted energy drink and ragi soup (Amir Gull et.al. 2014). The seed coat or testa of finger millet grain is generally rich in dietary fiber, polyphenols and other micronutrients compared to other cereals such as wheat, rice, maize and barley (Viswanath, V.A. et.al.2009).Some finding revels that Finger millet is nutritionally superior3-5 times to the widely promoted rice and wheat in terms of proteins, minerals and vitamins(Bhohale, R.S. 2013). Finger millet is considered as a hardy crop because it is good adapted to wide range of environment in tropical and semiarid regions of the world due to their greater resistance to diseases and pest, drought tolerant, resistance to water logging and also withstand in saline soils hence this crop is easy to grow in different habitats and under stressful condition without reducing net productivity (Dinesh Chandra, et.al 2016).As finger millet has such characteristics making it more adaptable in diversified environmental conditions various developing countries of like China, India and some parts of Africa finds interest in growing this crop for its utilization as a staple food . Many of the recent research shows its nutritional potential due to presence of some major as well as minor nutrients which are helpful for maintenance of good health. Due to these reasons some develop countries also give attention in cultivation of finger millets for production of value added products and also in terms of production of bioethanol and biofilms (Li J. et.al. 2008). Though finger millet is a gluten-free grain with low glycemic index and with a good nutritional and nutraceutical advantages, it is still neglected and underutilized crop (Amadou, Mahamadou, & Le, 2013;Jideani &Jideani, 2011).This review describes the nutritional composition of finger millets and also explore its nutraceutical and

pharmaceutical importance with the aim to get more attention of researchers in this field to make this crop more utilizable for the benefits of society in terms of health and nutrition.

Nutritional composition of Finger millet

Finger millet is considered as one of the most nutritious cereals. Among all other millets such as pearl millet (*Pennisetumglaucm*(L.) R.Br.), foxtail millet (*Setaria italic* (L.) P. Beauvois), proso millet (*Panicummiliaceum L.*), and kodo millet (*Paspalumscrobiculatum* L.). Finger millet contains higher dietary fiber due to presence of five layered testa which makes it unique than other millets (FAO 1995). It contains high dietary fiber (15-20%), Protein (5-8%), Carbohydrates (65-75%), Calcium (0.38%), Phytates (0.48%), Tannins (0.61%), Phenolic compounds (0.3-3%)(P.B.Devi et.al.2014), other extractives (1-2%) and has low fat content (1.3%). Finger millet has the highest amount of calcium (344-398mg) and potassium (408-490mg) per 100 gram of this cereal and also contains several essential amino acids such as Valines, Isoleucine, Threonine, Tryptophan and Metheonine (Vaishnavi N. et al. 2018, Ramasia S. E. et.al. (2019)).

Table No. 1: Proximate Nutrient composition in different millets

Nutrients	Millet types					
	Pearl millet	Foxtail millet	Kodo millet	Proso millet	Finger millet	References
Carbohydrate (g/100gm)	67-67.7	60.2-75.2	65.9-66.6	70.4-72.85	75.0-83.3	Singh E et.al (2016)
Protein(g/100gm)	11.6-11.8	11.50-12.3	8.9-9.8	11.02-12.5	7.2-7.7	S.Shobana (2013), Kamara et.al.(2009)
Fat/Lipid g/100gm	4.86-5.4	2.38-4.3	1.3-1.7	4.22-4.9	1.8-1.9	Amadouet.a.(2013), S. Shobana (2013), USD (2013)
Dietary fiber (g/100gm)	11.3-11.5	2.5-8.5	2.47-6.4	8.50	15-22.0	S. Shobana (2013), Devi et.al. (2014), RamasiaS. E. et.al. (2018)
Moisture (%)	12.4	11.2	12.8	8.67	7.15-13.1	Ramasia S. E. et.al. (2018)
Ash (%)	2.0	3.0	3.6	3.6	3.0	Jubete L.A. (2009), S. Shobana (2013), Devi et.al. (2014),
Energy (Kcal)	363	351	353	354	336	Singh E. et al. (2016)
Total Phenol (mg/100gm)	51.4	106	368	0.10	102	Devi et.al. (2014)
Minerals (mg/100gm)	2.2-2.3	0.47-4.0	2.6-2.8	1.9	2.7	S. Shobana (2013), Singh E. et al. (2016)

Table No. 2: Mineral composition in different millets

Minerals (mg/100gm)	Millet types					
	Pearl millet	Foxtail millet	Kodo millet	Proso millet	Finger millet	References
calcium	42	31	27-35	8-14	344	S. Shobana (2013), Singh E. et al. (2016), Dinesh Chandra et.al. (2016), Ramasia S. E. et.al. (2019), Jubete L.A. (2009)
Phosphorous	296	290	188	206	283	
Potassium	307-390	250-364	141-144	195	408	
Sodium	10.9	4.6	4.6	5.0	11.0	
Iron	8-11	2.8	1.7-2.34	0.8-2.9	3.9-4.62	
Manganese	1.15	1.16	1.10	1.6	5.49	
Copper	1.06	0.59	1.60	0.8	0.47	
Zink	3.1	3.51	0.7	1.7	2.3	

Nutraceuticalsignificance of finger millet

Finger millet is a very good source ofdietary fiber, micronutrients andpolyphenols. The lower fat contents couldbe one of the contributing factors for theextremely good shelf life of Finger millet. Nutritionally its importance is well recognized because of its high content of calcium, dietary fiber and phenolic compounds. Finger millet grain is also recognized for its health beneficial effects, such as anti-

diabetic, antitumerogenic, atherosclerogenic effects, and antioxidant and antimicrobial properties (Viswanath V, Urooj A, Malleshi NG (2009).

1. Dietary fibers as a nutraceutical

Helps in reducing cholesterol

High fiber content of finger millet checks constipation, high blood cholesterol formation & intestinal cancer (Usha 2004, S. Shobana et. al. 2009). Finger millet has a low glycemic index and shows improved plasma profile as it reduces Plasma Cholesterol, total Serum Cholesterol and LDL Cholesterol by 9% each and also reduces triglycerides by 15% with the significant increase in the level of HDL Cholesterol (Enas et. al. 2003).

Helps in systemic absorption of glucose

The high dietary fiber infinger millet controls the postprandial blood glucose surge as it is responsible for formation of unabsorbable complexes with available carbohydrates which affect carbohydrate digestibility and result in the delay of the systemic absorption of glucose (Devi et al. 2014; Lafiandra et al. 2014).

Helps in weight management

The high fiber content in finger millet helps to keeps the stomach full for a longer minimized appetite and results in weight loss and also lowers blood sugar levels by activating insulin.(Vaishnavi Devi. N ,R.Sinthiya 2018).

Polyphenols as a nutraceutical

The main polyphenols present in Finger millets arephenolic acids and tannins. Polyphenols are mainly present in the outer layers of the seedsuch asaleurone layer, testa, and pericarp.Earlier they are considered as anti-nutritional components because they reduce the digestibility of nutrients and the absorption of minerals. But recent studies have shown that various processing methods such as soaking, malting, decortication,steaming and fermentation, can improve the bio-availability of these nutrients (Sood et al., 2017; Krishnan et al., 2012; Dharmaraj and Malleshi, 2011, Platel et al., 2010).

Helps in the management of type 2 diabetes

Finger millet contains about 0.3-3% of polyphenols and known for inhibiting the activity of digestive enzymes such as amylase, pepsin, trypsin and lipase (Rohn et al. 2002) therefore helps in the management of type 2 diabetes which is characterized by high blood glucose levels (Saito et al. 1998, Toeller 1994).

Helps in inhibition of the growth of pathogenic bacteria

Polyphenols and flavonoids in the finger millet shows inhibition of the growth of pathogenic bacteria such as Escherichia coli, Bacillus cereus, Listeria monocytogenes, Streptococcus pyogenes, Staphylococcus aureus,Serratiamarcescens, Pseudomonas aeruginosa, Proteus mirabilis, Klebsiella pneumonia and Yersinia enterocolitica revealing its potential nutraceutical properties (Banerjee S. et. al. 2012).

Helps in inhibition of cataract

Finger millet polyphenolsshowsAldose Reductase inhibiting activity and shows antidiabetic and antioxidant potential. Phenolic constituent such as gallic, protocatechuic, p- hydroxybenzoic, p-coumaric, vanillic, syringic, ferulic, trans-cinnamic acids, and the quercetin found in finger millet polyphenols efficiently helps in inhibition of cataract eye lens (Chethan et al. 2008).

Help as an antimicrobial agent

Seed coat extract of finger shows high antibacterial and antifungal activity when compared to whole flour extract and this is due to high polyphenols content present in the seed coat (Viswanath et al., 2009; Xu et al., 2011).

Help as an inflammatory agent

Anubhuti S. et.al. (2018) worked on 35 finger millet genotypes and observed that in most of the finger millet genotypes among various phenolicsgallic acid is observed higher in quantity which shows inflammatory action if consumed in high amount .Hence it is advisable as a part of daily diet for the person suffering from joint pains or inflammation of the body.

Helps as an antiaging agent

Finger millets are rich in antioxidants along with polyphenolssuch asphytates, phenols and tannins which can contribute to antioxidant activity important in health, aging, and metabolic syndrome (Hegde et.al. 2002).

3) Minerals as a Nutraceuticals

Finger millet has the highest amount of calcium and plays an important role in growing children, pregnant women, the elderly persons and people suffering malnutrition ((Jideani, 2012,Jayasinghe et al., 2013; Manjula et al., 2015). Finger millet also has good amount of magnesium content as compared to other millets (table no. 2) and the consumption of this grain helps to reduce the severity of asthma , occurrence of migraine attacks, reduction of high blood pressure and the risk of heart attack (Saleh et al. 2013 ,

Dubey and Verma 2009). Another mineral Phosphorus helps in the development of body tissue and energy metabolism (Vanithasri et al., 2012; Ramashia et al., 2018).

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Advantages of Strength Training In Competitve Swimmimg

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Introduction

Swimming is a activity which involves floating of a human body over the water. This floating is achieved by coordinated movements of the body parts such as hands and legs. Swimming is one of the most popular recreational activities selected by humans. Swimming is also a Olympic sport and is pursued professionally by some athletes who desire to be best in it. There are 4 major styles of swimming namely Freestyle, Breast Stroke, Back Stroke and Butterfly in which the athletes compete at International Level. In a freestyle event the athlete can use any technique of swimming, in Breast stroke style the athlete must put his head inside the water, push his arms forward in front of the head and perform a frog kick with the leg, Backstroke is a technique where the athlete has to place his back on the surface of the water and use his hands for rotation and use the feet to kick against the water in order to make movement where as in Butterfly technique the athlete must stretch his arms of the body making a Y – shape and use legs to generate force to move forward. These styles must be practiced over along period of time in order to achieve the best possible result in competitive swimming championships. However practicing for longer periods of time and over training can cause decrease in performance as well decrease in the strength of the muscles involved in swimming. Hence strength training is considered as a must for a athlete who wishes to perform excellently in swimming at the highest level possible. The benefits of strength training to competitive swimmers can be read further in this paper

Building of Muscles

A body starts building muscle mass when exposed to stress in the form of weights or some kind of resistance. Strength training helps in building muscle mass which helps the swimmer to perform better at competition level than a swimmer that has not undergone strength training during his training sessions.

Injury Prevention

Swimming is an activity that involves a lot of repetitive movements which can tend to put a strain on the muscles and cause a injury. Strength training not only helps to build the muscles but to strengthen weak muscles. Stronger muscles and stronger muscles groups can help a swimmer to perform better at competition and can also help in injury prevention.

Techniques of Bio mechanics

Strength training helps to teach the proper techniques of bio mechanics to the swimmers. As swimming is a technique mastery of this technique is important for best performance in competition. This technique and mastery of bio mechanics can be learnt through a proper and planned strength training program.

Increase in Power

A trained muscle or muscle groups generates more power and is more efficient than a untrained muscle or muscle group. Hence a swimmer who undergoes a strength training program is able to perform better since the muscles have more power to help him during the competition.

Delay in Fatigue

The duration of the muscle to function under stress or under pressure increases drastically when it undergoes a strength training programme. A tired muscle or a trained muscle groups can lead to decrease in performance but a muscle that has undergone strength training works efficiently and thereby give better performance in competition.

Neurological Improvement

A swimmer with a balanced and planned strength training programme is able to send loud and clear messages to the concerned muscle groups thereby leading to effective functioning of the muscles involved in swimming which in return leads to better performance during competition. A trained body leads to a trained mind which sends positive message to the muscle groups to work continuously and tirelessly and hence the swimmer is able to push him harder even under the conditions of fatigue.

Improvement in Body Awareness.

Top swimmers tend to loose the ability of certain muscles due to large amount of time spent in the pool during the training phase. Strength training on certain areas such as the back, glutes, shoulders and lower body can increase body awareness and can lead to increase in performance.

Increased Range of Motion

Strength training helps the swimmer to have more powerful and increased range of motion. Strength training strengthens all the muscles around the concerned joints thereby helps the body to propel through the water with an increased and powerful range of motion.

Increase in Muscular Endurance

Swimming as a competitive sport requires a high level of muscular endurance for optimum performance in competition. A Strength training program involves various exercises which help improve muscular endurance. Higher resistance in the training sessions helps to develop muscular endurance which will help to improve the performance of the swimmers.

Increase in middle distance performance capacity

Two strength training sessions a week can help in increasing the middle distance capacity of the swimmers thereby helping in increasing the performance of swimmer and helping them achieve good results.

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Financial Technology

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Introduction

Financial technology (Fintech) is used to describe new tech that seeks to improve and automate the delivery and use of financial services. At its core, fintech is utilized to help companies, business owners and consumers better manage their financial operations, processes, and lives by utilizing specialized software and algorithms that are used on computers and, increasingly, so Broadly, the term "financial technology" can apply to any innovation in how people transact business, from the invention of digital money to double-entry bookkeeping. Since the internet revolution and the mobile internet/smartphone revolution, however, financial technology has grown explosively, and fintech, which originally referred to computer technology applied to the back office of banks or trading firms, now describes a broad variety of technological interventions into personal and commercial finance.

Objective of research papers

1. To study the history of Financial Technology.
2. To know the concept and meaning of financial Technology.
3. To study Innovative FinTech business models or Applications.

Data collection For this research papers to use secondary data from various websites.

Definition Fintech refers to the integration of technology into offerings by financial services companies in order to improve their use and delivery to consumers. It primarily works by unbundling offerings by such firms and creating new markets for them. Startups disrupt incumbents in the finance industry by expanding financial inclusion and using technology to cut down on operational costs. Fintech funding is on the rise but regulatory problems abound.

Financial technology (abbreviated **fintech** or **FinTech**) is the technology and innovation that aims to compete with traditional financial methods in the delivery of financial services. is an emerging industry that uses technology to improve activities in finance. The use of smartphones for mobile banking, investing, borrowing services, and crypto currency are examples of technologies aiming to make financial services more accessible to the general public. Financial technology companies consist of both startups and established financial institutions and technology companies trying to replace or enhance the usage of financial services provided by existing financial companies.1 Fintech now describes a variety of financial activities, such as money transfers, depositing a check with your smartphone, bypassing a bank branch to apply for credit, raising money for a business startup, or managing your investments, generally without the assistance of a person. New technologies, like machine learning/artificial intelligence, predictive behavioral analytics, and data-driven marketing, will take the guesswork and habit out of financial decisions. "Learning" apps will not only learn the habits of users, often hidden to themselves, but will engage users in learning games to make their automatic, unconscious spending and saving decisions better Fintech, or financial technology, is the term used to describe any technology that delivers financial services through software, such as online banking, mobile payment apps or even crypto currency. Fintech is a broad category that encompasses many different technologies, but the primary objectives are to change the way consumers and businesses access their finances and compete with traditional financial services. 2

The Short History of Fintech

Phase 1 – Beginning for the 19th : This is an era when we can first start speaking about financial globalization. It started with technologies such as the telegraph as well as railroads and steamships that allowed for the first time rapid transmission of financial information across borders. The key events on this timeline include first transatlantic cable (1866) and Fed wire in the USA (1918), the first electronic fund transfer system, which relied on now-archaic technologies such as the telegraph and Morse code. The 1950s brought us credit cards to ease the burden of carrying cash. First, Diner's Club introduced theirs in 1950, American Express Company followed with their own credit card in 1958.

Fintech Phase 2 – the 60's to mid-2000s : This period marks the shift from analog to digital and is led by traditional financial institutions. It was the launch of the first handheld calculator and the first ATM installed by Barclays bank that marked the beginning of the modern period of fintech in 1967. There were various significant trends that took shape in the early 1970s, such as the establishment of NASDAQ, the world's 1st digital stock exchange, which marked the beginning of how the financial markets operate today. In 1973, SWIFT (Society for Worldwide Interbank Financial Telecommunications) was established and is to this day the first and the most commonly used communication protocol between financial institutions facilitating the large volume of cross border payments. The 1980s saw the rise of bank

mainframe computers and the world is introduced to online banking, which flourished in 1990s with the Internet and e-commerce business models. Online banking brought about a major shift in how people perceived money & their relationship with financial institutions. By the beginning of the 21st century, banks' internal processes, interactions with outsiders and retail customers had become fully digitized. This era ends with the Global Financial Crisis in 2008.

Fintech Phase 3 – As the origins of the Global Financial Crisis that soon morphed into a general economic crisis become more widely understood, the general public developed a distrust of the traditional banking system. This and the fact that many financial professionals were out of work, led to a shift in mindset and paved a way to a new industry, Fintech 3.0. So, this era is marked by the emergence of new players alongside the already existing ones (such as banks). The release of Bit coin v0.1 in 2009 is another event that has had a major impact on the financial world and was soon followed by the boom of different crypto currencies (which, in turn, was followed by the great crypto crash in 2018).. Smartphone has also become the primary means by which people accesses the internet and use different financial services. 2011 saw the introduction of Google Wallet, followed by Apple pay in 2014.

Innovative FinTech business models or Applications

1. Alternative credit scoring: -Many self-employed people with a steady source of income do not pass conventional bank loan screenings due to strict and outdated credit scoring criteria. Credit rating FinTech companies such as Nova Credit are taking a new approach by considering alternative data points like social signals and percentile scoring amongst similar borrower groups. All these qualitative factors combined with an intelligent and self-learning algorithm can lead to better lending decisions over time.

2. Alternative insurance underwriting: - In today's world, two individuals with the same weight and height, both non-smokers and who don't drink alcohol will be given the same life insurance premium. However, one person might be an exercise freak, while the other might be a couch potato and more likely to die of diabetes. These faulty premium calculations happen because of averaging out (called normalizing in actuarial terms) as risk premiums currently don't account for factors that aren't quantifiable. As with alternative credit scoring,

3. Transaction delivery: - Data is the new oil, and managing it better can give immense insights into the needs and wants of the customer. FinTech startups in the transaction delivery space are creating free products, such as expense management apps, in order to collect customer data and then cross-pollinate that data with the rest of the group to map the potential of the customer to pay premiums, invest in real estate, buy mutual funds, etc. The business model involved in these types of FinTech companies is commission based, for example, on reselling third party financial products.

4. Peer-to-peer lending: - Peer-to-peer (P2P) lending is when an individual borrows money from other individuals. Similarly, peer-to-business (P2B) lending is when a business borrows money from one or multiple individuals. These lending models are making it easier for investors to get better returns than those offered in debt markets by giving their money to pre-approved and vetted borrowers. FinTech companies such as Funding Circle create platforms to match borrowers with lenders and usually take a fee from the borrower's repayment.

5. Small ticket loans: - Banks and other lenders typically don't want to underwrite smaller ticket loans because of the low margins and high costs involved in setting up and recovering them. FinTech companies in this slice of the market (such as Affirm) are delivering impulse buy mechanisms (buy now & pay later, or BNPL) and one-click buy buttons on e-commerce websites to enable customers to buy quickly without having to enter any form of authentication or credit card details. These loans will typically be underwritten at 0% interest so that almost anything can be purchased outright with the option to pay in installments.

6. Payment gateways: - Payment gateways are platforms that enable shoppers to pay for a product or service on a merchant's website. Today, there are countless payment methods such as debit cards, credit cards, digital wallets, and crypto currencies. Typically, banks charge enormous fees to handle transactions from all these different methods, but FinTech companies are integrating all of these payment methods into convenient apps that online merchants can easily afford and integrate on their website. Typical users of these payment apps would be businesses selling either their physical products or services to end users.

7. Digital wallets: - Digital wallets can be seen as a combination between a no-frills bank account and a payment gateway. With this business model, a user can pre-load a certain amount of virtual money into their wallets and use this virtual money to make either online or offline transactions with merchants who accept digital wallets as a payment mechanism. A digital wallet business model typically involves giving users the convenience of making payments for a small fee that is typically charged to businesses in the form of a merchant discount rate (MDR) and via the float that they would make on the money lying unpaid

in customer/business accounts. Typical end users of wallets would be businesses selling either their physical products or services in stores to end users.

8. Asset Management: - Ever heard of buying stocks or mutual funds without having to pay a commission fee? FinTech companies like Robin Hood are enabling investors to trade for free in exchange for their data. They forward this data to high frequency traders who can then influence the price of the asset. Even though the investor might pay a slightly higher price for their asset, the difference between the amount they save from trading fees and the slight increase in price is still positive.

9. Digital banking: - Imagine your traditional brick and mortar bank going completely online — no physical office, no bank tellers, no mail. Challenger banks such as N26 are offering no-frills individual and business bank accounts through a complete digital infrastructure. The business model here is almost identical to that of a bank with physical branches except that with the huge cost savings in manpower and real estate, customers can greatly benefit from reduced rates.

10. Digital insurance: - As with digital banks, FinTech companies operating in the insurance industry are taking all of the traditional services to the digital world. Offering life and health insurance with better underwriting practices, these FinTechs can price their premiums at variable rates depending on the customer, thereby offering aggressively cheaper coverage compared to traditional insurance companies. These types of insurance, together with personalized marketing, can create business possibilities that insurance companies have only begun to explore.

11. Big Data Analytics: - For fintech companies, market and customer data are of prime importance. Due to the massive number of consumers and service providers in the market, managing this data becomes a hassle for companies. With the power of data analytics of large sums of data, intelligent models can process raw information to detect patterns and future predictions. By taking into account customer behavior, purchase, and search history, data mining helps fintech providers develop market strategies in the best of their interest.

12. Artificial Intelligence: - Today, intelligent systems play an important role in the development of financial technologies which include smart catboats, automatic credit scoring, and wealth management systems. These help digital businesses carry out smooth operations and meet global regulatory compliance by preventing fraud through their platforms.

13. Automated Business Operations: - In this era of digital upheaval, fintech organizations rely heavily on Robotic Process Automation (RPA). The ability to assign manual and tedious tasks to automated systems allows managing finances less of a challenge. RPA has applications in data collection, compliance regulations, transactions management, and email marketing through automated bots. This streamlines operations for financial entities and lets them deliver seamless services to their customers.

14. Block chain Technology: The finance sector uses block chain technology to scale its operations and customer experience. It offers fintech companies to acquire user data through a safe and secure channel, effectively store it on cloud databases, and allow consumers to perform quick transactions. This significantly reduces the risk of cyber-attacks since transactions are encrypted and protected from external intervention. The increasingly popular crypto currency is backed by block chain to store customer records and allow digital payments regardless of location and time. 4

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Lockdown Impact on Biodiversity and Environmental Pollution

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Abstract:

A Corona virus disease (COVID-19) is an infectious caused by a newly discovered corona virus. Most people infected with COVID 19 virus will experience with mild to moderate respiratory illness and recover without requiring proper treatment. This disease spreads primarily through droplets of saliva from infected person. The best way to prevent and slow down transmission is due to maintaining social distancing, were masks on face and cleaning hands by sanitizers. It has shown positive impacts on the biodiversity and environmental pollution. There are some reports like examples of reduced human pressures on natural ecosystems cleaner air and water and wildlife reclaiming contested habitats. The purpose of this study to provide clear and actionable strategies to community, health workers and researchers in future.

Key words: *COVID-19, Biodiversity, Environment, Pollution.*

Introduction:

The COVID-19 pandemic has led to a noticeable loss of human life worldwide and presents challenge to public health food systems. We must think about future environment and environmental degradation with ambition and urgency. Only then can we protect the health, food security and nutrition of all people and ensure that our 'new normal' is better one. Covid-19 which increased rapidly not only in the surrounding areas but also spread in the country and the outbreak turned into pandemic. (Dutheil et al 2020). Government placed the whole India on lockdown to slow down the spread of infection. Shutdown of public transport, educational institutes, business centers, parks and other social interactions points are responsible for curtailing the transmission of Covid-19.The ramping down of human activity appears to have a positive impact on the environment. Biodiversity, Industrial and transport emissions and effluents have reduced, and measurable data supports the clearing of pollutants in the atmosphere, soil and water. The positive impact on the environment may be temporary but we should learn from this lockdown on how to maintain and improve this situation for a longer duration.

Methodology: The methodology was based on reports of survey published by the Government of India. Digital media includes reviews published in the newspapers, World Health Organization, articles, Encyclopedia.

Observations:

Lockdown Impact on Biodiversity

1. The increase in the number of insects that means more food for birds.
2. The COVID 19 pandemic affected virtually all sectors and biodiversity conservation sector at local, regional and global levels.
3. Due to non-pollution of water hyacinth in Godavari River, full leaves have been removed and large number of aquatic life move freely in the water.
4. On the Antarctic Peninsula, so - called snow algae are turning the snow green due to
5. The presence of green algae.
6. Due to lock down logging, mining, road building in remote places, dam building,
7. irrigation, coastal development, rapid urbanization, population growth all are
8. stopped.so it leads to loss less biodiversity.
9. Since the enforcement of a nationwide lockdown, water bodies have also been
10. clearing. According to the real-time water monitoring data of the Central Pollution
11. Control Board (CPCB), the average water quality is seen to be suitable for bathing,
12. propagation of wildlife and fisheries.
13. The rivers Godavari, Yamuna and Ganga have seen significant improvement, so transparent that one can see its aquatic life in deep water.
14. In some households, there are unwanted guests. Like Deer, peacocks was seen to enter a house, leopard moving around in Nasik. It's safe to say, while we are trapped in our houses, wildlife is enjoying their freedom.

The following strategies are needed to conserve biodiversity by monitoring the collected data more effective in our human dominated world.

1. Conservation research needs to integrate with social scholarship in a more sophisticated manner.
2. Designing better policies and enforcing laws in favor of nature and biodiversity

3. Educate and make students, social workers aware so that we could create a link between present conditions and uncertain conditions of the future for conservation of nature.
4. Permanent restriction on travelling and crowding of people at place should be created so that we should control outbreak of epidemic or pandemic as well as maintain the environmental status which we achieve.

Lockdown Impact on Environmental pollution

1. The environmental pollution was very negligible during first strictly lockdown in 25th March to end of April- 2020.
2. In India, March 22 was the 'Janata Curfew', following which; a significant decreased in air
3. pollution levels was seen.
4. Since the March 25 lockdown that forced 1.3 billion Indians to stay home due to which air quality has dropped to "satisfactory" levels.
5. The lockdown ordered shut down of "non-essential" service providers and also all modes of public transport leading to dramatic effect on the environment.
6. While the complete shutdown of India's economy was designed to stop the spread of COVID-19, it is having an ancillary health benefit of clearing the air that millions of people were choking on. As vehicles stay off the road, construction is put on hold, and factories stop production, the levels of microscopic particulate matter start to drop.
7. NO2 (Nitrogen Dioxide) –Highly polluting and emitted from combustion of fossil fuel, traffic pollution etc. China and Northern Italy recorded significant reductions in nitrogen dioxide levels.
8. Due to lockdown, energy and oil demand is reduced as there is lack of transport activities. Air travel dropped by 96%. Global oil demand declined. So it shows a positive impact on environmental quality.
9. Due to lockdown we get opportunity to challenging circumstances and learn to deal with the ordeals effectively.

Pollution level decrease during lockdown:

1. Air pollution by 75%
2. Water pollution by 60%
3. Sound pollution by 40%
4. Light pollution by 30%
5. Coalball based power generation by 35%
6. Petroleum products consumption by 25%

Conclusion: It was observed that the environment has started to renew itself due to all kinds of industry vehicle movement and social activities of people continue at a low level for long time. The links between lockdown and nature are becoming better understood and appreciable. So that we are seeing the growth in an emerging disciplines, planetary health, focusing on the connections among the well-being of humans, other living things and nature's ecosystems. This positive impact on the environment maybe temporary but Governments and individuals should learn from this lockdown how to reduce pollution on a long term basis. For this study, we emphasized that the effect of lock down on Covid 19 was statistically significant.

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A Study of Equity Returns of Bajaj Finance to the Shareholders– A Case Study

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Abstract:

The researcher has tried to study the past returns of the Bajaj Finance share. The researcher has also tried to study the reasons behind the extraordinary returns. This paper has been mainly written for the retail investors. Where they can get almost past 10 years analyzed data and the researcher's individual research opinion. The researcher has also tired to predict the future business growth. Finally suggestions to acquire the stock for long term wealth creation as per the individual risk bearing capacity.

Research Methodology:

Data Collection: This study is mainly based on the secondary data. For these study companies annual reports, national and international broker`s reports have been studied. Also this study is backed by primary data, which are the interview and discussion with customers and employees.

Research Rationale/Gap:

This stock has given extraordinary returns in the past to check its business and fundamentals. The researcher is interested in studying the PE ratio of the stock. The reasons how the stock has maintained its growth story in return.

Objectives:

1. To study the share price movements of Bajaj Finance Share for last 5 years.
2. To study the sales and profits of the share for the study period.
3. To study the reasons behind business growth and share price growth.

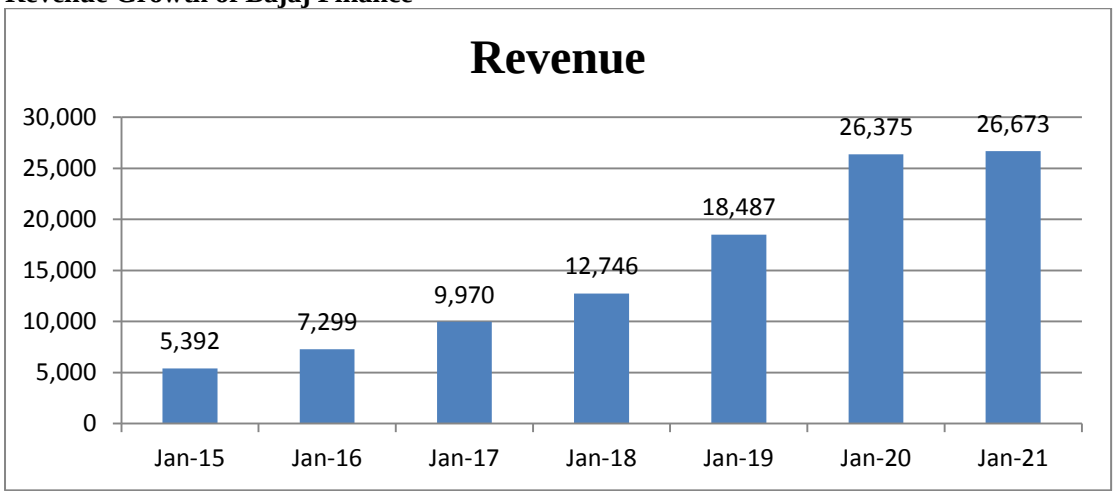
Review o f Literature: Share Price -As this paper is case base for this brokers report have been studied Cholamandalam Securities (October 2012) in their report Target Price was given Rs. 1474 (Nifty 6046). In October 2013 the same target had been upgraded to Rs 1620 (Nifty 5717). In October 2014 the same target was Rs 2930 (Nifty 7764). October 2015 the same target was upgraded to 5814. July 2016 the same has been upgraded to 9150 but the share price touched at Rs 9600 and this price is pre bonus and split. July 2017 after split and bonus this price target was Rs 1439 (Nifty 9897). In July 2018 Motilal Oswal downgraded the share price to Rs 2500 to current CMP. Rs 2517. In May 2019 Motilal Oswal again downgraded the share price to Rs 2900 to CMP. 3112 (Nifty11407). In January 2020 Motilal Oswal gave the target price of Rs. 4850 (Nifty 12248). In June 2021 Motilal Oswal gave a target of Rs. 6200 (Nifty 15670) which was met also. After reviewing these and other reports we can understand the price trend.

Data Analysis and Interpretation:

	Mar-15	Mar-16	Mar-17	Mar-18	Mar-19	Mar-20	Mar-21
Revenue	5,392	7,299	9,970	12,746	18,487	26,375	26,673
Interest	2,274	2,959	3,853	4,696	6,723	9,608	9,519
Expenses +	1,752	2,354	3,250	4,115	5,454	9,159	10,839
Financing Profit	**1,367**	**1,986**	**2,867**	**3,935**	**6,310**	**7,609**	**6,314**
Financing Margin %	25%	27%	29%	31%	34%	29%	24%
Other Income	26	35	22	10	13	8	3
Depreciation	36	56	71	102	144	295	325
Profit before tax	**1,357**	**1,965**	**2,817**	**3,843**	**6,179**	**7,322**	**5,992**
Tax %	34%	35%	35%	35%	35%	28%	26%
Net Profit	**898**	**1,279**	**1,836**	**2,496**	**3,995**	**5,264**	**4,420**
EPS in Rs	17.9	23.74	33.4	43.19	69.12	87.48	73.35
share Price on 1st April on corresponding year	***404***	***683***	***1276***	***1908***	***3096***	***2318***	***5452***

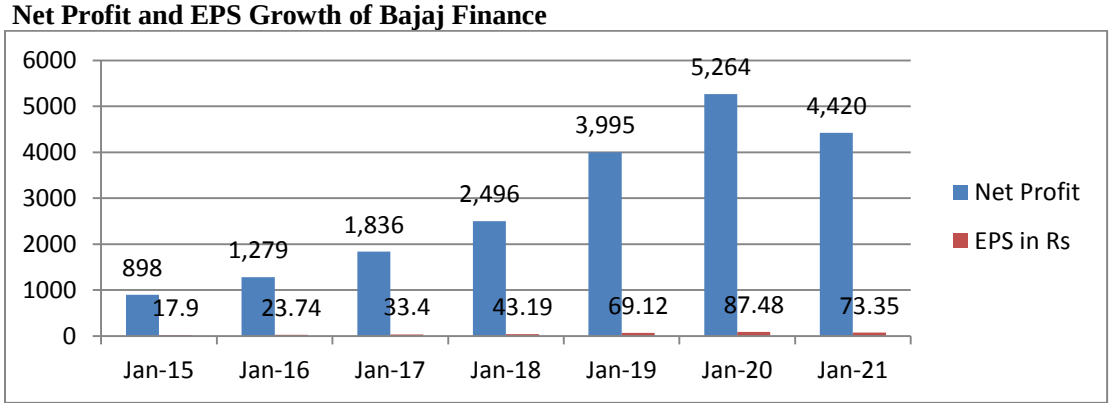
Source: Company Annual Report and Broker's Report

Revenue Growth of Bajaj Finance



Source: Company Annual Report and Broker's Report (Sales in Rs. Cr)

Net Profit and EPS Growth of Bajaj Finance



Source: Company Annual Report and Broker's Report (EPS in Rs, Net Profit in Rs. Cr)

Hypothesis Testing

H0: The share price of Bjaj Finance are not correlated with EPS
H1: The share price of Bjaj Finance are correlated with EPS
Test Used: Pearson`s Correlation Test with 0.05 Level of Significance.

Pearson's product-moment correlation
data: data$share.price and data$ EPS.in.Rs
t = 2.6235, df = 5, p-value = 0.0469
alternative hypothesis: true correlation is not equal to 0
sample estimates: cor - 0.7610692

Inference: With the given data sample we can conclude that EPS has significant positive correlation with the Bajaj Finance share price.

Conclusions and Suggestions: The long term paid high returns

Split and Bonus History during the study period: September 2016 this stock has given bonus 1:1 and the stock got split to New Face Value Rs 2 from Old Face Value Rs. 10.

Reasons behind business growth and share price growth:

1. There is a well diversified Asset under management.
2. Healthy asset quality
3. Strong customer acquisition,
4. Low ticket size and Cross selling.
5. FII and FPI are increasing their share.
6. Improving cash flow.
7. No promoter's shares have been pledged.
8. Lower cost of funding
9. Stable margins
10. Strong credit rating
11. Focus on life style products
12. Increasing the digital

13. Facing Corona Crises successfully
14. Tie up with E commerce Companies

The retail investors can buy the stock in combination of when stock price goes below 200 days moving average, in the correction period and through stock systematic investment plan with considering his capacity to bear the risk and uncertainty.

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Protection of Environment: Duty and Responsibility in Modern Era

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Abstract:

There are many ways to save and protect our environment. We all pollute the environment. We live in If we adopt simple remedies in our daily life then we contribute to protect our environment to some extent. In this paper we are focusing the importance and need to protect our environment. We also suggest some important things to protect our valuable environment.

Keywords: *Environment, Protect, Control, Modern era*

Introduction:

All the physical surroundings on earth are called environment. The environment includes everything living and nonliving. There are three types of environment Physical, Social and Culture. The physical environment is where individuals live, learn, work and play. We interact with this physical environment through the air that we breathe, water that we drink, houses where we live. Social environment is their society and all surrounding influenced in some way by humans. It includes all relationship, institutes, culture and physical structure. Culture is an umbrella term which encompasses the social behavior and norms found in human societies as well as the knowledge beliefs arts, laws, customs, capability and habits of individuals in these groups. For controlling every system different acts was implemented. The environment protection acts was enacted in 1986. The main objectives of this acts was protection and improvement of the environment. This acts aims at reducing the emission of carbon dioxide into the environment. Due to reduction of carbon dioxide we have clean and fresh air within the atmosphere which ultimately contributes towards better healthy health of society. The environment protection act authorizes the central government to protect and improve environment quality, control and reduce pollution from all sources and restrict the setting of any industrial facility on environment grounds.

Needs to protect environment:

The earth we live in is the only option for all living things. All living and nonliving things depends on this earth. Our environment provides us a lot of things such as air, water, food, land. Food, cloth, house are the fundamental needs of human being. Without these things our daily life is impossible. It is not enough to use all the resources but it is our prime duty to protect these things. Our life depends on many nonliving component. The main reason to protect the environment is because it helps to protect humanity. If we didn't have our environment then we wouldn't have a place to live or resources to live off.

Responsible factors to protect Environment: In 1970, the environment protection agency (EPA) has been working to protect the nation natural resources. This agency has partnership with state and local government. The aim of this agency is to establish programs that are aimed at reducing pollution and protect environment. Protection of environment is an individual and personal responsibility for all human begins because we are all part of biosphere. We have only one environment. So we must protect it. If our corporations are very powerful they also helps to protect environment. If a massive corporation decides. Some environmental destruction is in their interest.

Environment in olden days:

Indian texts such as Arthashastra, Brahmans, Vedas, Manusmriti, Ramayana, and Mahabharata enable us to understand concepts of environment conservation and maintain forest ecology. In olden days penalties and strict punishment were imposed for injuring the living animals domestic as well as wild animals. Forest were considered as a treasured resource. The Vedas encompasses knowledge of various concepts regarding nature and life such as ecological balance, environment conservation and weather cycle. This gives brief and transparent picture how people in ancient India were concerned about protection and cleaning of environment. In olden day's pollution, population and industrial development are in small scale. Less technological were developed so the pleasant and peaceful environment was there. In India traces of environment protection, sustainability can be identified through various sources of ancient India literature where different themes such as preservative safe guarding and management of the environment can be detected. Most of the elements of nature where considered to be holy within the Hindu theology which is practiced even in present times. In olden days the five natural resources earth, water, light, cosmos and air was war shipped. The Arthashastra has various Sutras in different chapters relating to themes of statecraft and administration which depicts environmental awareness. In Rig-Veda it was mentioned that "Do not cut trees" because they remove pollution. In Yajurveda it was mentioned that "Do not disturb the sky and do not pollute the atmosphere". The ideas of the legal protection of ecology and

environment are also established in Kautilya's Arthasastra and the writing relation to the system of governance adopted by Ashoka. Later these Vedas become to demonstrate profound knowledge about biodiversity.

Environment in Modern Era:

Due to rapid development in technology, industry, Agriculture, Medical field we are facing indefinitely many problems. The major current environment issues may include climate change, Pollution, environment degradation and resource depletion. The major environment problems we faced in this period are ozone depletion. Greenhouse effect, Global warming, desertification, deforestation, loss of biodiversity, disposal of waste, pollution , soil degradation , overpopulation , water pollution.

Responsibility to protect environment:

Human activity are hugely responsible for damaging the environment. So environmental awareness is very important to everyone for that we have to change our behavior. Before giving massage of protection of environment to the community we start from our home. Stop unnecessary use of water, make a proper management of wastage, use ecofriendly things, and avoid unnecessary use of papers. For daily work if possible use bicycle. For one family one car is sufficient if we go through this formula we stop air pollution, noise pollution to some extent. Every year atleast 5 trees should tress should be plant. This will be helpful for the next generation. If we not protect our forest, water, domestic and wild animals then for next generation all these things will be only in a pictorial form. So it is important for everyone to improve their environment awareness. It is especially imperative to teach children about importance of environment awareness to ensure that the lives of future generation are secure. Therefore we must equip our children with the tools necessary to behave in a responsible and improved way towards the environment.

Conclusion:

1. Respect the environment making rational use of natural resources and taking steps to prevent pollution from the different processes involved in our industrial operation.
2. Cooperation with the responsible administrative authorities and agencies.
3. Carry out environment programs.
4. Save our environment by pollution control laws which should be impose strictly.
5. The usage of nonconventional sources of energy should be encouraged.
6. Save electricity by switching of all the lights and devices when not in use.

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Article-The Effect of Natural and Man-Made Disasters in India

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Abstract-

This article attempts to gain a better understanding of how the natural and man-made disasters affect human being. This article mainly focuses on different natural and man-made disasters happened in India. Our country India is considered to be the largest country in the world to face natural and manmade calamities. To date India has endured many setbacks. Natural disasters, such as earthquakes, volcanoes, hurricanes, floods, and cloudbursts and man-made disasters like air leaks, chemical leaks, road accidents, bomb blasts, riots, fires, communal riots and terrorism make a person helpless. Natural disasters have destroyed many people's homes. Looking at the consequences of this disaster, it is clear that it is not just the loss of life but the loss of property and the environment.

Keywords: - *natural and man-made disasters, destroyed, endured, setbacks, consequences.*

Introduction:-

The number of natural and man-made disasters in India is increasing day by day. Natural and man-made disasters not only cause loss of human civilization but also great loss of life. Natural disasters are caused by the natural behavior and beyond the control of human beings that occur on a regular basis whereas manmade disasters are a consequence of man-made activities. India has taken the hardest hit from natural disasters due to their massive population. Natural disasters can have a life-altering effect on the individuals and families fortunate enough to survive them. But the effect of natural disasters can be felt at the community, city and state level, or many times can affect an entire country. Natural disasters such as excessive rainfall, floods, earthquakes, droughts, landslides, tsunamis, droughts, hurricanes, and manmade disasters like fires, bomb blasts, gas leaks, chemical spills, road accidents, terrorism, etc. have caused social, economic and even loss of life. In many cases, Irresponsibility, lack of seriousness ignorance has increased the damage.

Theme: In this article, I have compiled the different effects most horrible natural and manmade calamities of Indian history. Natural disasters and manmade cause problems that last after the disaster is done, including problems with the environment, infrastructure, public health and humanitarian issues etc.

Environmental Problems

Natural disasters from tsunamis and flood can cause wide-ranging and long-term consequences for ecosystems: releasing pollution and waste, or simply demolishing habitats. Tsunamis and flood destroy vegetation such as trees, resulting in landslides and coastlines that slip into the sea. Nuclear disaster caused a cascade of issues in the ecosystem and surrounding waters, spreading radioactive material through far-ranging ocean currents. Whole ecosystems can be dramatically damaged or transformed from a single disaster event. These changes force human inhabitants to redesigning their lifestyles and livelihoods around an altered environment.

Infrastructural Damage

One of the most immediate and devastating concerns with natural and manmade disasters are the damage to both public and private infrastructure. Natural disasters such as Floods, Earthquakes, landslides excessive rainfall, Tsunamis can destroy entire buildings and can cause serious property damage. Many peoples who live in an area hit by a natural and manmade disaster lose everything they own which leaves them homeless. Certain natural disasters fall outside of the scope of insurance coverage and many private homeowners do not have property insurance and this means that in the wake of a disaster. Disasters can have long-term negative consequences beyond demolition of infrastructure and the immediate loss of life. The rebuilding process is time-consuming, expensive and psychologically tumultuous for people.

Public health

Health issues are one of the most devastating emerging problems after any disaster. During and after the disaster like hurricanes and floods standing water can be a breeding ground for pathogenic bacteria and disease vectors like mosquitoes. It is because facilities for water and toilet hygiene are damaged. After a disaster contaminated water and food supplies pose a risk to people's and animal health. Flood waters can carry many sources of contamination such as dirt or oil which causes infectious diseases such as Malaria and cholera etc. In cases where infrastructure and transportation

capabilities are damaged,survivors of natural disasters can be cut off from life-saving medications for both acute and chronic conditions, emergency healthcare services. After a natural disaster event, survivors can experience mental health consequences, including depression, anxiety, loneliness, post-traumatic stress disorder, or PTSD. The loss of houses can also leave them exposed to wind and hot or cold temperatures.

Damage to the Economy

Day to day life of individuals affected by disaster also affect economy. Rebuilding after a disaster puts a significant financial strain on governments as well resulting in an economic downturn that can affect entire life of human being.

Loss of Life

The bulks of deaths were raised due to the destruction of public health and sanitation, infrastructure.

Individual Impact

At the individual level the effect can often be felt physically and mentally. Disasters cause loss of financial resources, destruction of property, and personal injury or illness. The loss of resources, security and shelter can lead to massive population migrations in lesser-developed countries.

Community Impact

Communities that experience a disaster must also absorb the effects of these destructive events. Many local communities lose so much in economic resources that recovery becomes difficult sometime it is impossible. Communities must often recognize population, demographic and cultural shifts as a result of the effects of the disaster on their individual citizens.

Conclusion:

The effects are further intensified by socioeconomic factors such as population increase, infrastructure expansion, rapid urbanization and large numbers of people residing in informal settlements in destitute and poor conditions. After experiencing a disaster, many individuals develop various disorders or withdraw into states of depression. Individuals develop negative associations with the environment which cause to significant population migrations.

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Impact of GST on Various Sectors of Indian Economy

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Abstract:-

Goods and Services Tax is an indirect tax applicable on supply of goods and services. It is a unified, multistage and designation based tax. One of the important features is that it is comprehensive in nature. It has replaced 17 indirect taxes in India such as Value Added Tax, Services Tax, Entertainment Tax etc. There is only a single indirect tax across the country which creates a unified market. It is said to be the biggest form of reform in the indirect taxation aspects ever since 1947. The main objective of introduction of GST is to support and enhance the economic growth of the country. In this research paper an attempt has been made to impact the goods and services tax on various sectors of Indian economy such as trader's manufacturers, service distributors. The study also attempts to understand the concept, benefits and drawbacks of Goods and Services Tax.

Keywords:- *GST, Indirect Tax, Indian Economy, Positive Impact, Traders, Manufacturers, Service Providers, Central Government, State Government.*

Introduction:-

In India the Goods and Services Tax Act was passed in the Parliament in March 2017 and came into force on 1st July 2017. However, the process of implementing the new tax regime commenced a long time ago. In 2000, Atal Bihari Vajpayee, then Prime Minister of India, set up a committee to draft the Goods and Services Tax law. During the Congress led UPA government the finance minister P. Chidambaram in February 2006 continued work on the same and proposed a GST rollout by 1st April 2010. The Indian taxation system before implementation of GST was a very complex one. There were numbers of taxes changed on supply goods and services which creates Confusions, complications and at the same time leads to tax evasion and tax avoidance GST was first introduced by France in 1954. Many countries in the world have a single unified GST system while some countries follow dual GST systems such as Brazil, Canada etc. It means Central Government as well as State Government can impose the GST at the same time. In India, a dual GST will be applicable whereby a Central Goods and Services Tax and State Goods and Services Tax will be levied on taxable supply of goods and services. The government has proposed a 5 steps tax structure for all goods and services under the slab 0%, 5%, 12%, 18% and 28%. Alcohol, Crude oil, Petrol, Diesel, Airplanes Fuel, Natural Gases are not included in GST .The main aim of GST is to replace existing taxes like value added tax, service tax, excise duty and sales tax. It will be inhabited on manufacture, sale and consumption of goods and services. Implementation of GST is the step towards a self regulated, transparent and all inclusive tax system.

Components of Goods and Services Tax:-

There are three components applicable under this regime i.e. Central Goods & Service Tax, State/Union Territory Goods and Services Tax and Integrated Goods and Services Tax.

CGST:- Central Goods and Services Tax is collected by the Central Government on an intra-state supply of goods and services. Intra-State supply means supplier supplies goods and services within the state.

SGST/UTGST:- State Goods and Services Tax is collected by the State Government on an intra-state supply of goods and services. Union Territory Goods and Services Tax are collected by the Union Territory government.

IGST:- Integrated Goods and Services Tax collected by the Central Government on an Inter- state supply of goods and services. Inter- state supply means supplier supplies goods and services from one state to another state or union territory. Revenue collected from IGST will be divided between Central Government and State Government as per the rates.

Objectives of the study:-

1. To understand the concept of GST in India.
2. To study the impact of GST on various sectors.
3. To study the importance of GST for Indian Economy.
4. To highlight the advantages of GST for Indian Economy.

Research Methodology:- The data for the study were gathered from secondary sources such as books, newspapers, respective journals, bulletins, articles published and websites.

Benefits of GST:-

1. GST has removed the cascading effect on the supply of goods and services.
2. The GST regime eliminates the tax on tax, the cost of goods and services automatically decreases.
3. All activities made through online on the GST portal, which accelerates the process like registration, returns filing, Claim for refund etc.

4. Under the GST regime composition scheme available for small businesses. In which lesser compliances are involved.
5. The GST regime reduced tax evasion and avoidance.
6. It would introduce two tiered One Country - One Tax regime.

Impact of GST on Various Sectors:-

Traders:-

The effect of Goods and Services Tax on wholesalers and retailers would be limited to the value addition of goods and services. In the GST regime trader tax paid at earlier stages would be available as input tax credit for payment of GST on supplies. It eliminates the cascading effect that's why the cost of goods and services are reduced. Before the GST regime, traders were not eligible to take credit input service. In the GST regime, traders are eligible to take credit for input service. In the previous tax system a trader who wanted to pass on Central Value Added Tax credit of excise duty needed to obtain dealer registration and he was liable to disclose the margin. But in the current tax system there is no requirement of separate dealer registration to take credit. In this system small traders would be eligible for the composition scheme up to Rs 1.5 crore provided their annual turnover limit in the preceding financial year did not exceed Rs 1.5 crore In the previous regime of tax, the goods sent for job work are not liable to Central Sales Tax on being made available Of Form 'H'. But currently in the GST regime the goods sent for job work are taxable. The GST regime increases the burden of compliances of returns. In that trader responsible for file 37 returns in a year.

Manufacturers:-

GST has helped to reduce the cost of production and made an easy tax system. In the previous tax system manufacturers were required to pay 25 % to 26% more because of the cascading effect. But in Current tax regime eliminates the cascading effect. Before adopting the GST regime, manufacturers had to register factories in the single state. But after introduction of GST manufacturers only have to apply for registration. In the previous tax system, there were various types of taxes such as Central Sales Tax, Value Added Tax, Excise Duty, Entry Tax etc. But in the GST regime only one tax is GST. This is positive relief for the manufacturer. Manufacturers would be in a position to save taxes due to less restriction in taking set-off of taxes paid at various stages of manufacture reducing the cost of goods and services supplied. The overall impact of GST on the manufacturing sector is positive.

Service Providers:-

In the previous tax structure more clarity for software companies like online software sales; it was not clear whether to apply Value Added Tax or Service Tax on the product. But in the current GST regime, there is a clear difference which will eliminate the confusion of suppliers between goods and services. In the previous tax system, tax was levied mainly at the origin and destination based levy, the burden of which was by the end customer. Under the GST regime they would be taxed in the same way except that the place of supply would have to be confirmed. In the previous tax structure, the service tax rate was around 15%. But in the GST regime service tax rate is around 18%, cost of services is increased under GST.

Conclusion:-

The introduction of the Goods and Services Tax is a very remarkable step in the field of indirect taxation system in India by subsuming a large number of central and state taxes into a single tax. The input tax credit (ITC) structure is available under the current GST regime. It will encourage traders and manufacturers of the country because it will reduce the cost of products. Small scale industries will be encouraged in the country as a composition scheme is introduced for the small traders. After the GST regime some services are costly as service tax has increased from 15% to 18%. Overall contribution of GST in various sectors is positive.

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Solid Waste Management by Amravati Municipality Corporation before and during Global Pandemic Scenario: A case study to understand Strategy and Policy for Solid waste management during COVID 19 Pandemic

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Abstract

Municipal solid waste includes commercial and domestic wastes generated in municipal or notified areas in either solid or semi-solid form excluding industrial hazardous waste .Solid waste management as the discipline associated with the control of generation collection, storage, transfer and transport, processing and disposal of solid wastes in a manner that is the best principles of public health, economics engineering, conservation, aesthetics and other environmental consideration. In past one year the world around has been facing the pandemic and it is during this time we have noticed the importance of health and hygiene. While we focus on personnel hygiene it is also important how the day to day waste produce from every household including the Corona affected house hold are managed and disposed safely. Amravati is second largest city in Vidarbha region and is located 156 Km Away from Nagpur[1] This study makes an efforts to understand strategy and methods adopted by AMC to handle the waste management it also focuses on any change in the planning of waste management during pandemic.

Key Words: *solid waste, public health, disposal, pandemic.*

Introduction.

Amravati is a growing city, with number of Educational institute, medical facility and many administrative centres. The city is growing area wise and population wise too with total population of city to be 7.65 lakhs in the year 2021 and growth rate is 1.73. Such huge amount of population generate equally huge amount of solid waste[2].The waste that is generated mostly comprises of Solid and Semi-Solid industrial waste along with potentially hazardous Bio medical waste. Solid components hugely depend upon the communities socials status ,eating habit and religious following. Apart from the regular waste generated there has been great increase in biomedical waste too owing to the pandemic situation there has been a sharp rise in medical waste which includes Mask, gloves and personnel protection equipment's(PPE)[3] The concern body of the municipal cooperation need to take extra efforts in disposing these equipment. These waste if not disposed properly will be hazardous to human life. In last many years the city has witnessed a growth in Population and also urbanisation has caused a great impact in generation of waste material. A study carried out in 2011 on solid waste management suggest that Amravati city generate around 184.90 tons municipal solid waste per day[1].However , in present study the city is generating approximately 250 ton/day and yearly of 92000 tons, this is because of the significant growth in population and urbanisation. The waste is gathered form four different zone of the city.

Table1: Zone wise collection of Solid Waste

Zone	Waste generated per day (in tons)
1	58 tons/day
2	60 tons/day
3	42 tons/day
4	50 tons/day
5	40 tons/day

The waste thus collected is dumped at Sukali Depot with the help of open trucks and dumpers[1]

Segregation of the Waste Collected

After the collection of this waste from the city it is segregated into
Wet Waste : Biodegradable waste
Dry Waste : Both degradable and non-degradable
Hazardous waste: biomedical waste from hospitals

Out of this, Wet waste is mostly used for composting and later this compost is used in municipal garden. The Dry waste is dumped at Sukali depot,and biomining process is done on the collected dry waste. Biomining techniques may also be used to clean up sites that have been polluted with metals[4] The Biomedical waste is handover to Global Eco-save agency of Bandera which treats the bio-hazardous waste before disposing it off.

Infrastructure and man power employed

The Amravati Municipal Co-operation carries the task of waste collecetion, transportation and management with the help of Contractual labour and Regular A.M.C labours[1] .Following are the tables of Manpower and infrastructural facility available with A.M.C for Solid Waste Collection and Management.

Table2: Manpower employed for Solid Waste Management

Sr no	Particular	strength
1	Permanent Labour	799
2	Contratual Labour	1210
3	Waste Pickers	107
4	Doctor	1
5	Sanitory Supreindent	1
6	Senior sanitary inspector	5
7	Sanitory Inspector	40
8	Mukadam	40

Table3: Transport Vehicles used in Solid Waste Management

Sr no	Transport Vehicle Available	Number
1	Vehicles with separate Waste Collection Trolly	138
2	Hydrolic Auto	46
3	Bell Cart (Ghanti Katle)	50
4	Open Truck	30
5	Dumper	15

The current study have observed that there has been a significant improvement in infrastructure with respect to the growing waste of the city[4]

Bio-medical Waste Management: The waste generated from Hospitals and despencaries are categoriged as biomedical waste.Biomedical waste mainly include waste created during a diagnostic process, the treatment of a condition or disease, or immunizations of humans or animals. It also includes any research activities or processes that involve biological testing.. This bio medical waste could be hazards if remain undisposed or are Improperly sseggregated. They have potential to contaminate groundwater sources, which in turn may infect humans and animals alike[5]. It has been found that nearly 85% of waste generated in health care set –Ups includes food remnants, fruit peels, wash water, paper cartons, packaging material etc[6]. The potentially hazardous waste include

1. Dressings and swabs contaminated with blood, pus and body fluids.
2. Laboratory waste including laboratory culture stocks of infectious agents
3. Potentially infected material: Excised tumours and organs, placenta removed duringy, extracted teeth etc.
4. Potentially infected animals used in diagnostic and research studies.
5. Sharps, which include needle, syringes, blades etc.
6. Blood and blood products[7]

Bio Medical waste management during Pandemic:

Bio Medical waste are potential hazardous material a safe disposal of these Bio Medical waste is needed to avoid any unwanted Mishaps. Proper biomedical waste (BMW) management in accordance to the stipulated rule was one of the neglected aspects of health care for years, especially in developing countries like India[8].In Pandemic situation the disposal of bio medical waste has become a major task for all the concern authorities. Unchecked use and disposal of single-use surgical masks (at times N95 respirators). These Mask are sometimes dispose along with the non-infectious kitchen/general waste from the household and residential areas. It than becomes difficult for the labours to identify the bio medical waste container[8] To counter the bio medical waste management in India , , Central Pollution Control Board (CPCB), Ministry of Environment, Forest & Climate has published guidelines for the management of waste generated during treatment/diagnosis/quarantine of COVID-19 patients[9].Apart from this there has been a large number of deaths too reported due to COVID-19 , such dead bodies must be treated very carefully from the hospital discharge to creamtion ground. The A.M.C have deployed separate vehicles through the contractor to collect the bio medical waste of diseased individual be it in the home Quarantine , Hospitalised on dead due to COVID. The collected Bio medical waste of Patients are treated with SODIUM HYPOCHLORIDE [10]

Bio Medical waste Management at Crematorium during Pandemic

As per the guideline mentioned by Government of India Ministry of Health & Family Welfare Directorate General of Health Services (EMR Division).The Crematorium/ burial Ground staff should be sensitized that COVID 19 does not pose additional risk.•The staff will practice standard precautions of hand hygiene, use of masks and gloves.•Viewing of the dead body by unzipping the face end of the body bag (by the staff using standard precautions) maybe allowed, for the relatives to see the body for one last time. •Religious rituals such as reading from religious scripts, sprinkling holy water and any other last rites that does not require touching of the body can be allowed.•Bathing, kissing, hugging, etc. of the dead body should not be allowed[10].. The A.M.C has been following all the mandatory procedure and moreover the ashes although do not possess any harm are disposed of in a pit which is immediately covered, while in few of the cases the relatives of the deceased person carry the ashes along with them and bears the responsibility of safe disposal.

Conclusion:

The A.M.C is facing a significant growth in annual generation of Solid waste. This waste need to be disposed off properly, however the dumping ground are proving insufficient for the huge amount of waste generated and this could pose a problem in near future. Amidst the Pandemic condition a remarkable pressure has been created on the labours and employees of A.M.C to deal with very vulnerable situation of collecting waste which could be harmful. Hence a training for the front line workers must be organised to make them aware to distinguish the biomedical waste and a regular non hazardous waste. Also more campaign should be carried out by A.M.C to make people understand the importance of segregation of wet waste , Dry waste and Bio medial waste.

Acknowledgement:

We would like to thank shri Prashant Gaoner (Sanitory Inspector , Amravati Muncipal Corporation) and Shweta Bokey (Amravati Muncipal Corporation) for Providing all the required information. Also we would like to extend our thanks to Shri Chetan Pawar , Member Amravati Muncipal Corporation.

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Environmental Impact of Technology

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Abstract:

Technology helps human being to get result faster and make our lives easier and comfortable. There are lots of negative impact of technology on environment .Misuse of technology leads environmental pollution and damage our natural planet. Moreover it affect humane health and life. But there is some positive impact of technology also on environment. Now a day technology is use to save and protect our environment and planet. This paper explains the positive and negative impact of technology on environment.

Introduction:

Since two million years ago. Technology has been serving as a catalyst for positive global growth. Sustained technological advancement is essential for the development of our planet. History has shown that technology can have profound implications for our future. It is fundamentally changing the way we live, work, relates to one another and to external worked. Technology has helped us simplify our lives and make it more comfortable and luxurious. Also it assisted in fighting off the deadliest diseases, and solved the most complicated problems for us. Technology has profoundly shaped society, the economy and the environment. It opens the door for people to enter into a new world which is fully developed and well civilized .It is true that the most of invention caused sound, air, water and land pollution hence it was consider that technology is responsible for environmental pollution. But when scientists realize the negative impact of technology on the environment , they start thinking about environmental protection. Technology can play a crucial role in decoupling development and environmental degradation. Now the advent of new technology has the potential to transform environmental protection

Negative impact of technology on Environment-

The industrial revolution has brought about new technologies with immense power. Continuous industrialization and further technological advancement has succeeded in developed countries around the world. And impact of this technology on the environment has included the misuse and damage of our natural earth.

These technologies have damaged our environment in many ways

Air Pollution:

Air pollution occurs when excessive quantities of harmful gases such as carbon dioxide, carbon monoxide , sulfur dioxide and methane are release into the atmosphere. The main sources of emission of these harmful gases that related to technologies is industrial revolution such as the burning of fossil fuels, factories, power stations, mass agriculture and vehicles. The consequences of air pollution include green house effect, global warming, climate changes and negative health impacts for humans and animals.

Water Pollution -Water pollution is the contamination of water bodies such as lakes, rivers, oceans, and groundwater, usually due to human activities. Some of the most common water pollutants are domestic waste, industrial effluents. Due to excessive usage of insecticides and pesticides in agriculture water get polluted . This is very harmful for human health. The release of inadequately treated wastewater into natural water bodies can lead to degradation of aquatic ecosystems. Water pollution can caused diseases such as typhoid and cholera, eutrophication and the destruction of ecosystems which negatively affects the food chain.

Sound Pollution:

It is also true that so many inventions of science like high-tech machines, equipment industries are create sound pollution. Big factories and vehicles release toxic gases in air and make it polluted Integration of technologies in industries, factories and agriculture are responsible for noise pollution .The main sources of noise pollution are transportation system in urban areas, industrial noise, construction of building, highways and street. Industrial noise also adds to the already unfavorable state of noise pollution. Loud speakers, plumbing, boilers, generators, air conditioner and vacuum cleaners add to the existing noise pollution. These all resources are gift of technology. The most common cause of noise pollution on human health is noise induced hearing Loss (NIHL)**.**

Land Pollution:

The plastics industries manufacture plastic made things which are widely use everywhere but these are not disposable and it cause land pollution. The rapid expansion of technology like IT equipment (including computer, laptop, mobile etc), household appliances(including washing machine, A.C. Refrigerator etc), consumer electronics and automatic dispensers ,results in the creation of a very large

amount of e-waste. Due to increasing global population, wastage of these equipments is also increasing. The world facing biggest problem is e-waste management.which gift of technology.

Depletion of natural resources:

Resource depletion is also a negative impact of technology on the environment. Humans can not create natural resources and they are either renewable or nonrenewable. Deforestation, mining of fossil fuel and minerals, contamination of natural resources, water usage, over consumption of resources and soil erosion are types of resource depletion. Advancement of technology is responsible for all these. Since the global population is increasing, levels of natural resource degradation are also increasing. Deforestation is very harmful to the environment because it results global warming, Depletion of the stratospheric ozone layer. Due to industrial revolution, large scale mineral and oil exploration has been increasing which causing more natural oil and mineral depletion. The exploitation of minerals has become easier because of advancement in technology.

Positive Impact of Technology on the Environment:.

The technology and environment are thought to be on the opposite ends of the spectrum but humans are looking for ways to save the environment with technology. So, be it generating renewable, green energy or using sensors to monitor endangered species,smart technology, electric vehicle , technologies like AI and IoT are helping create a sustainable future.

Recycling of wastage –

The linear "Take, Make, Dispose" processes that characterize how goods, food, fresh water and energy are currently produced have caused major environmental, economic and social problems, such as climate change, resource scarcity, and pollution. There are so many industrial, domestic wastages like plastics, garbage, polluted water which make environment polluted. We can protect our environment by recycling of this wastage. As we all know that it became possible only due to technology and nowadays we all used recycled paper, cans, bottles, car components and even water. When a whole life-cycle assessment is made, recycling makes economic sense, reducing costs and maximizing production

Biotechnology:

Biotechnology can produce crops which are resistant to climate change. Sugar cane or corn crop waste is used to produce biofuels. This biofuel is an alternative to traditional fuels which is main cause of air pollution. Biofuel generated from the biomass of living organisms or their metabolic waste and hence biofuel production is a solution that facilitates the use of biotechnology for environmental purposes.

Renewable energy sources-

The usage of the renewable-energy sources will increase manifold with the improvement in the infrastructure. The sources such as solar and wind energy have already made their place across the world. The main reason behind the usage of these resources is the lesser effect on the environment and curbing the release of the toxic gases like Carbon Dioxide, Sulphur dioxide. Usage of renewable energy sources play a vital role in saving the environment. The increased usage of the renewable-energy resources will help in decreasing the unfavorable environmental impact. These sources of energy are clean and help in the reduction of the residual waste. This further helps in keeping the atmosphere green and drops the rate of carbon footprint.

Electric vehicles:

The environmental technology of the electric vehicle is propelled by one or more electric motors, using energy stored in rechargeable batteries. Electric vehicles demonstrate a positive impact of technology on the environment because they do not produce carbon emissions, which contribute towards the 'greenhouse effect' and leads to global warming.

Smart technology:

The technology of the internet further demonstrates a positive impact of technology on the environment due to the fact that social media can raise awareness of global issue and worldwide virtual laboratories can be created. Experts from different fields can remotely share their research, experience and ideas in order to come up with improved solutions. In addition, travel is reduced as meetings/communication between friends and families can be done virtually, which reduces pollution from transport emissions

Conclusion:

Technology is a byproduct of scientific process and it is human creation. Technology has both positive and negative impact on the environment. Excessive usage of technology can destroy our planet. But if we use it carefully and in appropriate manner then it is not harmful. Technology will be critical to saving the environment, reducing the impact of global warming, helping in adapting to climate change,

cleaning up polluted areas and taking care of our own health. So technology is neither good nor bad but neutral.

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Impact of Environmental Covid 19 Effect on Indian Industrial Development

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Abstract:-

The Indian Economy get largely affected by the rise of Covid-19(Corona virus) pandemic Government of India(GOI) now making strong strategies of measures to handle this pandemic situation. Countrywide lockdown causes disruption of supply and demand chain. Indian Economy faces protracted period of slow down over the past few quarters. It goes down at six-year low rate approx... 4.7 in the current fiscal. Since march-2020 India starts reporting its confirmed cases. The Chief Economic Advisor told that, this situation is arises due to the (COVID-19) coronavirus pandemic effect on our economy. Hospitality Sector has been almost collapsed. Consumer activities are reduced. There is rise in LPG sales due to plunge in fuel consumption. A lot of stress on supply chain system. Government income also get decreased. While studying on the GDP statistics, Indian agricultural economy growth up to 3.4% . On the other hand overall economy contracted up to 7.7% in Financial year(FY) 2021.After the initial or beginning of first wave of covid-19 coronavirus, we seems that we had gain the control of the situation but the second wave of pandemic wanting for basic needs of corona patient such as oxygen and medical supplies. This second wave of pandemic started from the west of Maharashtra, and went to North India and also spread in South of the country.

Keywords:- *COVID-19, Coronavirus, GDP, Indian Economy, Work From Home (WFM), Economic Sectors Growth, Consumers Demand, Export.*

Introduction:-

Adam Smith, Father of economics defines it as a study of wealth in his magnum opus "**Wealth of Nation".** Indian economy is 4th largest economy w.r.t. GDP (according to purchasing power of parity (PPP)) rank after **US, China and Japan**. Indian economy treated as a developing economy in the world having some characteristics such as low per capita income, higher population, below poverty line (BPL), poor infrastructure and agricultural based economy

Literature Review:-

The impact of (covid-19) coronavirus pandemic on Indian economy is largely affected. According to economic activity and w.r.t. loss regarding human life of people. All the sectors of economy are adversely affected including in house demand and exports also. Here we make an attempt to analyze the impact and remedies on some key sectors of economy.

Food and Agriculture:-

Our economy is agricultural based and we called it as a backbone sector of the country, also government announces it as a essential category, therefore the impact is not goes up to such a high extent on the both primary agriculture production and agricultural inputs.. Many state govt. have already permitted to free movement of fruits, milk and vegetables, foods etc. Online food and groceries are heavily impacted due to not proper strategies on movement and stoppage of logistics vehicles. **Reserve Bank of India (RBI)** which is the apex institution of India and the finance minister, both announced measures by helping to the industry and short term employees. In forthcoming days, rural food production areas will hold a great solution to the macro impact of coronavirus (Covid-19) on Indian food sector as well as on larger economy.

Telecom:-

In Indian telecom sector, some significant changes accord even before corona pandemic. Due to brief price between the service providers. This essential service sector had continued to work during the Covid-19 pandemic. Thanks to adopt the strategy of the **work from Home (WFH).**Contribution of this sector reaches up to 6.5% of GDP and near about 4 million employees involved in it. Increased internet usage had impacted directly and due to this, shows the result of pressure on the network. Near about 10% demand has increased. As per the government policies and recommendations, this sector can be aid by relaxing the regulatory compliance provide moratorium for spectrum dues, which would be used for network expansions by the companies.

Aviation and Tourism.-

Aviation sector contributes to economy approx.2.4% while the tourism contributes approx. 9.2% of **GDP** respectively. In the Financial year 2018-19 tourism sector serves up to 43 million peoples but due to covid-19, both the above industries were hit more significantly. Its extent of hit is quite much harder than 9/11 attack and the financial crises of 2008. Aviation and tourism both sectors have deals with severe cash flow from the start of the pandemic, more than 38 millions lay-offs, which shows 70% of total workforce. Both white and blue collar jobs are impacted due to this. According to **IATO (Indian Association of Tour Operators)** estimates that due to travelling restrictions, both sectors incurred loss of approx. Rs.8.5 billion.

Pharmaceuticals:-

This sector is on the rise, since corona pandemic starts especially in our country, which provides the largest producer of generic drugs globally. It grows with size of market up to $55 billions during the march-2020 i.e. at the initial stage of corona pandemic in India. Our pharmaceuticals sectors **export the Hydrocloroquine** through out the globe especially to US, UK Canada and the middle-east. Recently there were rise in the prices of raw materials imported from china due to the corona pandemic specially generic drugs are mostly impacted due to heavy reliance on imports, distributed supply-chain and unavailability of labor due to social distancing. Govt. imposed ban on the export of critical drugs, equipment and **PPE kit**.to make sufficient quantities available to our native country, that's why the pharmaceuticals sector struggling. In such disparate time most pharmaceuticals companies facing financial stress, tax-relaxation and addressing the labor force shortage etc. are the differentiating factors.

Oil and Gas:-

This sector has quite significant in the world context. India has become the 3rd largest energy consumer country only after US and China and contributes to approx. 5.2% of the world oil and gas demand. Due to lockdown in the entire India, the demand of fuel slowdown more than 60%. As manufacturing industry declines and goods and passenger movements of both bulk and individuals, fails to make up the revenue loss and road taxes. Govt.of India (GOI) thinking of passing benefit of decreased crude price to serve end customers at retail outlets to reach demand.

Conclusion:-

Due to the corona pandemic, it is evident that downturn in economy is fundamentally different from recession. Increased unemployment and reduced demand results to alter the business landscape. In this uncertain environment, govt. should adopt new principles like "shut towards localization, cash conservations, Supply chain resilience and innovation will help business in trending a new path.

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Impact of Covid-19 on Indian Economy

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Abstract:-

The impact of the COVID-19 pandemic in India has been very destructive. Growth of India in the fourth quarter of the fiscal year 2020 went down to 3.1% according to the Ministry of. The experts said to the Indian government that this drop is due to the coronavirus pandemic effect. The rating agencies had initially revised India's growth for FY2021 with the lowest figures India has seen in three decades. owever, after the announcement of the economic package in mid-May, India's GDP estimates were down even more to negative figures.

Keywords: - Covid*-19, Economy, Lockdown, Impact, Recovery.*

Introduction:-

Covid-19 has caused irresistible illness that can enormously increase dreariness and mortality throughout the world and cause critical financial, social and political disturbance. Facts recommends that the probability of pandemics has expanded over the past century since of expanded worldwide travel and integration, urbanization and noteworthy misuse of the common environment. (Jones and others 2008; Morse 1994). These patterns likely be proceed and escalating. There is a need to grow and maintain attentiveness and well-being capacity (Smolinsky, Hamburg and Lederberg, 2003). The Present-day pandemic spotlight on COVID-19 (coronavirus disease-2019) was earlier placed on Zika virus, H1N1, severe acute respiratory syndrome (SARS), chikanguniya, Middle East respiratory syndrome (MERS), and Ebola. Major companies in India have temporarily suspended or significantly reduced operations. Young start-ups have also been affected as funding has fallen. The Indian government has announced various measures to tackle the situation, from extra funds for healthcare and for the states and tax deadline extensions. On 26 March a number of economic relief measures for the poor were announced totalling over □170,000 crore (US$24 billion). The current COVID-19 outbreak has provoked social stigma and discriminatory behaviours against people of certain ethnic backgrounds as well as anyone perceived to have been in contact with the virus. (Barrett R, Brown P J. 2008). On 12 May the Prime Minister announced an overall economic stimulus package worth □20 lakh crore (US$280 billion). Globally in a poll by the 'Edelman Trust Barometer', out of the 13,200+ people polled, 67% agreed that "The government's highest priority should be saving as many lives as possible". That is, life should come before livelihood.

Methodology

In this research paper we are using Secondary Data by collecting Information on the present issue like websites, newspaper articles, magazines, Government reports, journals, etc. However, in this study we had utilized them tactfully to build on incredible precision instead of conducting the same research once again. This provides a better understanding of the subject and clear vision.

Covid-19:- The Economic crisis

Lockdown Phase 1 (25 March – 14 April)

The Government announced the food security scheme for 800 million people across the country. Cabinet Minister Prakash Javadekar made the announcement in a press conference that the ration would be 7 kg every month (which would include wheat at a cost of □2 per kg and rice at □3 per kg.

On 28 March the Prime Minister launched a new fund called PM CARES fund for combating coronavirus-like situations.

Lockdown Phase 2 (15 April – 3 May)

As per new lockdown 2.0 guidelines, the Ministry of Home Affairs announced, among other things, that all agricultural activities will remain fully functional. Information technology companies can function with 50% staff. The partial list of restrictions would take place from 20 April.

Impact of Covid-19 on various sectors:-

Pharmaceuticals:-

This sector is on the rise, since corona pandemic starts especially in our country, which provides the largest producer of generic drugs globally. It Grows with size of market up to $55 billion during the march-2020 i.e. at the initial stage of corona pandemic in India. Our pharmaceuticals sectors **export the Hydrocloroquine** rough out the globe especially to US, UK Canada and the middle-east. Recently there were rise in the prices of raw materials imported from china due to the corona pandemic specially generic drugs are mostly impacted due to heavy reliance on imports, distributed supply-chain and unavailability of labour due to social distancing. Govt. imposed ban on the export of critical drugs, equipment and **PPE kit**.to make sufficient quantities available to our native country, that's why the pharmaceuticals sector

struggling. In such disparate time most pharmaceuticals companies facing financial stress, tax-relaxation and addressing the labour force shortage etc. are the differentiating factors.

Energy:-

Consumption of fuel was the lowest since 2007. Cooking gas (LPG) sales rose 12%. An International Energy Agency report in April estimated India's annual fuel consumption will decline 5.6% in 2020. Diesel demand will drop ~6%.

Agriculture:-

Our economy is agricultural based and we called it as a backbone sector of the country, also government announces it as a essential category, therefore the impact is not goes up to such a high extent on the both primary agriculture production and agricultural inputs.. Many state govt. have already permitted to free movement of fruits, milk and vegetables, foods etc. Online food and groceries are heavily impacted due to not proper strategies on movement and stoppage of logistics vehicles. **Reserve Bank of India (RBI)** which is the apex institution of India and the finance minister, both announced measures by helping to the industry and short term employees. In forthcoming days, rural food production areas will hold a great solution to the macro impact of coronavirus (Covid-19) on Indian food sector as well as on larger economy.

Manufacturing:-

Major companies in India such as Larsen and Toubro, Bharat Forge, UltraTech Cement, Grasim Industries, the fashion and retail wing of Aditya Birla Group, Tata Motors and Thermax momentarily suspended or significantly reduced operations in a number of manufacturing facilities and factories across the country. IPhone producing companies in India also suspended a majority of operations. Nearly all two-wheeler and four-wheeler companies put a stop to production till further notice. Many companies have decided to remain closed till at least 31 March such as Cummins which has temporarily shut its offices across Maharashtra. Hindustan Unilever, ITC and Dabur India shut manufacturing facilities except for factories producing essentials.

Telecom:-

In Indian telecom sector, some significant changes accord even before corona pandemic. Due to brief price between the service providers. This essential service sector had continued to work during the Covid-19 pandemic. Thanks to adopt the strategy of the **work from Home (WFH).**Contribution of this sector reaches up to 6.5% of GDP and near about 4 million employees involved in it. Increased internet usage had impacted directly and due to this, shows the result of pressure on the network. Near about 10% demand has increased. As per the government policies and recommendations, this sector can be aid by relaxing the regulatory compliance provide moratorium for spectrum dues, which would be used for network expansions by the

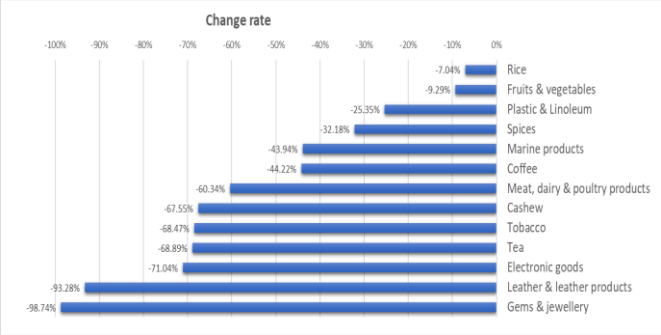
Economic recovery:-

Recovery shapes

A V-shaped recovery is the best outcome. Arthur D. Little, an international consulting firm, has suggested that India will most probably see a W-shaped recovery..

V-shaped recovery

In the second week of May, companies started preparations for restarting operations. Some companies opened offices with the maximum permitted strength of 33% while others took a more cautious approach of as low as five per cent. The beginning of June saw companies further reopen and making plans to reopen. A study by Elara Securities Inc. found that five Indian states, Kerala, Punjab, Tamil Nadu, Haryana and Karnataka, are contributing 27% to India's GDP as India emerges from a total lockdown. On 29 July 2020, the Cabinet of India passed the National Educational Policy 2020 aimed at strengthening the economy. Sectors such as manufacturing, real estate, professional services, construction, tourism, public utility and defence were still in recession. This conclusion was based on indicators such as E-Way Bills, GST revenue statistics, commercial paper, steel demand and recovery in GDP growth. Due to low base effect a number of infrastructure sectors such as natural gas and cement saw high double digit growth in March 2021; a number of related sector such as coal were still in recession. In April the output of the core infrastructure sectors again saw high growth, again a consequence of the low base effect.



Conclusion and Suggestion:-

The GST collection is also not at par. The situation of COVID-19 is aggravating the financial health of the country even more worsen. As per the UN report, India will be impacted by $348 mn on its trade due to Corona Virus. The figure shall increase even further depending on the period of lockdown, locally & globally. It is expected that in the short term the price of logistics, transportation, freight and many other services will rise. The Government is taking all possible measures to handle it efficiently however the exact impact shall only be known once the corona period is over. The economy is expecting no. of financial packages (5% to 10% of GDP) to overcome this historical slowdown. The Government till date has announced two financial stimulus (INR 1.7 lack crore and approx. 1 lakh crore along with 17000 crores to the state governments) to boost the sentiment of the Industries and the people.

1. To cut various rates such as repo rate.
2. The tax concession in the export should be continued.
3. The tax collection may also be considered to be rationalized hence industries will look for relaxation in the GST as per the need of the hour.
4. DBTs (Direct Benefit Transfer} should be exercised more effectively.
5. Availability of Working Capital and Loan facilities should be easy.
6. The expenses on Govt. Machinery must be relaxed especially on transportation, salaries, etc.

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Impact of COVID-19 on Customers of Health Insurance Sector

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Abstract:

Last few months have been Challenging for our Nation, and also for our people and businesses. India is one of the worst hit by the Coronavirus pandemic. This pandemic has left its mark on almost all industries and sectors including health insurance. While the pandemic is still displaying no signs of reduction, we are now able to project its impact the health insurance industry. Some of positive changes that the health insurance industry has seen. 1) 30-40% hike in health insurance adoption 2) The business has saw a massive move towards digitalization. 3) Then there has been a clear change in the customer attitude regarding health and life security. The full image is not altogether glowing. The health insurance industry is facing with many a challenges as well as worries that are brought out pandemic.

Key words*: Health insurance, Customer satisfaction, COVID-19 impact.*

Introduction:

Meaning of insurance

Insurance contract takes place between two parties where one party promises to embark on the risk of the other in exchange for premium and assurances is given to insure the party on happening of an event which is not certain. The important benefit of insurance is that it binges the risk of some people over a large number of people facing similar type of risk. Insurance has been identified as a sunrise sector by the financial planners of India. The insurance industry has lot of potential to grow, penetrate and service the masses of India. Insurance is all about protection. An insured needs two types of protection life and non-life. General insurance industry deals with non-life protection of the insured of which health insurance is a part. Health insurance is a contributor of around 29% of premium midst all other subdivisions of general insurance. But hitches in this sector are many which is the reason behind this study. An insurance plan that covers the expenditures connected with health care can be labeled as health insurance. Health insurance is provided by private, government and stand-alone health insurance companies. The rise of private insurance companies brought the primer many innovative products like critical illness plans, top-up policies. Growth of middle class, higher hospitalization charges, costly health care, digital technology and increase in consciousness level are some of the reasons for the growth of health insurance business. Lifestyle diseases are on the rise. There is lower physical movements today than past and there is no motive why this would not be the tendency going frontward. The inference is the arrival of lifestyle lasting illnesses such as cardiac problems and diabetes. In the background of the Indian health insurance business. The prospect of this industry is delayed by low dispersion and adverse customer awareness about its usefulness. The reverse side is that we have barely looked at the opportunity that lies in the coming period. Much remains to be captured and even more remains to be achieved.

Evolution of Health Insurance: During the last 50 years, India has attained most in terms of health insurance. Post-independence, stress has been put on prime health care and made significant development in refining the health of the country. The new economic policy and liberalization procedure followed by Government of India paved the way for private sector of insurance subdivision in the nation. The Insurance Regulatory and Development Authority (IRDA) bill was significant for the start of transformation having noteworthy repercussions for the health sector.

Importance of Health Insurance in India: 1.3.1 Routines have transformed. Indians today suffer from stress. Long work hours, less exercise, indifference toward healthy balanced diet and increased consumption of junk food have deteriorated our immune systems and we are at bigger risk of contracting diseases. 1.3.2 Uncommon non-communicable illnesses are now common. Chubbiness, high blood pressure, strokes and heart attacks, which considered rare, now more and more number of urban Indians are affected by them. 1.3.3 Health care is incredibly costly. Medicinal innovations have led to in cures for dreaded illnesses. These treatments are available only for few. Due to high operating and treatment expenditures. 1.3.4 Indirect expenses enhances the financial burden. Indirect causes of expenditure like travel, staying and even momentary loss of pay for as much as 35% of the overall charge of treatment. These evidences are ignored when planning for health expenses. 1.3.5 Partial financial planning. Many of us have insurance cover for home, vehicle, child's education and retirement years. Fatefully we have not insured our health. We disregard the point that illnesses attack without warning and seriously affect our finances and eat away our savings in the absenteeism of a good health cover plan.

Types of Health insurance plans: Different health insurance plans in India can be broadly classified into the categories like Hospitalization plans, Family floater health insurance, Pre-existing disease cover plans,

Senior citizen health insurance, Maternity Health insurance, Hospital daily cash benefit plans, Critical illness plans and Disease-specific special plans such as Dengue Care and Corona Kavach policy.

SWOT analysis Strengths. The developmental trend of the health insurance sector is may be high due to rise in per capita income and evolving middle-class in India. New policies are being introduced in this sector by varied insurance companies which will help to fulfil customers requisite. Customers will be enormously aided when cash less facility will be provided across the nation by all the insurance enterprises.

Weaknesses. The financial state of this sector is feeble because of less investment in this sector. The public sector insurance companies are ruling this business due to their better infrastructure facilities. This sector is likely to get high claims ratio and many wrong claims are also made.

Opportunities. The likelihood of future development of this sector is high, as infiltration in the rural sector is less. The up gradation of technology and the use of internet are helping this sector to grow in size and move towards environment-friendly paperless management.

Threats. The main threat of this sector is the likely change in the government guidelines. The success of this sector is affected due to growing expenses and claims.

Consumer Behaviour and Health Insurance: India's private health insurance segment has been undergoing high growth due to more inclusive and tailored health coverage. It has recorded a composite annual growth rate (CAGR) of 23% in Health insurance is an unexploited market, with health insurance covering only around 3.1% of the India's population. The National Health Profile 2020 states that around 48 crore persons were covered under health insurance in 2017–18. Increasing load of diseases, rising elderly population and growth of knowledgeable and empowered consumers will result into expansion of health insurance cover in the coming years, this sector, will be shaped by consumer expectations like any other service sector. This brings vast challenges for any industry; but understanding the expectations of the health insurance consumer is a bigger test. This is due to every consumer wants best quality products and services when it comes health.

The steps in the journey of health insurance customers: 1) Discover need of health insurance 2) Research about health insurance policies 3) Decide which policy to buy 3) Purchases policy 4) Get and review policy during free look period 5) Get services 6) Get admitted 7) Claim settlement 8) Claim wellness benefits 9) Renew or change

Impact of Covid-19 on Health Insurance: The COVID-19 disease has brought challenges for the health insurance business on various areas; but it is also an opportunity. Health insurance is likely to support the setback that this pandemic has brought. By being extremely pertinent to society, via appropriate mitigation strategies, insurance Industry may be capable to support it more though product development and ensuring their extensive coverage. India has habitually been an underinsured nation, with private health insurance schemes covering only 18% of the people in city areas and a little over 14% in country areas. Because of prevalent COVID-19 pandemic, health insurance companies are facing various challenges in various areas:

Payment of Claims and liquidity maintenance: Currently risk of COVID-19 assessed under active products, claims may lead to an additional load on the accounts of insurers if treatment is provided outside the Government hospitals. Because instructions of IRDAI clearly instructed to treat Covid-19 claims under active health insurance policies.

Development of new products: Due to the pandemic, there has been increase worry and consciousness about health, and enquiries related to health insurance policies have improved by 30–40%.Covid-19 pandemic has provided a chance for insurance companies to innovate and aid the growing needs of a more knowledgeable people. Some insurance corporations have introduced COVID-19 insurance products in the month of March 2020.

Reserves requirement In the wake of the pandemic, the Government has took steps towards dropping of bond interest and repo rates, which has brought challenges for insurers in terms of keeping higher reserves, risk related to liquidity, credit risk, etc. In sight of these challenges, the regulator may have to provide some momentary relaxation on the reserves obligation of insurers who were very near to the edge of solvency.

Review of literature Ellis et al. (2000) studied a variability of health insurance schemes in India. It was discovered that there is a requirement for a competitive environment which is only possible with the opening up of the insurance sector. Aubu (2014) showed a comparative study on public and private corporations towards marketing of health insurance. Study exposed that private sector services aroused enhanced response than that of public sector for the reason that of innovative approaches and technologies implemented by them. Nair (2019) has completed a comparative study of the satisfaction level of health insurance claimants of public and private sector non-life insurance companies. It was discovered that

majority of the respondents had claim of reimbursement through third party overseer. Satisfaction due to payment of claim was found comparatively higher for public sector than private sector. Devadasan et al. (2004) study says public health insurance is a significant intermediate stage in the growth of an reasonable health financing mechanism in Europe and Japan. It was determined that community health insurance agendas in India bid valuable teachings for its policy makers. Kumar (2009) scrutinized the role of insurance in funding health care in India. It was established that insurance can be vital resource for mobilizing funds, providing protection against risk. Nevertheless this to happen, it will need systemic reforms of this segment on the part of the Government of India. Dror et al. (2006) considered about preparedness among rural and poor persons in India to pay for their health insurance. Study naked that insurance covered persons were more willing to make payment for their insurance than those uninsured persons. Jayaprakash (2007) inspected to comprehend the sprints stopping the people to buy health insurance policies in India and approaches to decrease claims ratio in this sector. Yadav and Sudhakar (2017) considered personal factors influencing decision to buy health insurance policies in India. It was found that factors such as consciousness, tax benefit, financial safety and risk handling has noteworthy effect on decision to purchase health insurance policy. (Dutta, 2020) it studied that Health insurance sector is always under the pressure because this sector is having more claims. IRDAI has taken strong steps to increase premium. It will help in growth of this sector

Research Gap: After Extensive literature review it is understood that there has been substantial studies done performance of health insurance sector but more studies are required regarding study of consumers of health insurance and COVID-19 has put impact on health insurance sector consumers.

Objectives of Study: To review health insurance scenario in India with respect to consumers of health insurance To study Impact of COVID-19 on Health Insurance

Research Methodology: This study is based on secondary data obtained from the annual reports of Insurance Regulatory Development Authority (IRDA), survey reports, journals, research articles and websites. An attempt has been made to evaluate the consumers of the health insurance sector in India and Covid-19 imapct on Health insurance consumers. The data so collected has been classified, tabulated and analysed as per the objectives of the study. 6. Problem statement: The purpose of this study is to understand performance of health insurance on the basis of Consumers and study impact of COVID-19 on Health Insurance sector. To study this problem secondary data is used

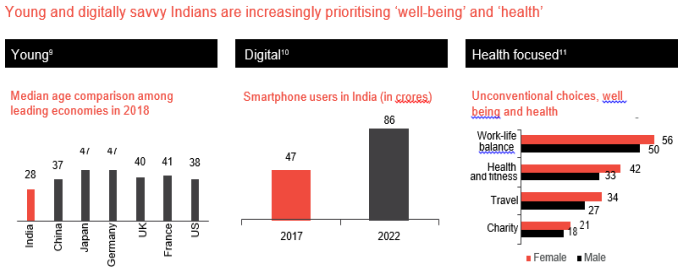
Data analysis:

Table 1.

	Health insurance premium earned	Claims incurred	Commission and management exps	Total claims and commission and management
Year	(Rs. Crs.)	(Rs. Crs.)	incurred (Rs. Crs.)	exps incurred (Rs.Crs.)
2014–2015	17260.69	17405.79	5343	22749
2015–2016	20456.57	20900.18	6629	27529
2016–2017	24709.75	26088.59	7059	33148
2017–2018	27875.24	26247.22	8329	34576
2018–2019	33010.89	30027.26	10049	40076
Source: Handbook on Indian Insurance Statistics. Website: www.irda.gov.in				

The Table no 1 shows that health insurance premium increased from Rs.17260 crores in 2014–2015 to Rs. 33011 crores in 2018–2019. But claims incurred together with commission and management expenses have grown from Rs. 22749 crores to Rs. 40076 crores during the same period. Thus the claims and management expenditures incurred together is higher than the health insurance premium collected in all the years thereby lead to underwriting loss.

Figure 1: Tech Savvy young Indians are giving priority to Health



Source:

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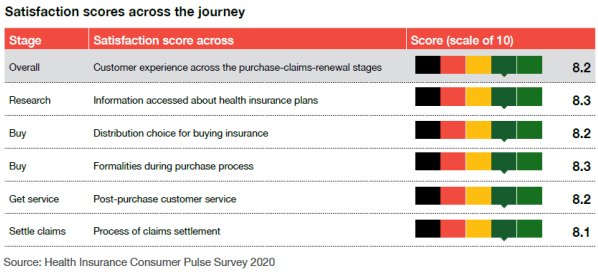
4) PwC Health Insurance Consumer Pulse Survey

Figure 2: Score of Satisfaction of customers in Health insurance



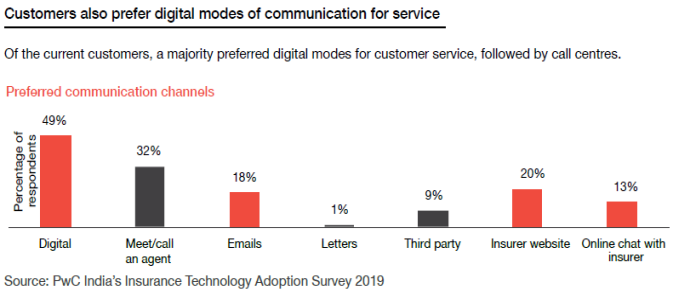
Satisfaction scores across the journey

Stage	Satisfaction score across	Score (scale of 10)
Overall	Customer experience across the purchase-claims-renewal stages	8.2
Research	Information accessed about health insurance plans	8.3
Buy	Distribution choice for buying insurance	8.2
Buy	Formalities during purchase process	8.3
Get service	Post-purchase customer service	8.2
Settle claims	Process of claims settlement	8.1

Source: Health Insurance Consumer Pulse Survey 2020

Source: PwC Health Insurance Consumer Pulse Survey

Figure 3: Customers Preference related to communication channel



Source: PwC Health Insurance Consumer Pulse Survey

Findings:

1. According to Article in times of India dated 6th June 2020, Only 4% of Covid Patients have health insurance.
2. Entree to healthcare is considered important for human right and the spread, quality and price efficacy of healthcare can change this dream into a certainty. India is on 145 positions on the global healthcare access and quality (HAQ) index, behind Bangladesh, Sri Lanka and other neighboring countries. The private sector in India has been growing its contribution in the improvement of healthcare infrastructure and enhancement of access. As per the National Statistical Office's annual survey of 2019 private hospitals provided for more than 50% of in-patient hospitalizations in rural areas as well as urban areas, at 52% and 61% respectively.
3. Aggregate satisfaction score of customer of health insurance is around 8.2 on the scale of 10.
4. The Indian insurance regulator, IRDAI, has announced reforms to improve customers in the health insurance sector. :
5. Insurers were provided with flexibility to change the base premium rate up or down around 15% because of any changes in loss-ratio performance of the last 3 financial years.
6. Insurers are permitted to raise the upper age limit from the usual limit of 65 years.

7. To insurers are permitted to introduce extra distribution channels for specific products without a tedious approval process.
8. India has youngest population among the principal economies. 1/3rd of the total population comprises Generation Y or millennials.
9. India is Chief smartphone user population in the world, it will mark the digital shift. yet a lesser infiltration than top 30 user countries.
10. Health and Well-being are now main concern of the Indian population. The young population is concentrating on health, fitness and well-being.
11. Digital modes play a noteworthy role in the research stage, whereas customary media (newspaper, TV) plays a substantial role in motivating awareness. Social media platforms can also be used to create awareness because consumers spend over 90 minutes everyday online on their smartphones.
12. COVID-19 catastrophe has altered the way business processes are to be conducted. The crisis has restated the position of businesses being prepared for future so that they can remain to be functional without disruption even during complete lockdowns, consequently curtailing their dependences on physical infrastructure.
13. COVID-19 is one of the reasons for the expected premium increase. The health insurance companies have received claims worth Rs 14,000 crore, out of which they have settled only Rs 9,000 crore. The constant spread of Covid is one of the explanations behind the rise in the health insurance premium as the Covid has placed huge load on the insurance companies. In spite of no alteration in quarter 1, 2021, there are some charges for an surge in the premiums. The increase may be between 10-15 per cent.
14. Shift to digital operations through strong IT platforms available to all stakeholders appears unavoidable.
15. A very significant feature of insurance claims dispensation is the handling of paperwork, which mostly initiates from hospitals.
16. Function of health insurance in serving people to afford quality healthcare is supreme. Consciousness about health insurance has been growing and this is apparent in the healthy growth of the sector. Health insurance premium collection is INR 50,822 crore in FY20, continuing to be after the first contributor to the general insurance sector.
17. Correspondence in insurance business associated to underwriting and claim dispensation should be substituted with digitisation, with all processing methods with verification accessible through the internet.
18. This would consequently:
    a. Avoid the spread of infections like COVID-19 as digitisation guarantees nil physical interaction.
    b. Avert delays/issues in physical paper transmission from the client to the middleman to the insurance corporation, as well as storage and recovery
    c. Advance the transparency of actions engaged while guaranteeing and claim settlement
    d. As non-tangible products/services offered by insurance companies have the benefit of conducting their business of underwriting and claim settlement online with least or no infrastructure, excluding for service delivery at hospitals.

Conclusion:

1. According to consumer pulse survey customers want digital involvements at each phase of their health insurance voyage – from research to renewals. So, insurers are likely to build digital resources that deliver a continuous and stress-free experience across each phase of the voyage, Let it be: - occurrence on online channels where clients - research- digital resources where customers can be directed to the best-fit product- attending transitions among unassisted and assisted service channels- claims dispensation.
2. It is vital for insurers to develop a profounder understanding of customers by primary research. – Insurance companies should invent on behalf of the customer to meet unspecified demands. Allow customers to coose features. - Make the best use of evolving technology such as wearables and IoT to redefine the marketplace.
3. Insurance companies may build accessible dispersal competences by providing training and technological push to bring behavioural changes. Insurance companies can pursue new and innovative business strategies and novel partnerships. They can mark the distributor voyage digital, instinctive.

4. COVID-19 rash poses dares for health insurers, it also gives them an chance to come out stronger and re-establish their determination, value and contribution to the humanity. Customer service has always been important base on which the efficiency, trust and goodwill of a health insurer depends.
5. Some of the actions that might help reach a greater customer experience include:
6. Instantly offering to enrol extra people under health schemes to cover COVID-19
7. providing more coverage and fast services to those who are occupationally more uncovered to the threat of COVID-19
8. Mechanizing the first level of customer service through robots to accomplish the difficulty of provisionally reduced staff.
9. Health services workers are at the front position in the battle against COVID-19 as the pandemic lasts to binge worldwide. It has already started impacting businesses in the nation, and an increasing number of COVID-19 cases would mean a rush in health claims due to the widespread nature of the illness.

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Impact of Environment on Health

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Abstract

Improvements in fitness is the environmental medications may want to attain are a need while deciding on environmental fitness motion to forestall infection. An evaluation of the fitness influences from the fundamental threat elements untreated ingesting water, negative hygiene, mistaken sanitation is seemed to motive infectious sicknesses along with cholera, diarrhea, dengue etc. The wager of preventable fitness influences through the surroundings as a whole. The environmental opportunities can pressure up the possibilities of contracting coronary heart sicknesses, and numerous infections. The surroundings are a traditional international wherein all of us are alive today. Eco-pleasant fitness is one of the primary fields inside network fitness due to the various methods out of doors forces can have an effect on how we eat, live, and grow. The influences of environmental degradation on human fitness are critical for the development of well-knowledgeable techniques through the fitness sector. The measures taken to govern to unfold of the virus have widespread outcomes at the surroundings. This examines additionally specializes in the nice and poor environmental influences of the COVID-19 pandemic, through analyzing the to be had medical literatures. The pandemic scenario meaningfully recovers air first-class in distinctive cities, reduces GHG emission, water pollutants, noise, and reduces the load at the traveler terminus BS. There are a few poor results of COVID-19, along with the upward thrust of scientific waste, random use and elimination of antiseptics, masks, and purses constantly risking the surroundings.

Keywords: *Environmental medications, Health influences, Environmental opportunities, Environmental influences, COVID-19 pandemic,*

Introduction:

The thinkable fitness profits because of environmental interferences and ailment issues may be prevented through making use of them are important issues for decision-making closer to public fitness motion. Counting the ailment trouble produced through the surroundings has been complex given the relative loss of evidence. Due to the improvement of the latest gear in epidemiologic exam and techniques to wager people's fitness outcomes, had been evolved. The fitness influences from out of doors air pollutants had been evolved which can be extra latest entire and relative analyses techniques include, a comparative threat evaluation of threat elements that are environmental, estimates of the worldwide effect of the surroundings on fitness. On the country wide level, several comparable researches had been established, displaying the significance and hobby for such records. In this newsletter, we strive to offer the effect of the surroundings on fitness. The pandemic has produced huge worldwide disturbance, which could without delay or not directly have an effect on the surroundings like perfection of air and water first-class, lower of noise and maintenance of biology. The larger use of private protective equipment along with face mask, hand gloves, gowns, goggles, face protect etc. and their random elimination creates an environmental load. In those conditions, this examines proposed to find out the useful and awful environmental importance of the COVID-19 pandemic, and endorse in all likelihood plans as upcoming recommendation for environmental sustainability (1-6).

Methodology:

This examines changed into done through rereading the to be had posted literature, case research, and distinctive authorities and non-authorities' businesses record from reviews and reliable websites. Scientific literatures have been accumulated through digital manner from the database of Science Direct, Springer, ISI Web of Knowledge, Research Gate, and Google Scholar. This examines accumulates and gives the records that are relevant to the environmental outcomes of COVID-19 and get to examine objectives.

Result and Discussion:

Environmental pollution reason damaging fitness consequences. Several of poisonousness and opposite fitness affects in addition to the associated modes of movement stay mental. In the modern-day stage, a number one trouble in knowledge environmental fitness troubles is the dearth of appropriate technology and theoretical methods. The international disturbance produced with the aid of using the COVID-19 has carried approximately a few consequences of the surroundings and weather. Due to pressure manipulate and a large stoppage of social sports, air first-rate has advanced in lots of towns, with a discount in water pollutants in one-of-a-kind components of the countries. Increased use of PPE, face mask, hand gloves, their random elimination and technology of a substantial quantity of medical institution

waste has bad effects at the surroundings. There are each wonderful and bad environmental effects of COVID-19. Due to the closed down of industries, transportation and agencies has added an unexpected drop of greenhouse gases emissions. Levels of air pollutants have decreased due to measures taken to manipulate the virus. It can be claimed that discount of nitrous oxide and carbon monoxide passed off because of the shutdown of heavy industries. Typically, nitrous oxide is made out of the fiery of fossil fuels, which comes from motor automobile exhaust. It is said that because of nitrous oxide reasons, acid rain and numerous respiration sicknesses suffered with the aid of using humans. It became additionally said that, the ranges of nitrous oxide decreased in Delhi, the capital of India all through the lockdown. We understand that cars are predominant sponsors of emissions and make a contribution to the delivery sector's GHGs emission. Due to the reduced passengers and regulations on flights are being cancelled with the aid of using business plane agencies because of the pandemic, that could deduct carbon dioxide emissions, which has consequences of the surroundings. Much less intake of fuels decreases the greenhouse gases emission, which allows to combat in opposition to international weather change. In this era oil call for has decreased, international coal intake is likewise decreased due to much less electricity call for all through the lockdown duration. The pandemic duration may want to lower carbon dioxide fuel line because of the above cited condition. During the lockdown duration, many businesses reassert of pollutants have absolutely stopped, which helped to lessen the water pollutants. The river Ganga and Yamuna have reached a momentous stage of cleanliness because of the absence of business pollutants on the times of lockdown. Due to the enforcement of a ban on public gathering, the wide variety of vacationers and water sports had been decreased in lots of places. Due to the COVID-19 lockdown, the meals waste is decreased, which subsequently decreases soil and water pollutants. Enormous quantities of strong refuse are generated from production, and production approaches liable for water and soil pollutants are decreased. Due to excessive ranges of sound noise, pollutants are generated from one of a kind human sports which includes machines, cars, production paintings which may also result in opposite consequences in humans. Noise dangerous consequences on physiological fitness at the side of cardiovascular disorders, hypertension, and sleep shortness of humans. It can be referred to that hundreds of thousands of humans are liable to listening to loss because of noise pollutants. Anthropogenic noise pollutants have opposite effects at the surroundings via the converting equilibrium in predators. Noise additionally negatively impacts the invertebrates that assist to manipulate environmental approaches which might be active for the stability of the ecology. Huge quantity of antiseptics is implemented into residential regions to dispose of viruses. Such extensive use of antiseptics may also kill non-centered useful species, which may also create ecological imbalance. Directly or indirectly, the effect of this pandemic surroundings is affecting human life, human fitness. It recaps how we've left out the environmental mechanisms and imposed human made weather change.

Conclusions: -

1. The COVID-19 has carried approximately a few consequences of the surroundings and weather.
2. Both wonderful and bad environmental effects of COVID-19.
3. Less intake of fuels decreases the greenhouse gases emission, allows to combat in opposition to international weather change.
4. Construction and production approaches liable for water and soil pollutants are decreased.
5. We need to reflect inconsideration on the way to forget about the environmental mechanisms and imposed human made weather change.

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Job Satisfaction of Women In Education Sector

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Abstract

Job satisfaction of employees is determined by the various factor in the organisation. It is employees sense of achievement, very often job satisfaction of employees depends upon the nature of the job & the institution where they are working. Therefore the present research paper aims to examine the various factors which affects the level of job satisfaction of women employees in education sector, the primary data collected from women working in education sector in latur, the factors such as income, family support, workload, number of working hours, attitude of their supervisors with themselves are found to have an influence on job satisfaction of women working in education sector

keywords: *job satisfaction, women in education sector, factors affecting job satisfaction*

Introduction

Today the world is full of competition, as a result it creates a lot of pressure on every organisation to perform their best level for this purpose the major significant factor is employees. Management as well as organisation cautiously needs the information regarding employee's satisfaction on job, which refers to sound decision in solving the problem & quarries of employees. At same workplace, at same nature of job, under the same working conditions, one employee may feel better with their job such thing may not apply to another employee. For this reason number of factors may be considered for measuring job satisfaction of different employees these are as:

1. Attitude of the supervisors with their employees.
2. Challenging nature of the work & it's working conditions
3. Timely appreciation by the supervisors as well as the organisation about the achievement of the employees.
4. The pay structure as compared to the competitors, through which the employees can maintain good quality of their lives.

Meaning of job satisfaction

Job satisfaction is the feeling of an employee about his/her work and how he/ she feel well in the organization. It indicates the degree of employee's positive or negative feelings about their jobs.

Definition of Job Satisfaction

1) According to E. A. Locke, describe job satisfaction as, "the pleasurable emotional state resulting from the appraisal of one's job as achieving or facilitating the achievement of one's job values"

2) According to P. E. Spector, "Job satisfaction is the extent to which people like or dislike their jobs".

Objectives of the Study

1. To study the present job satisfaction level of working women in education sector.
2. To identify factors influencing the job satisfaction among the working women in education sectors.
3. To know the impact of employment of women in socio economic status.

Hypotheses of the Study

1. The working environment in education sector is positive & healthy, thus satisfied with their job
2. There is a positive effect of job satisfaction in education sector amongst the working women.

Limitations of the Study

1. This study has been conducted among the women working in education sector with reference to Latur city only.
2. One cannot completely reply on their given opinion, this is because they are working temporary & likely to be change with time.
3. The major limitations of this research are the psychological temperament of the women employees, which may act as the biggest barrier.

Why the Job Satisfaction Is so Important

Job satisfaction is important in each & every field of life. Every firm have the significant effect on their employees who work hard for their firm, some of those effects indicates how the employees feel regarding their work. This may show that job satisfaction has an important key factor not only for employees but for the employer's also. Hence job satisfaction is very beneficial for the company in several ways as;

1. Satisfied employees may translate into the satisfied customers:
2. It increases the chances of referrals:

3. Satisfaction of employees is directly connected to organisations productivity:
4. Innovation:
5. The Satisfied Employees are in position to Handle Pressure:

Factors Affecting Job Satisfaction Level

Job satisfaction is the big factor in the employee engagement. The term job satisfaction may depends upon the various factors like as; the pay structure, the promotional opportunities, security of job, working hours, working environment, the relation between the employees and supervisors, etc. the expectation as well as the feeling of one employees may differs from one another that what they want to achieve from their job. Job satisfaction may play a significant role in cost reduction by reducing conflicts among the employees, the certain task errors as well as the turnover.

Working Environment:

It is important to provide the effective working environment to the employees for their overall development. If the working environment was attractive, clean, proper surrounding, effective ventilations then it will be so easy foe employees to effectively perform their job.

Pay structure:

Wages & salary are the rewards which are given to the employee's foe their work done. If the employees may get the proper recognition regarding their work the employees may feel satisfied. Money not only helps the employees to satisfy their basic needs but also helps to raise their standard of living. A satisfied employee does not see how they get by doing the job because they feel that the organisation may provide better pay structure.

Safety & Security:

In the recent days the organisations are taking the various measures in respect of safety & security of the employees. For this purpose different facilities may be provided as; the medical check-ups, insurance policies at the lower rates, health care facilities, etc. with this the employees may feel safety of their lives as well as security regarding future, hence they may feel satisfied with their job.

Age:

The factor which may effect on the level of job satisfaction is age. From the various research shows that the level of job satisfaction was increases with raise in age. It means the old employees have the higher level of job satisfaction as compared to the young employees. This is because the person can learn from the experience.

Women In The Field Of Education

Mahatma Jyotiba Phule, Baba Saheb Ambedkar was the leaders of lower castes in India who was undertaken the various initiatives for making education effectively available to women's of India. However the women's education got improvement after independence in the year 1947, then after the government was undertaken the number of measures to make available the education to all the women of India. After the Independence, the educational rights of the women was promoted and women as well as the society were made aware about the value of education.

The women's literacy rate was increased over the last three decades and it positively reflects on the growth of the female literacy higher than as compared to male literacy rate. In the 1971 only 22% of the Indian women was literate, whereas at the end of the year 2001 it must be raised to 54.16% female are literate. The increase in the female literacy rate is 14.87% in comparison to 11.72 % to that of the male literacy rate.

Review Of Literature

What Contribute to Job Satisfaction among Faculty and Staff: By Linda Serra Hagedorn, this book contents 118 pages divided into 9 chapters, in this book contents the various information of the members of the campus community which may suggest the various factors which may help to promote the job satisfaction which indirectly improve the other positive outcomes. Further few members argue that the pleasant atmosphere improves the satisfaction level. Other facilities as faculty staff and students meet, sponsoring special events, as well as providing day care also helps to improve satisfaction level of job.

Women in Administration in India by George Jayasheela, Administration is nothing but the performance of the various functions of the particular state and it may be differs from the legislature and judiciary. This present study explains the Administration refers to the Managerial view of the administration & this study here is on the women administration of All India Services; i.e. IAS, IPS & IFS. These are the services which are in existence from the British Period, since these are the olden days where women's does not have freedom so the entry of women's in this sectors are very late, women's got entry in this sector after the few decades of independent. In 1951 only one women got this service, in 1961 also only one women entered in this service & in the year 2000 only 9 women's got into the Administrative service.

Research Methodology

Research Design

For the present study, both the descriptive and analytical study are used. It has made an attempt to make the study about the job satisfaction of women in education sector with reference to latur city

Source Of Data

The above study is based on the primary data which is collected from the women working in education sector of Latur District. Whereas the Secondary data must be collected from the different literatures like journals, newspapers, published articles, university magazines, books, magazines and the related websites.

Findings

1) Age is the significant factor which influence the overall satisfaction, monetary and fringe benefit, motivation as well as the promotion level, work life balance, social status and security regarding the job.

2) Educational qualification is also the most significant factor affecting the overall job satisfaction, highly educated women was more satisfied with their jobs as compared to other educated women.

3) Recognition is the key significant factor affecting the level of social status and the security. Recognized women has been felt more social status and the security.

Suggestions

Based on the present research study some of the following suggestions has been made:

1) Institutional/ organizational administration has been expected to define clearly the employment policy, terms and conditions to the employing faculty while they will want to join the institution

2) The institution may also tries to create the effective staff association or committee who find out issues which are related to the dissatisfaction and the grievances of employees.

3) Stress is the major problem which was faced at every type of work place. Hence the management as well as the government should takes some initiatives to minimize the burden of stress by the way of conducting some stress relieving programs like as seminars, organizing health care program, Dhyana, Pranayama, Yoga, games and so on.

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Role in the studies characterization of physico-chemical parameters of water sample in Mukhed Area. Dist. Nanded Maharashtra

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Abstract: -

The analysis of Physico-chemical Parameters characterization of the water sample was studied by before rainy season. This study was made in the month of April 2020 to June 2020. The analysis of the water sample were not much polluted containing constituents. The present work investigation deals with the study of water sample were selected for characterization in Mukhed area. The parameters studies were sample water in temperature, pH, electrical conductivity, dissolved oxygen, total alkalinity, total hardness, free CO2, chloride, fluorides, total solid carbonates, nitrates, sulphates, phosphates, calcium, magnesium, etc.

Keywords: - *Physico-chemical, parameter, variation water, etc.*

Introduction: -

Water is the basic need of every living organism, plants as well as animals. The main source of water from rainfall in rainy season. After rainy season source of water is groundwater. The water is used for domestic, drinking, agricultural, irrigational and industrial purposes. The quality of groundwater depends upon annual rainfall.

Location: -

The study of the water sample data were collected from Mukhed area for the monitoring analysis Physico-chemical characterization of water sample. The water samples were collected from the location before rainy season between early in the morning 08.00 am to 10.00 am.

Materials and methods: -

The samples were collected during April 2020 to June 2020 and analyzed by standard methods (APHA, 1098) sample were identified following the relevant monograph (Hustadt, 1930. Pochman, 1942, Desikachary 1959). The samples were collected air tight and opaque polythene containers. The analysis of physico-chemical characteristics was carried out by standard methodology for water analysis given by Kodarkal etal (1998) and Trivedi and Goel (1984). To determine the temperature of water in temperature pH, electrical conductivity, dissolved oxygen, total alkalinity, total hardness, free CO2, chlorinity, fluorides, total solid carbonates, nitrates, sulphates, phosphates, calcium, magnesium etc. These parameters applied for quality of water sample is used for practical and studies purpose. The water sample were used for the measurements of such analytical parameters. The dissolved oxygen is one of the most important parameters in the water sample for quality assessment.

The following parameters are used in characterization analysis of water samples as,

Temperature: -

Temperature is one of the most important factor to determine the water temperature of the sample were recorded by using portable thermometer as in Celsius. The temperature at the time of water sample ranged from 28.9^0c to 30 ^{0}c.

pH: -

The pH of the water samples was determined by using digital pH meter, electrode etc. the pH value of the water sample ranges from 7.8 to 8.6 The measurement was carried out by immersing the electrode cell in the sample of the water. The reading were recorded by using digital pH meter for the results.

Total Alkalinity: -

Alkalinity is the buffering capacity of the water sample it contains carbonates, calcium, magnesium, potassium, sodium etc. in the water sample from the natural salts. The alkinity for analysis of water sample in the variation in Mukhed area ranges 40mg/L to 98mg/L.

Total hardness: -

It is found in soap destroying in water sample which is carbonates, calcium, magnesium, sulphate, nitrates etc. The hardness was determined by the complexometric titrations with EDTA using eriochrome black - T as an indicator. The ranges 192mg/L to 212 mg/L.

Total solid: -

It is used as the study of water quality for streams, rivers and lakes. TDS is not generally considering a pollutant. The maximum concentration of total solids are dissolved in water sample ranges 190 mg/L to

542 mg/L.

Chloride: -

Chlorides are generally present in naturally water samples. The presence of chloride in natural water samples are dissolution of the salt deposits. Chlorides are highly soluble in water but low soluble in natural water. The chloride contains ranged 40 mg/L to 92 mg/L. The determination of chloride is in easily made by AgNO3 titrations (Mohr's titration) method in silver (Ag) reacts with chlorides forming products which AgCl precipitation in the presence of sulphuric acid (H2SO4) when all the chlorides are form precipitated as consider example of the titration between silver nitrate and potassium chloride the reaction is represented as $K^+Cl^- + Ag^+NO3^{- -} \square K^+NO3^{- -} + Ag^+Cl^-$

Calcium: -

The titration between Std. NaOH against Std. EDTA by using
muroxide as an indicator. Calcium is important component of the water. The calcium content ranged 115 mg/L to 122 mg/L.

Electrical conductivity : -

The determination of electrical conductivity of the water samples is measured by with the help of a digital conductometer and conductivity cell etc. the conductometer is used to measure the conductivity of the water. The value of electrical conductivity of water temperature is 30^0 c. The effect on temperature increases with electrical conductivity. The maximum value of electrical conductivity range from 0.89µs/cm to 1.22 µs/cm.

The value of physico-chemical parameters are as shown in the Table No. 01

Parameters	Range
Water temperature	28.9^0c- 30 ^{0}c.
pH	7.8 - 8.6
Total Alkalinity (mg/L)	40 - 98
Total hardness (mg/L)	192 - 212
Total solids (mg/L)	198 - 542
Chlorides (mg/L)	40 - 92
Fluorides (mg/L)	28- 32
Calcium (mg/L)	115- 122
Nitrates (mg/L)	14.2-24.6
Dissolved oxygen (mg/L)	6.4 to 8.5
Electrical conductivity (µs/cm)	0.89 -1.22

Results and Discussion

The value of physico-chemical parameters is as shown in above table No. 1

There was no any significant difference in the range of physico-chemical parameters in before rainy season. These parameters applied for the qualities for practical and studies purposes. The present paper deals with the study of the analysis of results of physico- chemical characterization of the water analysis sample. The present work indicates overall study of water sample parameters. It is observed that water sample minerals their physical and chemical property changed. The sample were used analytical parameters such as temperature, pH, dissolved oxygen, alkalinity, total hardness, total solid, chlorides, fluoride, calcium etc. Dissolved oxygen is one of the most important parameter in the water quality assessment. The total alkalinity shows seasonal variation.

Conclusion: -

The analysis of result obtained in this present work is useful in the future management of the water drinking purposes. The study shows that the water quality is rather good and there is no fear of water quality problems to all living organisms related to health so it is necessary to analysis the water quality time to time in the year.

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Spatio-Temporal Changes In Cropping Pattern In Beed District

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Introduction :

The study of changes in cropping pattern is important for agricultural planning. In the recent technological and computer era the significance of the agriculture is remain constant. World's more than ninety percent population directly depends on agriculture for their food. Cropping pattern is changing as per space and time. Cropping pattern is transforming due to changes in environmental factors and due to changes in mad made factors. Review of changes of cropping pattern gauges the shifts in area under different crops over period of time. The heterogeneity and possibility of crop substitution are the two important characteristies of agricultural land which deserves special mention in studies pertaining to cropping pattern changes. Heterogeneity aries from agro-climatic difference existing within the various tahils of the district. The heterogeneity of land also aries due to difference in availibity of irrigation, facilities among different tahsils of the district. "Investigation pertaining to study of changes in cropping pattern assume special importance in taking cognizance of soil climatic factors and the crops that could be grown within a particular environment" (Pandit Somnath, 1983). Input of changes in technological, economic and institutional factors can be felt only when the existing cropping pattern under goes a change. Generally the farmers have atendency to stick to a stable cropping pattern under any given agro-climatic region and they do not shift much from this position extent to the extract dictated by price factorsin adjusting hectarage allocation. Break through in form technology makes room fornew production. Opportunities which do change the cropping pattern, but with sometime lag. Newer production opportunities become possible by a new technology suchas use of high yielding crop varieties along with chemical fertilizers, pesticides, insecticides and increase in irrigated area.

Study Area :

Beed district is one of the important district of Marathwada region of Maharashtra state. The economy of Beed district is mostly depends upon agriculture. Beed district is lies between-18 28'' to 19 28' north latitudes and 74°54' east to 76'57east longitudes. It has an area 10615.3 km. which constitutes 3.44 percent of the total area of Maharashtra state and population of 2159841 as per 2001 census which is 2.31percent of the state amongst the 35 district. There are seven old tahsils in Beed district considered for the study.

Objectives :

1) To study the area under different crops in different tahsils of Beed district in1979-84.
2) To study the cropping pattern in different tahsils of Beed district in 1994 1999.
3) Find out the volume of change in area under different crops from 1979-84to 1994-99 i.e. in twenty years in different tahsils of Beed district.

Methodology:

This work is totally depend on secondary data. Data collected from Socio-Economic Reviews & District Statistical Abstracts of Beed Districts. The first five years i.e. 1979-84 (five years average) treat as a base year and lastfive years i.e. 1994-99 treat as a last years for the study. Volume of change iscalculated for twenty years. Data is represented by choropleth maps.

Spatio-Temporal Changes in Cropping Pattern in Beed District :

Table No.1 shows the existing overall cropping pattern of the region and volume of change in their during the period of 1979-84 to 1994-99. The region is food grains oriented region, as they have occupied 80.73% area was under food crops in1979-84 and nearly 70.02% area was under food crops during the period 1994-99.Among the food grains Bajra is next to Jowar in importance as it occupies 18.61%area during 1994-99. The area under Jowar was 34.68% where as the area under cotton was 9.36% during 1994-99. Area under pulses was 11.14% during the period1994-99., Jowar, Bajra, Cotton and Pulses are the main crops in Beed district.

Conclusions:

a) Cropping pattern is slowly changing in Beed district during the period 1979-84 to 1994-99.
b) Area under total cereals decreased by 7.57% in Beed district during the period under study.
c) Area under total pulses is also decreased by 3.15% in Beed district during the period of twenty years.

d) Area under tôtal oil seeds has also decreased by 0.75% in Beed district during the period 1979-84 to 1994-99.
e) Area under total food crops has decreased by 6.52% in twenty years.
f) Area under non food crops has increased by 6.52% in Beed district during the period under study
g) The changes are taken place in cropping pattern from traditional crops to commercial crops during the period 1979-84 to 1994-99.
h) The process of comnmercialization of agricultural in Beed district is started during the period under study.

Suggestions:

1) It is very necessary to increase area under irrigation for rapidcommercialization in cropping pattern.
2) There is scope for fruit gardening in Beed district.
3) There is scope for Soyabean crop. The climatic conditions, soils of Beed district are very useful for Soyabean crop.
4) Rainfall water harvesting 1S very necessary in Beed district.
5) Area under forest is very less & it should be increase in Beed district.

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Effects of Covid-19 Pandemic and Environment Assessment

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Abstract:

The worldwide episode of Covid illness 2019 (COVID-19) is influencing all aspects of living souls, including the actual world. The actions taken to control the spread of the infection and the stoppage of financial exercises affect the climate. Subsequently, this examination expects to investigate the positive and negative ecological effects of the COVID-19 pandemic, by exploring the accessible logical written works. This examination demonstrates that, the pandemic circumstance essentially further develops air quality in various urban communities across the world, decreases GHGs emanation, diminishes water contamination and commotion, and lessens the tension on the traveller objections, which may help with the rebuilding of the environmental framework. What's more, there are additionally some unfortunate results of COVID-19, like increment of clinical waste, erratic use and removal of sanitizers, cover, and gloves; and weight of untreated squanders ceaselessly imperilling the climate. It appears to be that, monetary exercises will return before long the pandemic, and the circumstance may change. Subsequently, this examination likewise traces conceivable approaches to accomplish long haul ecological advantages. It is normal that the appropriate execution of the proposed techniques may be useful for the worldwide ecological supportability.

Keywords: COVID-19, Environmental pollution, Biomedical waste

Introduction:

On late December 2019 in Wuhan city, in China, a strange pneumonia was seen with a connection to a creature market that sells poultry and different creatures to general society. This occasion was before long answered to the World Health Organization (WHO). The causal microorganism had been distinguished as a novel Covid that was named COVID-19. Coronavirus before long spread to different pieces of the world. The World Health Organization has announced the circumstance a pandemic. The COVID-19 pandemic has affected each part of human existence and the worldwide economy. The quantity of new cases and passing is expanding at a disturbing rate without any indications of control yet, making the assessments of its monetary and different effects unsure.

Contingent upon the degree of COVID-19 effect in every nation, just as country-explicit circumstances and limit, the world's Governments are embracing various degrees of mediations, including venture out limitations and lockdown to contain the spread of the profoundly infectious infection.

Coronavirus and its Effects on Environment

Because of the surprising flare-up of COVID-19, pretty much every of all shapes and sizes city and town in the influenced nations like China, France, Spain, Turkey, Iran, Taiwan, Italy, USA, Germany, S Korea, U.K, India, Australia and some more, is under halfway or all out lockdown for a significant stretch of time going from half a month up to a couple of months. The significant areas adding to air contamination are transport, enterprises, power plants, development exercises, biomass consuming, street dust resuspension and private exercises. Also, certain exercises, for example, activity of DG sets, eatery, landfill fires, and so on additionally add to air contamination. Under the cross-country lockdown, all vehicle administrations – street, air and rail were suspended with exemptions for fundamental administrations. Instructive organizations, mechanical foundations and accommodation administrations were additionally suspended. Subsequently, air quality improvement has been noted in numerous towns and urban areas across the world. Because of non-working of enterprises, mechanical waste discharge has diminished generally. Vehicles are not really found on the streets bringing about right around zero outflow of green-house gases and poisonous little suspended particles to the climate. Because of lesser interest of force in businesses, utilization of petroleum products or regular fuel sources have been brought down impressively. Biological systems are in effect enormously recuperated. In numerous enormous urban communities, the occupants are encountering an unmistakable sky without precedent for their lives. The contamination level in places of interest like backwoods, ocean sea shores, slope regions, and so forth is additionally contracting generally. Ozone layer has been found to have restored somewhat. The pandemic has shown its differentiating outcome on human progress, as in, on one hand, it has caused overall frenzy circumstance, yet made an exceptionally sure effect on the world climate on the other.

Methodology

This examination was performed by inspecting the accessible distributed literary works, contextual investigations, and diverse government and non-government associations data from reports and

official sites. Logical literary works were gathered through electronic means from the data set of Science Direct, Springer, PubMed, Tailor and Francis, ISI Web of Knowledge, Research Gate, and Google Scholar yet not in a precise way. A Number of investigations were studied and data information which are applicable to the natural impacts of COVID-19 and meet the examination objectives.

Environmental effects of COVID-19

The global destruction caused by the COVID-19 has brought about several effects on the environment and climate. The immobilization and other restriction and a significant slowdown of social and economic activities, air quality has improved in many cities with a reduction in water pollution in different parts of the world. The most abundant use of PPE (e.g., face mask, hand gloves etc.), their haphazard disposal, and generation of a huge amount of hospital waste has negative impacts on the environment. Both positive and negative environmental impacts of COVID-19 are presented in Figure 1.

Positive Environmental Effects:

Reduction of Air pollution

Air quality improved to a great extent on account of a decrease in street traffic, air traffic, and production line discharges of carbon dioxide (CO2), Nitrogen oxide (NOx), ozone, and particulate matter development.

Reduction of noise pollution

Noise pollution is most is vast and abundant among all the sources, the noise generated by road vehicle traffic significantly affects the quality of urban environments. Concerning the recent imposition of COVID-19 societal lockdown. From various sources the data collected shows that the average noise levels before lockdown and during lockdown were found to be decreased.

Ecological restoration and assimilation of tourist spots

Due to COVID 19 pandemic tourist spots were closed and which consume lots of energy and other natural resources and generating waste on the spots decreased.

Negative Environmental Effects:

Increase of biomedical waste generation

Since the episode of COVID-19, clinical waste age is expanded universally, which is a significant danger to general wellbeing and climate. For test assortment of the suspected COVID-19 patients, finding, therapy of gigantic number of patients, and sterilization reason heaps of irresistible and biomedical squanders are created from emergency clinics (Zambrano-Monserrate *et al*., 2020 and Somani *et al*., 2020).

Safety equipment use and haphazard disposal

To shield from the viral disease, as of now people groups are utilizing face veil, hand gloves and other security gear, which increment the measure of medical care squander.

Household waste generation, and reduction of recycling

Increment of civil waste (both natural and inorganic) age has immediate and roundabout impacts on climate like air, water and soil contamination (Islam et al., 2016).

Results And Discussions:

The present study concludes that these ecological outcomes to make an appropriate system for long haul advantage, just as economical natural administration. The COVID-19 pandemic has gotten a worldwide reaction and make us joined to win against the infection. Also, to secure this globe, the home of individuals, joined exertion of the nation's ought to be basic. In this manner, some potential techniques are proposed for worldwide natural supportability. For environmental rebuilding, places of interest ought to occasionally closure after a specific period. Additionally, ecotourism practice ought to be reinforced to advance maintainable livelihoods, social protection, and biodiversity preservation.

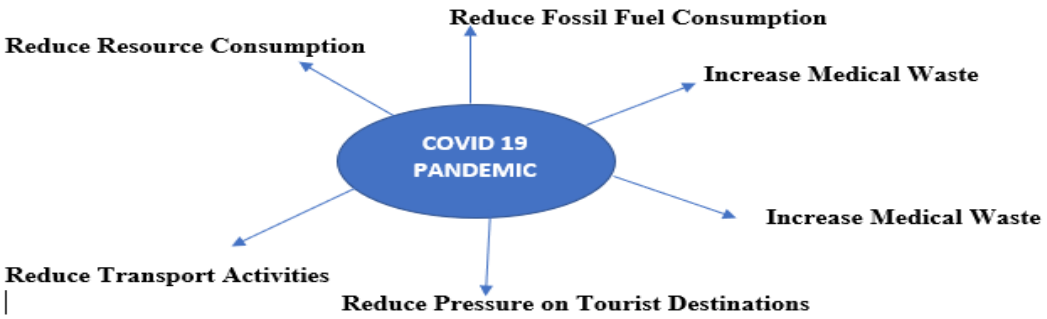

Fig.1. Positive and negative environmental effects of COVID-19 pandemic.

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Impact of Population Growth on Environment in India

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Introduction:

India is basically known as a country of villages. With over seven lakh villages at the time of independence, India was one of the major rural based countries. Agriculture is still the basic vocation of more than 55% population in India. Thus the rural dominance still exists in the context of India. Since the economic reforms in 1991, the overall economic structure has changed in India. The economic reforms created a platform for the faster economic growth and development through industrialization and privatization. This scenario attracted the rural human resource towards urban areas for their employment. However, many people from rural backgrounds migrated to different urban cities in the last two-three decades. This has created a huge pressure on the urban infrastructure in the past few years. At the same time, the population growth is observed in both rural and urban areas. The ever increasing population and urbanization has posed serious questions in front of the policy makers in the recent past. Population has been a major concern for Asian countries like India and China. Both the countries share more than $\frac{1}{3}$ of the global population. The growth in population is causing multiple hurdles in the path of economic development especially in case of India. Population growth creates pressure on agriculture, potable water resources, health facilities, education facilities and overall socio-economic structure of the country. These problems are increasing day by day and hence there is an urgent need to address them and find long term solutions. The present research article is an attempt to focus light upon the problems of population growth and urbanization and its impact on environment from Indian point of view.

Objectives:

Following are the basic objectives of the paper-

1. To study the population profile of India.
2. To study the impact of population growth on environment in India
3. To study the urban profile of India.
4. To discuss the impact of urbanization on environment in India.

Research Methodology:-

The researchers have used analytical method of research. The research is based on demographic and social data. The data is mainly collected from secondary sources like books, journals and reports of different institutions. The data is presented in the form of tables, charts and diagrams etc.

Review of Literature:-

Dr. Nagdeve in his article has emphasized on the issues related with population growth and its impact on environment, employment, urbanization, land and forests, agricultural produce and natural resources. The study reveals a heavy growth in India's population in the middle years after independence. It is also focused that the excessive exploitation of the natural resources is going to harm the environment in the long run (Nagdeve, 2019). Dr. C.K. Lakshmana in his research article has focused on the reasons and trends of population growth in India especially in the post Independence era. The outbreak of population has given birth to too many problems like urban poverty, social imbalance, increase in crime etc. (Lakshmana, 2014).

In their article entitled as Urbanization, Population and Environment in India: A Review, Urbanization in India has been comparatively fast and uncontrolled related to many developing nations. It is more oriented to population growth than economic growth, has consistent increase pattern with stage of acceleration. In India, both has a complex relation with environmental and make it unsustainable by rapid motorization, generation of waste and waste water in huge quantity, emission of greenhouse gases, contamination of natural resource, loss of forest and
agriculture land etc. (Solanki, 2017).

The primary causes of environmental degradation in India are attributed to the rapid growth of population in combination with economic development and overuse of natural resources. Major environmental calamities in India include land degradation, deforestation, soil erosion, habitat destruction and loss of biodiversity. Economic growth and changing consumption patterns have led to a rising demand for energy and increasing transport activities. Air, water and noise pollution together with water scarcity dominate the environmental issues in India (Chopra, 2016)

India's Population Profile:

Table 1: Population of India and its growth, 1891-2011

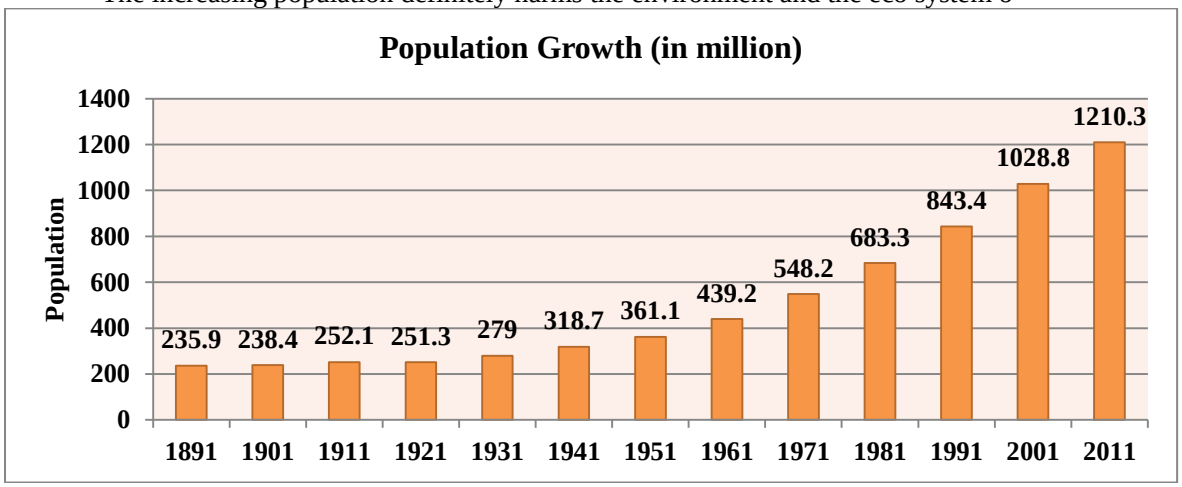
(Population figures in millions)

Year	Total Population	Decadal growth	Absolute per cent	Average annual exponential growth rate (in per cent)
1891	235.9	-	-	-
1901	238.4	1.1	1.1	0.11
1911	252.1	5.7	5.7	0.56
1921	251.3	- 0.8	- 0.3	- 0.3
1931	279.0	27.7	11.0	1.04
1941	318.7	39.7	14.2	1.33
1951	361.1	42.4	13.3	1.25
1961	439.2	78.1	21.5	1.96
1971	548.2	109.0	24.8	2.20
1981	683.3	135.1	24.7	2.20
1991	843.4	160.1	23.8	2.14
2001	1028.8	185.2	21.3	1.93
2011	1210.3	181.5	20.4	1.80

Source: (Premi, 2011)

The above table shows a definite growth in India's population over the last century. However this growth was very moderate in the initial period i.e. from 1891 to 1931. The population grown in this period was mere 43.1 million in a span of 40 years. But since 1931 there was a rising trend in the population. A significant growth of population is observed in the span of 40 years i.e. from 1931 to 1971. The total population of the country rose up from 279 million in 1931 to 548.2 million in 1971, which was almost double of what it was in 1931. So it can be said that the growth rate of population in the country was faster than the earlier period. Obviously, the rapid industrialization, urbanization and improved medical facilities in both, urban and rural areas were some of the reasons behind this rapid population growth. However, the population went on increasing in the post LPG era, which started in 1991. A significant growth in the population was observed after 1971. The decadal growth in population is very high in the last four decades. A growth of 109 million to a growth of 181.5 million in the last four decades is a worrying factor. However, the absolute per cent growth in population in the four decades after 1971 was declining from 24.8% in 1971 to 20.4% in 2011.

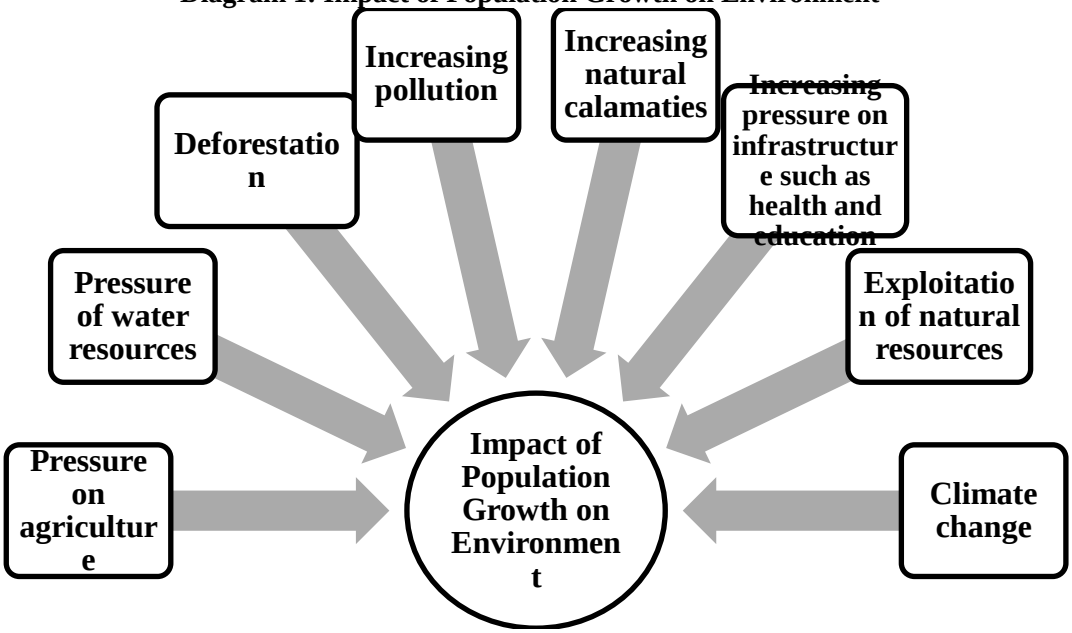
Chart 1: Population Growth in India



Impact of Population Growth on Environment:

The increasing population definitely harms the environment and the eco system o if any country. The increasing demand for physical and infrastructural development is motivating industrialization, transportation, technology and pollution at large. The increasing population is also putting a lot of pressure on different aspects such as agriculture, water resources, urban infrastructure, livelihood and sanitation etc. the following diagram depicts the impact of population growth on environment especially in Indian context.

Diagram 1: Impact of Population Growth on Environment



Conclusion:

Mother Nature has always given abundant resources to man but due to his greedy nature, he has exploited mother nature in a very bad manner. Population control is therefore a need of the hour not only to sustain the environment but also to pass the environmental heritage to our future generations. It is thus, very essential to control the artificial development at the cost of environment. Today, in the global pandemic situation of covid-19, mankind has realized the significance of trees and oxygen. Similarly it is the time to understand the limitations of the natural resources and take necessary action to control the population in India. Many social reformers from Dhondo Keshav Karve to Raghunath Karve have given their invaluable contributions in birth control movements in the last century. But it is the prime duty of the state to take affirmative actions regarding population control so that the environment can be preserved for the future generations. Production of agricultural food-grains, water resources and availability of residential land are under extreme pressure due to increasing population. Therefore, it is the time to take strict actions regarding population control and environment protection.

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Access to Water Supply and Sanitation – A Human Right

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Abstract

Human rights safeguard the dignity and equal worth of every human being and this cannot be taken away. Human rights often delegate the countries or states with the responsibility to ensure that every human being enjoy their human rights. Many human rights are related and interdependent. Clean drinking-water, sanitation and hygiene are crucial to human health and well-being. Safe wash is not only a prerequisite to health, but also contributes to livelihoods and dignity and helps to form resilient communities living in healthy environments. The principles of Human Rights guide this process and include the principles of indivisibility and universality, inclusion and participation, equity and non-discrimination, and accountability and rule of law. These principles also underpin the Sustainable Development Goals (SDGs), including access to clear water and sanitation. Evidence suggests that improving service levels towards safely managed drinking-water or sanitation such as regulated piped water or connections to sewers with wastewater treatment can dramatically improve health. If the Right to Water and Sanitation is recognized by the judiciary, it will go a long way in providing access to the poor. This paper focuses on the right to water and sanitation as a human right and how the implementing agencies meet their obligations to protect, respect and fulfil human rights.

Keywords: Human Rights, water, sanitation, sustainable development, judiciary.

Introduction

Human Rights "evoke hope and provoke action."

Human Rights always, be in past, present or future, serves as an influential tool for positive change in society. According to The United Nations Human Rights Agency, "Human rights are rights inherent to all human beings, whatever our nationality, place of residence, sex, national or ethnic origin, colour, religion, language, or any other status. We are all equally entitled to our human rights without discrimination. These rights are all interrelated, interdependent and indivisible." For a very long time now, the basic need of access to clean water and sanitation acts as serious challenge to the entire world. Several human societies around the globe have inadequate and restricted access to clean drinking water and clean water for domestic and personal uses. Additionally, many have limited access to sanitation and hygiene facilities across the world. The lack of such basic rights including access to safe, sufficient and affordable water, sanitation and hygiene facilities results in devastating effects on the health, human dignity and prosperity of billions of individuals. This in turn has substantial consequences for the realization of other basic human rights. Human beings are **"Rights-holders"** and the states are duty-bearers to provide water and sanitation facilities. The Rights-holders are entitled to can claim their basic human rights while the duty-bearers shall guarantee the right to clean water and hygienic sanitation services equally and without discrimination to all. Proper water and sanitation act as pillars to strong foundation for achieving the Sustainable Development Goals, including good health, end of poverty, peace, equality, empowerment of women and girls and justice. The value of clean water and sanitation is much more than its costs. Exclusively, water has complex value for our households, health, culture, society, education, economics and the integrity of our natural environment. Therefore, if we risk and undervalue these basic human rights, we will be putting the finite and irreplaceable resource at very high danger level.

Water and Sanitation as a Human Right - Definitions

What does the human right to water and sanitation encompass? The human right to water and sanitation can be described as below:

The **human right to water** entitles everyone, without discrimination, to sufficient, safe, acceptable, physically accessible and affordable water for personal and domestic use.

The **human right to sanitation** entitles everyone, without discrimination, to have physical and affordable access to sanitation, in all spheres of life, which is safe, hygienic, secure, socially and culturally acceptable, which provides privacy and dignity.

Moreover, the human right to water and sanitation shall ensure sufficiency, availability, safety, quality, accessibility, affordability and acceptability. These concepts are defined as under:

"Sufficient": The water supply should be sufficient for every individual for personal and domestic uses.

"Available" : The water supply shall be nearby and within the reach of every individual.

"Safe" : The water provided for uses should be free from contamination and safe.

"Quality" : Water should be good quality and safe for human consumption.
"Accessible" : Each human being shall have access without any kind of discrimination. *"Affordable"* : Should be made available at affordable prices for all.
"Acceptable" : Acceptable culturally and ensuring privacy and dignity especially for sanitation

Key International Conventions Recognizing Water and Sanitation as a Human Right

The right to water and sanitation has been recognized and framed as human right under international human rights laws through various conventions and declarations over span of years.

Mar Del Plata Declaration - March 1977

For the first time right to water was documented in the Action Plan of United Nations Water Conference, "*All peoples, whatever their stage of development and social and economic conditions, have the right to have access to drinking water in quantities and of a quality equal to their basic needs*".

Convention on Elimination of all Forms of Discrimination against Women (CEDAW) - December 1979

CEDAW, in its agenda to eliminate discrimination against women, expressly refers to sanitation and water. Article 14(2)(h) of CEDAW mentions, "*States parties shall take all appropriate measures to eliminate discrimination against women in rural areas in order to ensure, on a basis of equality of men and women, that they participate in and benefit from rural development and, in particular, shall ensure to such women the right: ... (h) To enjoy adequate living conditions, particularly in relation to housing, sanitation, electricity and water supply, transport and communication*".

Convention on Rights of Child - November 1989

There's an express mention of water, hygiene and environmental sanitation in the Convention. The Article 24(2) of the Convention reads as, "*States Parties shall pursue full implementation of this right and, in particular, shall take appropriate measures: ... c) to combat disease and malnutrition, including within the framework of primary health care, through, inter alia, the application of readily available technology and through the provision of adequate nutritious foods and clean drinking water, taking into consideration the dangers and risks of environmental pollution; ... (e) To ensure that all segments of society, in particular parents and children, are informed, have access to education and are supported in the use of basic knowledge of child health and nutrition, the advantages of breastfeeding, hygiene and environmental sanitation and the prevention of accidents*"

International Conference on Water and Sustainable Development (Dublin Conference) – January 1992

The Principle 4 of the Conference provides that "*... it is vital to recognize first the basic right of all human beings to have access to clean water and sanitation at an affordable price*"

United Nations Conference on Environment and Development. Rio Summit – June 1992

The Resolution under the Mar del Plata Water Conference was endorsed in Chapter 18 of Agenda 21 that all peoples have the right to have access to drinking water, and called this "*the commonly agreed premise.*"

United Nations International Conference on Population and Development – September 1994

The Conference's Programme of Action states that all individuals: "*Have the right to an adequate standard of living for themselves and their families, including adequate food, clothing, housing, water and sanitation.*"

General Comment No. 15. The right to water – November 2002

The United Nations General Comment 15, International Covenant on Economic, Social and Cultural Rights (ICESCR), the 1966 affirms the right to water under the ambit of international law. This Comment frames the right to water in two articles: Article 11, the right to an adequate standard of living, and Article 12, the right to the highest attainable standard of health. The Comment explicitly sketches the obligations of States parties to the right and outlines which actions will be considered as violation.

Further, Article I.1 reads as "*The human right to water is indispensable for leading a life in human dignity. It is a prerequisite for the realization of other human rights*"

Convention on the Rights of Persons with Disabilities – December 2006

Article 28 of the Convention outlines the right of persons with disabilities to an adequate standard of living and reads as "*2. States Parties recognize the right of persons with disabilities to social protection and to the enjoyment of that right without discrimination on the basis of disability, and shall take appropriate steps to safeguard and promote the realization of this right, including measures: (a) To ensure equal access by persons with disabilities to clean water services, and to ensure access to appropriate and affordable services, devices and other assistance for disability-related needs*".

UN General Assembly Resolution A/RES/64/292 - July 2010

The said UN Resolution, for the first time, explicitly recognized the right to water and sanitation and acknowledged that clean drinking water and sanitation are vital to the realization of all human rights. It further seeks the States and international organisations to offer financial resources, help capacity-building and transfer technology to aid countries, especially developing countries, to deliver safe, clean, accessible and reasonable drinking water and sanitation for all.

Human Rights Council Resolution A/HRC/RES/15/9 – September 2010

Subsequent to the UN General Assembly resolution, the said resolution of the UN Human Rights Council confirms that the rights to water and sanitation are integral part of prevailing international law and affirms that the said rights are legally binding upon States. In 2015, all United Nations Member States adopted the **2030 Agenda for Sustainable Development**. At the heart of this are 17 Sustainable Development Goals (SDGs), which provide a shared blueprint for peace and prosperity for people and the planet, now and into the future. Of these SDGs, Goal 6 consists target to ensure availability and sustainable management of water and sanitation services for all. These initiatives and recognition showcases the growing momentum for achieving equitable access to water and sanitation at global level.

Right to Water and Sanitation in India

Water is an emotive issue in India. With the increase in the population, industrialisation and urbanisation, the demand for water is also increasing consistently while the total water available remains constant. Conflicts among the different users, uses, regions and States have become an everyday issue. Moreover, where basic access has not been achieved, hygiene can't be assured. Therefore, providing a basic level of access should be the utmost priority. Right to Water in India is not expressly guaranteed either through the Constitution or any other legislation. It's an implied right, asserted through a bunch of laws which confers a duty upon the State through its various agencies to prevent and control water pollution. Hence, the Right to clean water is guaranteed under Article 21 of the Constitution of India and one cannot be deprived of it. The same has been upheld by the courts in the country which have widened the scope of Article 21 by including the right in it. The inadequate (or denial of) access to water and sanitation to the poor in India has been going on for a long time even before the advent of economic reforms. This has been happening despite the Supreme Court's rulings time and again that access to clean drinking water is a fundamental right as part of the right to life in Article 21 of the Indian Constitution. In addition to Article 21, Article 39(b) of the Directive Principles of State Policy, recognizes the principle of equal access to the material resources of the community.

Effect of the Pandemic on Water & Sanitation

Safely managed water, sanitation, and hygiene (WASH) services are of vital importance for preventing and protecting human health against the infectious COVID-19 pandemic. Frequent washing of hands with water and soap was considered as the single most effective step against COVID-19. The most basic and cost-effective strategies among others for containment of COVID-19 was preparation and investment in water and sanitation systems, particularly in resources constrained areas. The pandemic has thus raised an urgent need to ensure that every individual has access to water for hand hygiene as at the onset of the pandemic, many people worldwide used to not wash their hands with soap and water within their homes.

Suggestions & Conclusion

The preceding portions of international law instruments establish right to water and sanitation as human right. Concurrent with the evolution of the concept, the expectation is translation of the access to water and sanitation services to all without discrimination in real lives of human beings. For a state party the health care adds burden as inadequate sanitation is so high that the state ends up spending more on health than on provision of direct sanitation services. "*World Water Day is meant to be a call to action. Responsibility lies with all of us. Governments, associations, private partners: we must all recognize the multifold value of water and take action to conserve this basic resource, the resource which gives our planet its unique colour.*" — message from Audrey Azoulay, Director-General, UNESCO on the occasion of World Water Day 2021. To begin with it is recommended that state performs a self-assessment of equitable access to water and sanitation, and prevailing measures undertaken to improve equitable access to water and sanitation. Based on the self-assessment, the state shall develop a dedicated 'Equitable Access Action Plan' as would be applicable in its respective geography. The plan must include finances and funding information for achievement of equitable access to water and sanitation in each country. To sum up, a combination of factors will create a favourable atmosphere for a change in the way that society perceives the right to water and sanitation: the initiatives by social organizations, amendments in states' national laws, the mandatory obligations of international law, judicial interpretations, innovations by service providers and responsible use by the individuals.

It rightful to say there's no "magic wand" that the landscape of conventional access to water and sanitation will transform change immediately. Indeed, planned, and effective measures will bring about non-discriminative access to water and sanitation. Certainly, once adequate access is provided to all, it will have a positive impact, not only on the objectives to access to water and sanitation, but also on other SDGs.

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Study on Agriculture Water Resource Management in India

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Abstract:

Agriculture nevertheless bureaucracy the spine of India's economy, accounting for nearly 1/2 of of the countrywide profits and imparting employment to approximately thirds of the paintings force. Accordingly, the finest use of water sources has been for agricultural development, which could have benefited drastically through enhancements withinside the control of water sources. Improvements with inside the coping with of water assets should be constructed on an incorporated technique to soil-water-plant-nutrient management. This ought to consist of optimizing irrigation scheduling and extra green irrigation systems, including drip irrigation. Approximately 70 consistent with cent of worldwide freshwater intake is used with inside the agricultural sector, but water use performance in many nations is under 50 consistent with cent. Nuclear and isotopic strategies offer facts on water use along with losses via soil evaporation and assist optimize irrigation scheduling and enhance water use performance. The FAO forecasts that through 2050 worldwide water necessities for agriculture will growth through 50 consistent with cent to satisfy the expanded meals needs of a developing population. Global freshwater is turning into an increasing number of scarce, because of flawed management, indiscriminate use and a converting climate. Water shortage and exceptional issues in lots of components of the sector are a extreme undertaking to destiny meals protection and environmental sustainability.

Keywords*: Economic use, Water User Association, Ground water, Irrigation*

Introduction

Agriculture is the essential consumer of water in maximum countries. It additionally faces the vast venture of manufacturing nearly 50% greater meals with the aid of using 2030 and doubling manufacturing with the aid of using 2050. This will probable want to be completed with much less water, especially due to developing pressures from urbanisation, industrialisation and weather change. In this context, it is going to be essential in destiny for farmers to obtain the proper indicators to growth water use performance and enhance agricultural water management, even as keeping aquatic ecosystems. India has a huge and numerous agricultural zone. The US. has made big development toward meals security, with a sizable growth in in keeping with capita availability of meals grains. Growing populace would require extra manufacturing however this needs to be hired with sustainable practices for making sure the long-time period to be had availability of herbal resources. Water is an essential enter for agriculture. The zone gets the most percentage of sparkling water with inside the US Increase in manufacturing will necessitate extra allocation of water for maintaining agricultural growth. Over the beyond few decades, there was a decline in freshwater water availability. This coupled with the developing call for water throughout sectors which include agriculture would require water use performance to be introduced in our agricultural practices.

Irrigation requirement in India:

Agriculture stays critical to the Indian economic system and therefore, gets the best percentage of the once a year water allocation. Around ninety according to cent of utilizable water given to this sector, especially in shape of irrigation. Water for agriculture has especially been via fundamental and minor irrigation tasks. India's irrigation infrastructure is increasing through 1.eight M ha of 1rrigation capability with a public outlay of 7,000 crore according to annum. Current annual enlargement is one-0.33 much less than the most increase accomplished withinside the past. The troubles are because of bad implementation and the lengthy gestation length of irrigation tasks which leads to spill over main to the postpone among others. Another component connected to the usage of water is the low agricultural water productiveness that is from time to time because of the growing older infrastructure and insufficient upkeep thereby including to the demand-deliver gap. Irrigation in India has moved from the preliminary series of rainwater in ponds and diversion of extra water via channels followed at some stage in the 18th century to the canal primarily based totally irrigation machine advanced at some stage in the British Rule to medium and big garage primarily based totally irrigation structures advanced post-independence.

Development of irrigation system in India:

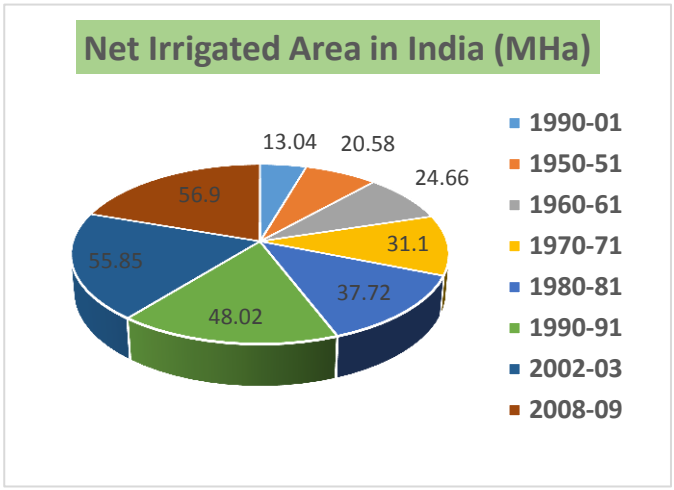
Time period	Highlights of the irrigation system
Ancient times	Irrigation was mainly in form of small ponds used by individual farmers. In peninsular India, irrigation system developed around numerous irrigation tanks while in northern India there were small canals in the upper valleys of rivers.
Medieval times	This period saw the development of the canal system of irrigation, first initiated by

	the Tughlak rulers. In south India irrigation through canals and tanks were developed.

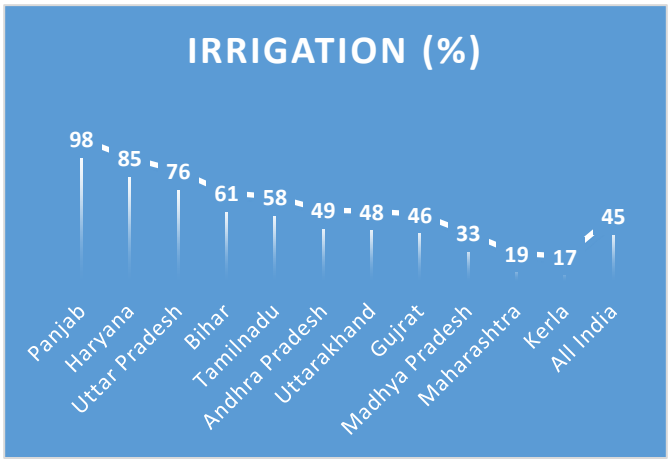
Status of Irrigation:

Irrigation is one of the primary drivers for agriculture. Both worldwide and country wide inclinations depict an splendid upward push in irrigated vicinity. Globally, irrigated crop yields are approximately 2.seventy instances better than that of rain-fed farming. In India, the internet irrigated vicinity determined an boom from a meagre 13.four M Ha in 1900 to 56.9M ha sooner or later of the length 1900 – 2009 (See Figure 1). The corresponding funding of their irrigation area multiplied from 441.eight crores withinside the number one plan (1951-56) to 211,700crore (projected) withinside the XI Five-Year Plan.

Year	Net Irrigated Area in India (MHa)
1990-01	13.04
1950-51	20.58
1960-61	24.66
1970-71	31.1
1980-81	37.72
1990-91	48.02
2002-03	55.85
2008-09	56.9



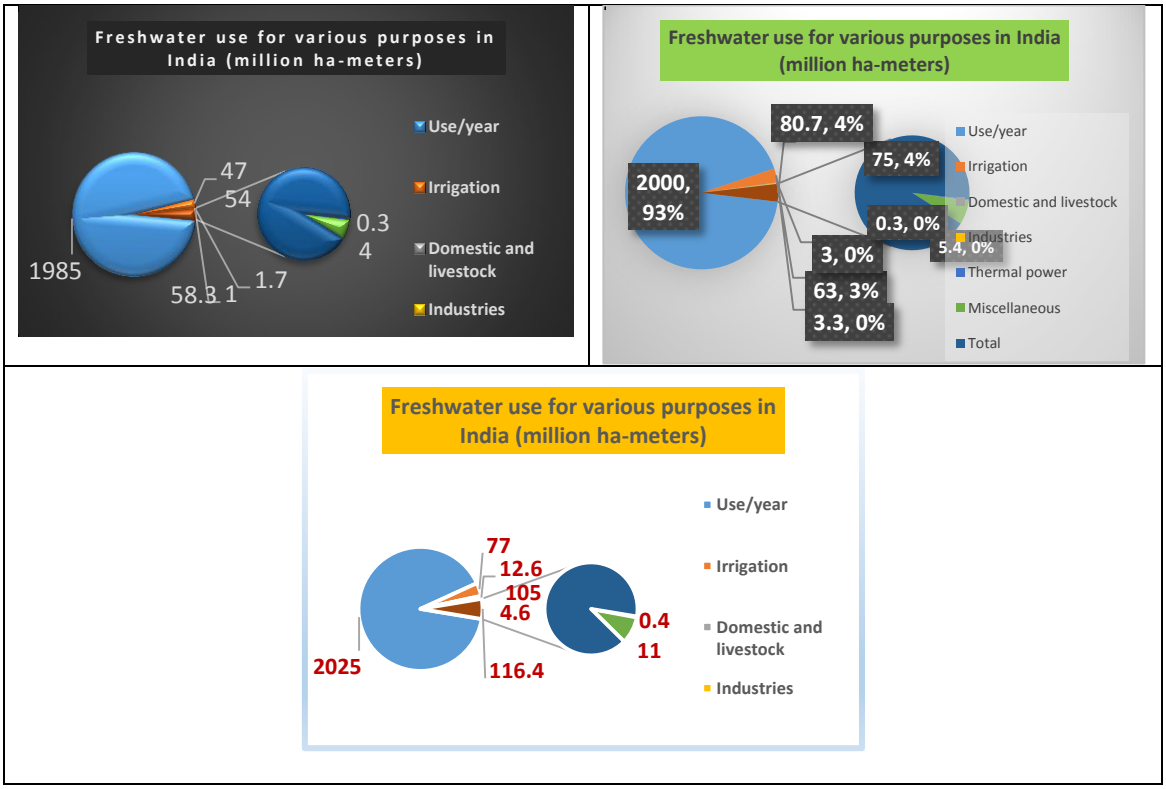
State wise Irrigation -2008-09:



States	Irrigation (%)
Punjab	98
Haryana	85
Uttar Pradesh	76
Bihar	61
Tamilnadu	58
Andhra Pradesh	49
Uttarakhand	48
Gujarat	46
Madhya Pradesh	33
Maharashtra	19
Karla	17
All India	45

Freshwater use for various purposes in India (million ha-meters)

Use/year	1985	2000	2025
Irrigation	47.0	63.0	77.0
Domestic and livestock	1.7	3.3	4.6
Industries	1.0	3.0	12.6
Thermal power	0.3	0.3	0.4
Miscellaneous	4.0	5.4	11.0
Total	**54.0**	**75.0**	**105.0**



India having with 18 in step with cent of the arena populace has handiest four in step with cent of world's water sources. The common annual rainfall that India obtained is round 4000 billion cubic metres, that's the foremost supply of water sources. The rainfall and to be had water sources varies throughout the states in India. India has round 20 river basins. Increase in populace, industrialization, agricultural and simple wishes of water has extended the call for over the period. Per capita availability of water has appreciably reduced over the period. Groundwater components a main function in providing ingesting water to each rural and concrete human beings. It helps eighty five in step with cent of the agricultural human beings, 50 in step with cent of the city wishes and 60 in step with cent of irrigation. But, Government has didn't draft strict law in extraction of groundwater, which has brought about floor water depletion. As a result, many states in India suffers from water shortage and depletion of water has brought about sea water seepage. On the alternative hand, the united states is typically get affected due to drought and flood. Around one 0.33 of the united states's geographical vicinity is drought -susceptible and 12 in step with centis flood susceptible. Given this, the existing project cope with the troubles and demanding situations confronted with the aid of using the united states in water aid management.

Conclusion:

Population growth, urbanisation and industrialisation has extended the intake of water sources. Besides, the call for for water can also additionally nevertheless growth thereby brought about big social and financial troubles. Large quantity of floor water is extracted thru the united states, there may be no powerful measures to alter the usage. Thus, enhancing water use efficiency, clearing line damages, implementing price lists and refurbishment of water our bodies by myself can remedy the water troubles in each rural and concrete regions. Government has to growth the expenditure for irrigational tasks specially for the states wherein the farmers go through big for his or her agricultural wishes. The cease customers are the not unusual place human beings and giving the obligation to them can convey greater interest in dealing with the water our bodies efficaciously. The National Water Policy has recommended diverse measures for efficaciously dealing with the water sources. It shows to recognize the supply of water and shortage. Besides, the financial cost of water needs to be understood wherein big quantity of water is misused, wasted and inefficiency usage. Reforms has to convey adjustments in neighborhood our bodies and water customers affiliation. Without the economic assist of the Government, the affiliation can't entire the task in dealing with water our bodies. The Government has to return back ahead to draft guidelines for growing new water customers institutions for dealing with the water our bodies withinside the united states.

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The Variety of Themes and Subjects of Hardy's Poetry

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Abstract;

Hardy's poems especially his love poems which especially appeared to be a journey from Personal to the Universal. In fact, in his early years, Thomas Hardy was fascinated towards writing of novels, but the poet in him still dominated while writing novels. Hardy's turning from prose to poetry, as some critics have to say, is concerned with marriage. The three volumes of poetry published before Emma's (Hardy's wife) death in 1912 consist of philosophical poems revealing unhappy man, narrative obsessively concerned with unhappy marriage and lyrics addressed to lovers, relatives or friends, but seldom the poet's wife. After suffering for many years from disease, she died quite suddenly in November1912, Hardy was shocked, surprised and plunged with deep remorse. He expressed his complex and developing reactions to her death in a magnificent series of poems of 1912-13. Robert Gittings, in his Biography of Hardy, claims "Hardy wrote these poems out of a sense of guilt over his part in their relationship particularly, in his lack of care for her in last years of pain." But the remorse in these poems and their range of response is of a much broader nature then this being directed towards a sense of sorrow that their love which has burned so brightly as first, had perished many years ago and perhaps never been swindled. Paradoxically, as the later poems in the series reveal, it was by dying that Emma rekindled Hardy's love. Whatever guilt Hardy might have been expiating in these poems. What is impressive about them is the poignant and consoling rediscovery of his lost love. While studying Hardy's love poems it would be essential to mention Hardy's relationship with Florence who had been working as Hardy's secretary for sometimes and in 1914 became his wife. She was absolutely a great support to Hardy in his old age, but the relationship was not always an easy one for her, with a type of irony typical in Hardy's writing, Florence discovered that her roles have been reversed. Some critics have complained of what they think to the paucity of themes and subjects in Hardy's poetry.

Keywords*: Personal, Universal, Love, Shocked and Remorse.*

Introduction:

Instead of writing poems to her, Hardy wrote dozens of poems about Emma, whom he had ignored for years while she was alive. Therefore, a sense of remorse is always there in Hardy's love poems, and a note of grief can be seen in almost all his poems. Hardy tried to make his personal voice, the voice of the Universe and this is a subject and theme of my article. Hardy's poems have been given to suit the purpose of study. Hardy's first book Wessex Poems and other verses was published by Harpers in 1898 with 30 illustrations by the author. The volume contained important poems like 'The Impercipient' 'Thoughts of Phena' 'Neutral Tones', 'Hap' and 'Amabel.' The book received a mixed response,Lionel Johnson stated that in the 50 poems there were passion, humor, wistfulness, grimness, tenderness, but never joy, the radiant and invincible. It is an attempt that has been made to analyze related poems of Thomas Hardy to show his personal agonies which became the agonies of the universe. The reading of Hardy's poetry produces a sense of monotony in the readers because the same themes have been repeated again and again in his poems. In reality, however, there is a considerable variety in the themes and the subjects with which Hardy has dealt in his poems and in any case, even the same themes have been treated in different ways in different poems. Hardy had written poems of love and also war-poems. He has written poems dealing with his childhood and the members of his family, especially his parents. He has written poems giving expression to his feelings and sentiments about his past life. He has written poems based upon his travels, and upon his reminiscences of the past. His poems were of belief and unbelief. Above all, he has written poems about the suffering and the misfortunes of human life, and has speculated in them about the causes of that suffering and those misfortunes. He has also written poems about social injustice. Thus, it is somewhat unfair to complain that there is a dearth or scarcity of themes in Hardy's poetry. Besides, Hardy has shown his talent for handling different forms of poetry. He has also written lyrics, dramatic monologue, personal and autobiographic poems, ballads and narrative poems, and descriptive poems with a large component of reflection and meditation in them. Hardy was a prolific writer of poetry; and his poems show an unusual kind of creative genius behind them. Talking about the various kinds of poems which Hardy wrote, a critic has classified them as war-poems, poems of pilgrimage, poems of love and so on. Writing about the themes of Hardy's poetry, another critic says that Hardy's poems deal with love, with the mysterious relationship between Nature and man, with the presentness of the past, with the pastness of the past, and the tragedy of its pastness and its irreplaceableness, with the necessity but also the impossibility of holding religious belief, and with the indispensableness but also the incredibility of the old beliefs. In the ballads and the narratives, Hardy does not just tell stories but also records his impression of

the nature of things, and his impressions of love, infatuation, violence, deceit, selflessness or devotion. In such poems Hardy probes reality and arrives at certain conclusion which however are tentative.

Review of Literature:

Let us take a brief look at some of the poems of Hardy in order to determine the variety of themes with which he deals. First, there are the poems which deal with Nature, and with the relationship between Nature and man. In this connection, we may consider two poems: The Darkling Thrush, and Afterwards. Hardy's "The Darkling Thrush" is the most representative of 19th century British poetry. He wrote the poem on 31st December 1900 and it is an indicator of modern poetry. "The Darkling Thrush" was written when Hardy was 60 years old, in his house at Dorset, towards the end of the last century. This poem is a good illustration of his compassion towards living creatures. It exemplifies the exactness and accuracy of Hardy's description of nature. The poem opens with a description of the severity of the dreaded English winter. The lonely figure of the thrush by the little grove, staring at the passing of the day and the end of the century stands out against the bleak environment which the poet imagines to be the corpse of the 19th century. The poem closes on a note of hope. So, the poem is Hardy's farewell to the dying 19th century. It celebrates his typical theme of man in an alien universe yet finally exploding into an orchestration of joy at the perception of 'sonic blessed hope.' Though the bleakness of the atmosphere hardly warrants it, the song of the bird gives token of some blessed hope for the world of which it has foreknowledge. The poem also invites comparison with Wordsworth's "To the Cuckoo," Keats's "Ode to a Nightingale" and Cowper's "To the Nightingale." It was originally entitled "By the Century's Death-bed." In Afterwards, the poet wonders if, after his death, people will recall the fact that he was a keen and sympathetic observer of natural phenomena. In this poem, he depicts himself as a close and sympathetic observer of the activities of even the small creatures like the hedgehog. He asks if, after his death, people would realize that the mysteries of Nature and the scenes of Nature had a great interest for him. When the poet dies, somebody would remark that the sight of a moth alighting upon a bush was a familiar sight to him. Similarly, he says, he had an eye for such mysteries as the "full-starred heavens." In short, when the poet dies he would be remembered as a man who used to take notice of all such things. Thus, here he depicts himself as a great lover of Nature and as a keen observer of natural scenes and occurrences.

Analysis:

Among the war-poems, just like "Drummer Hodge" and In Time of the Breaking of Nations stand foremost. Drummer Hodge is thought to be Hardy's finest war-poem. Here Hardy expresses his deepest sympathy for a man called Hodge who fell to his death in a South African battle field and was buried unceremoniously without even his dead body having been put into a coffin. Hodge was a northerner, now lying in a Southern grave. That portion of the foreign soil, where Hodge lies buried, has acquired forever the character and the personality of Hodge himself. Alien stars from foreign skies would shed their light upon Hodge's grave. This poem fully brings out the pity of war; but the greatest merit of this poem is the self restraint which Hardy here shows in depicting the tragedy of an individual who was killed in war. Hardy does not become sentimental; and yet he conveys to us his deepest regret at what has happened. In the other poem, Hardy points out that agricultural occupations would continue in spite of the outbreak of wars, and that men and women would continue to fall in love with each other even when the story of a war has been forgotten. As we know war is certainly tragic, but war is a passing episode in the everlasting life of mankind on this earth. The basic human activities would go on in spite of the wars. "Neutral Tones" is a lovely lyric. It stands the test of time and place. It is grand in its theme and versification. It is dated 1867, the year Hardy deserted Tryphena Sparks, his first love whom he called his lost prize. So, it clearly shows Hardy's sad sense of filial love. "Neutral Tones" expresses the memories of a striking but dreary landscape which reflects a very bitter moment of existence. Here, love is regarded as the tormentor who deceives, the theme of it is universal in its touch and appeal. The poem's diction is simple and plain. The lyric forecasts Hardy's mature strength and lyrical quality. "A Broken Appointment" is one of a fine elegies. It is well-known for its expression of Hardy's tragic sense of love, remorse, waiting, separation, loss and bereavement. The poem is written on Florence Heriniker. It is told that Hardy loved her and in her collaboration he wrote a short story. Hardy's personal feelings are almost everybody's.

Conclusion:

Among the love-poems of hardy, the most famous are those which he wrote after the death of his first wife, Emma. These came to be known as the poems of 1912-13. In all, Hardy wrote a hundred or more poems to commemorate his love for Emma of the days of their courtship and of the early years of their married life. The sheer range of subject matter in Hardy's poetry marks him out as a great poet. Some critics have expressed the opinion that Hardy was great only in respect of about a dozen poems which he wrote after the death of his first wife, Emma. Now, these poems do certainly represent the summit of his

poetic achievement. But it would be highly unfair and unjust to regard the rest of Hardy's poetic output as second rate. So, we can't believe that a man who wrote just twelve great poems, would write a thousand other poems which were only second rate-companions. It was not just the death of his wife who inspired Hardy to write great poetry. There is nothing narrow about Hardy. The whole of human life and the life of Nature is his field; and there is no subject on which Hardy could not write a poem.

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Industry 4.0 and its Impact in India

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Abstract:

In contemporary scenario, all industries are trying to stretch their fingers all over the globe to end up a robust competitor in commercial world. Industry 4.0 includes a wide set of technologies that provides an accurate platform for innovation and creative answers. In order to put in force such circumstance, it calls for the utilization of advanced prediction gear that involves the conversion of data into records in a systematic method to give an explanation for uncertainties. This era is an opportunity to alternate the financial rules of the industry. As we know India is in its verge of development. Its miles very important to recognize India thrust closer to "Make in India". Thus it's far essential for an India to undertake enterprise 4.0 generation and to get tailored to the identical. This in turn contributes inside the development of Indian economic system. This paper addresses the effect of industry 4.0 generation in India.

Key Words: Industry 4.0, Development, Revolution, IoT.

Introduction:

Along with the profit, industries also care approximately consumer pleasure, product fine and its customization and additionally cost of manufacturing. Thick digital transformation is at the way, behind the scenes of world's leading industries. They may be intensifying their product portfolio with digital functionalities and also making an investment in records analytics to force innovation and huge enhancements in efficiency as a basement capability. India and china are competing for lion's percentage in international production, from beyond 20 years. Even though India have infrastructural issues, bureaucratic wattle and also inconvenient deliver of sources, India components considerable professional labors and some of huge producers like Havel's, Godrej and Bosch hold their devices in India. India has a big task in its dream of being the global desired manufacturing vacation spot in future. The fourth business revolution is on its way, and there is no stepping lower back. Industry four.0 will be a project and can also have the answers for India's endured gain in the worldwide manufacturing manner. This is the era of advanced manufacturing, composite materials, quantum engineering, three-D printing and robotics.

Definition:

Industry 4.0 defines the gadget of production procedures depends on the autonomously communicating devices with each different and technology along the fee chain: a version of future smart manufacturing facility which makes decentralized decisions based totally on self-employer mechanisms, create a virtual reproduction of the bodily global. In enterprise four.0 laptop-pushed structures screen bodily processes. It additionally referred as fourth business revolution. The concept of enterprise 4.0 is broadly used throughout Europe, in particular in German's production region. At Hanover honest carried out in January 2011, Germany government delivered a new idea as considered one of its "strategic tasks" termed as the enterprise 4.0 this is adopted as part of the high Tech approach 2020 motion plan. Siegfried Dais of Robert Bosch gmbh and Henning Kagermann of acatech, the conversation Promoter group of the industry-science studies Alliance and a team co-chaired via different participants explained and proposed

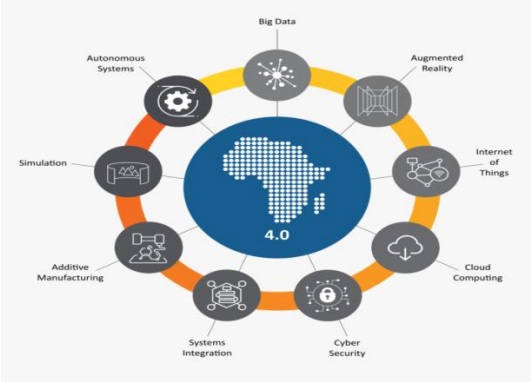
this concept in January 2011. It's far a imaginative and prescient, an idea which changed into first off explained by using enterprise 4.0 running institution.

Objectives of the Study:

1. To study the concept of Industry 4.0.
2. To anylise the opportunity in India for Industry 4.0.
3. To study the advantages of the Industry 4.0.

Literature Review:

With an increase in research on enterprise 4.zero and its implication in Logistics 4.0, is proof that it's far the subject of interest and want for growing enterprise. Industries of many us of a and its authorities have customary the technique which will enhance the attractiveness "industry 4.0" concept. As an instance, Czech government has agreed to "Initiative industry four.0" document and assigned help related to such projects of research. On the different observe, the experimental problems are how to plan the enterprise 4.0 idea. This 4th revolution word is nowadays regularly applied in worldwide meetings and Articles Journals. This literature look at has the predominant objective to display conditions which spotlight the blended effect of industry 4.0 in logistics and its chance evaluation to obtain resilience action primarily based on the formulated questionnaire. Enterprise 4.0 concept turned into published firstly by way of Kagermann in 2011 and that have dependent the enterprise 4.0 pillars statement which became published by using the German country wide Academy of science and Engineering in 2013.



Industry 4.0 concept is designated as the amalgamation across three dimensions: Horizontal Integration together with software matrix, Vertical Integration mixed with connected deliver chain networks and give up-to-quit virtual Integration for product's life cycle engineering along the deliver flow. Industry 4.0 term additionally conceptualized like "a cumulative of standards and technology of the supply community with digital integration in a corporation. From various studies papers, as of now, enterprise 4.0 pillars are described out of which 8 pillars are relevant in the Logistics area, which can be described as follows:

Cyber-bodily device:

Cyber-bodily machine (CPS) concept is defined as the approach in which synthetic and biological structures are collectively incorporated into bodily and cyberspace for processing, facts change, and feedback technique. The amalgamation of tightly consolidated bodily techniques, networking, and processing are called as Cyber-physical device (CPS). Community systems manipulate and screen the physical system with the help of embedded (cyber) subsystems via networked structures. Remarks loops are in useful resource to change the behavior of the physical method whilst required. Different devices like, sensing, computing, and communique (frequently wireless) capabilities are used to create a physical system. Identity of those physical gadgets may be executed with the assist of physical attributes or data sensing structures, for instance, Radio Frequency identity (RFID) or (infrared sensors), and then it can be blended with a networking gadget, primarily the net, for transmitting the gathered records to the processing subsystem.

Huge Statistics Analytics:

The great collation and evaluation of unstructured or dependent facts across numerous wonderful facts generated from distinctive systems and functions like employer consumer management, income management and production device to make it well known for assisting decision making in real time. As in keeping with Forrester's explanation, massive records contains of four dimensions: quantity, range, velocity, value of information. Massive data is processed throughout all these four dimensions for effective choice making. The analysis of records for already saved

statistics is applied for finding the safety troubles and decision making in capabilities of the supply chain or operations in the business enterprise and predicting the destiny threats and risks, additionally imparting the possible solution to triumph over from that difficulty happening inside the corporation.

Internet Of Things:

Internet of Things (IoT) an emerging net-based totally era that is large in an included connection of smart artificial gadgets, focused for boosting the output, performance, and finance with the assist of prognostic technique and large information innovation. The IoT conceptualizes a much broader channel wherein the network has originated to a physical situation to connect with machines, system, and bodily devices and are linked. A cyber device is used to control and reveal those devices. Hence all the things related the usage of a cyber-bodily interface known as the Iot gadget architecture. Iot architectures incorporate scalability and interoperability feature for smoother network connection at some point of the deliver chain.

Cloud Computing:

Cloud-primarily based records generation, which uses utility of communication for the technical spine as properly as for the prudent connections. Using this generation, the organization can enhance records sharing inside milliseconds or maybe faster. The term "virtual manufacturing" is an idea wherein all devices are related to a unmarried cloud and share records from one tool to different.

system Integration:

system Integration is the system software program which facilitates in integrating all the commercial enterprise features to carry them at the not unusual platform. The whole gadget Integration in computerized and robotization for assembling bureaucracy inside the vertical and even size shows computerization of correspondence and participation, mainly along side standardized approaches also.

Autonomous robot:

This era of bringing development inside the systems which made robot automatic, dependable and user-pleasant for common day challenges which will speak to each-other adequately for incompetence part of human beings to learn from them. The feature of an self sufficient robotic is to carry out manufacturing method autonomously, which will be unique and to work in the prohibited human surroundings. Independent robots finish their venture with greater accuracy and intelligence for a given time frame maintaining their aim on protection, reliability, maintainability, and consumer-friendly.

Simulation:

Simulation leverages the actual-time records for virtualizing the real situation in a digital model, plants and corporations use simulation, which may additionally contain area, layouts, and device, thereby lowering device downtime and decorate the quality. Simulation techniques which include two-dimensional and 3-dimensional simulations can be shaped for digital processing and cycle instances simulation, power intake, or ergonomic aspects of a manufacturing facility. Simulations in an commercial utility reduce the system riding time and possibilities of screw ups at the begin. Simulation can enhance decision-making excellent with an smooth and rapid manner.

Smart Logistics:

because the requirement of customized items are increasing more and more so inbound/outbound approaches in logistics have to adapt to this evolving circumstance. Because of its increasing intricacy, it cannot be sorted with ordinary planning and manipulate approaches. We conceptualize the time period clever Logistics, which is defined as the aggregate of Logistics activities with the application of cyber systems, robots, and the internet of Things. Smart Logistics idea is same with the smart manufacturing facility, smart product, and smart offerings. We take into consideration the technology-pushed method for defining smart logistics with the help of smart product and smart services. Clever Logistics is a middle idea section just as a key issue of enterprise 4.0, which is the area the vertical mix happens. The core idea of smart Logistics is the **three-dimensional integration**: Vertical integration takes place throughout all the features in the logistics; Horizontal integration among all the stakeholders in logistics procedure beginning from dealer to stop user of product; stop to give up integration with digital structures throughout all of the value chain.

Hazard control:

A developing management strategy needs a few danger control techniques to deal with challenges wherein powerful hazard management is a key component that p lays the function. Risk as "the degree of exposure to uncertainties that the corporation have to understand and efficiently control as it executes its techniques to obtain its business targets and create value". Hazard management is a systematic system that

aware a corporation about all approaches the chance can be controlled. Within the absence of adequacy, sure actions are had to level down the danger to an acceptable and affordable level. Its amplification is accomplished via automatic trends, for example, Cyber-bodily system, net of things, massive records Analytics and self sufficient Robots, which are included beneath the term industry 4.0 or IOT. Distinguishing ability risks, investigating them, and building up the resilience moves for effective chance control.

Features in the logistics:

Horizontal integration amongst all the stakeholders in logistics system beginning from provider to give up user of product; cease to give up integration with digital structures throughout all the price chain.

Risk management:

A growing management strategy wishes a few hazard management techniques to deal with demanding situations in which powerful chance control is a key thing that p lays the role. Threat as "the degree of publicity to uncertainties that the business enterprise should recognize and efficiently manipulate as it executes its strategies to reap its commercial enterprise objectives and create cost". Risk control is a systematic manner that aware an organisation approximately all methods the hazard can be controlled. Inside the absence of adequacy, certain movements are needed to level down the threat to a suitable and reasonable level. Its amplification is achieved through automatic developments, for instance, Cyber-physical machine, net of Things, huge records Analytics and self-reliant Robots, which are included under the term enterprise 4.0 or IOT. Distinguishing capability dangers, investigating them, and constructing up the resilience actions for powerful threat management.

Industry 4.0 implementation:

The output of sample statistics for the study will consist of a survey carried out with 5 logistics managers with experience 5 to fourteen years every from automobile businesses in India. All experts are from the logistics area no longer always from data technology (IT) associated sectors. Therefore, the studies tries to formulate a wider p respective of the dangers and resilience movement that are related to smart Logistics implementation applicable to the automobile zone inside the Indian context. The Questionnaire carries complete the listing of logistics and sub logistics activities followed by using the applicable enterprise 4.0 Pillar and then the hazard related to the implementation and its resilience motion. Inside the 2nd component, a chance assessment of enterprise 4.0 and the proposed answer for the equal will be carried out. Thereby, respondents have to specially answer the risk encountered while practicing enterprise 4.0, alternatively than sharing know-how obtained from an outside employer. Additionally, the possible answers groups are looking to mitigate the dangers. Records collection and analysis

Industry 4.0-optimal solution:

Internet and cell telephones as a new remodeling era succeeded due to the fact they had been followed by way of a societal transformation and not due to the fact they had been new. Internet as a generation did not invent Social networks, but social networks formulated thanks to the internet, and also enabled it to expand further. Inside the same manner guidelines of the industry gamers will be modified via bringing new functionalities through industry four.0. The improvement in special industries will proceed at extraordinary charges. Within the identical way India wishes to take few steps to make certain a production achievement story in industry 4.0. It has to enhance its fledging net of factors (IOT) enterprise: As the growth of industry 4.0 is based on the increase of IOT market, it is essential to paintings on seamless data integration. So one can create a smart manufacturing unit all heterogeneous gadgets have to networked and connected collectively in the commercial automation gadget thru IOT. Even although Indian IOT is emerging now it is the important part of digital India to transform India right into a digital information driven economic system. To broaden a sturdy statistics protection environment: sensible software of clever manufacturing facility is impossible without a sturdy protection infrastructure. Protection offerings industry must be developed so as to manage superior targeted cyber-safety threats and assaults and additionally strict government guidelines and policies are to be made for information security and protection Talent development it is the proper time for the India to enhance its skill in some the areas wherein it has no longer completed well so far, like superior automation, automation bionics, business ICT, cognitive robots and and so on.., and additionally it has to attend to safety associated talents as industry 4.0 includes Human gadget cooperation and engagement. An instructive method from businesses enables India in its instruction for leadership in enterprise 4.0

Advantages of Industry 4.0:

1. Results in innovation
2. Effective globalization
3. Finest usage of assets

4. Easy product waft
5. Green non-stop actual time tracking
6. Green electricity consumption
7. Self sustaining controlling
8. Extra flexibility meeting high degree closing minute modifications
9. Distinctive end to end product transparency in real time
10. At ease and reliable backup gadget for each step in cloud storage challenges in enterprise 4.0
11. Education
12. Sort of procedure and paintings company
13. Loss of research and expert workforce
14. Provider of mechatronic device and machineries
15. Robust community infrastructure
16. Pretty green cyber protection
17. Effective plant format.

Conclusion:

India is a population of 1.2 billion humans and its sources are stretched to say the least. however, India has to transform the manner it has historically dealt with issues; the sector round it's miles converting. As we mentioned in advance fourth business revolution is on its way to occupy the sector and in all likelihood presents massive opportunities. Via enterprise 4.0 it's miles feasible to create extended atmosphere with certified personnel and to bear on India's aspect in manufacturing and can orchestrate to big scale customization. Even though it is very hard to manipulate the method centrally, if gamers in the device practice right levers there can be strengthened outcomes. For this reason it's far vital to talk the thoughts that players in government and company quarter will profit maximum, if an initiative of enterprise 4.0goes together. By using adopting industry 4.0, we can have a first-rate aggressive advantage over worldwide competitors in financial system. But first and important we need to have the essence of velocity so as to seize this possibility and to acquire our aim. Nowadays industry 4.0 represents setting control on the brand new way of technological trends and improvements inside the vehicle area alternatively than focusing most effective on growing the performance to expand the business version. Subsequently, vehicle logistics requires complicated new capabilities, each at the character stage and in the business enterprise as an entire, to grow to be Smarter. The digital integration and transformation in logistics will create a database, making logistics smarter, extra transparent, and greater efficient at every level, from customer want to shipping. Manufacturing, procurement, buying, and sales & advertising features have become extra carefully aligned as digitization advances.

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Impact of Environment on Health

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Abstract:
The environment can directly and indirectly impact on our health and wellbeing. Environmental health examines the interaction between the environment and our health. Environment health refers to aspects of human health that are determined by physical, chemical ,biological ,social and psychological factors in the environment. Health is a state of complete physical, mental and social wellbeing and is not merely the absence of disease or illness. A clean environment is essential for human health and well – being. The health of the population is also adversely affected by climate change, through heat waves, floods and changes in the distribution of vector-borne diseases. At a broader level, climate change, loss of biodiversity and land degradation can also impact on human well-being.

Keywords*: Health risks, environmental pollution, human health, hazards.*

Introduction

Environmental degradation undermines development and damages human health. Ill health on the other hand affects the work force ,hinders development and health are thus closely interlinked with proper development improving the environment, sustaining to development and increasing community health making possible sustainable development .The role of each and every individual in the maintenance of a clean and healthy environment is therefore indispensable. All the physical surrounding on Earth is called the environment. The environment includes everything living and everything non-living people, animals, plants and all other living things rely on the nonliving parts of the environment to survive. The part of the environment where life happens is called biosphere. The world Health Organization [WHO] definition of health emphasizes the physical, mental and social well-being:"Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity.'' Human health and well-being are intimately linked to the state of environment. The word "Environment" is derived from the French word "Environia" means to encircle or surround. The term environment includes all the biotic & abiotic entities around us. Biotic refers to the world living organism, whereas Abiotic refers to the world of non-living elements. The Environment provides us the basic elements air, water, food and land which are essential for life to flourish on the earth.

How does the environmental effect on our health?

Our health is affected in countless ways by the ways by the environment we live in. Many factors influence the health of a population, including diet, sanitation, socio-economic status, literacy and lifestyle including various Environmental exposures and related human health effects.

Importance of environment:

Environment plays an important role in healthy living and the existence of life on planet earth. Earth is a home for different living species & we all are dependent on the environment for food, air, water and other needs. Therefore, it is important for every individual to save and protect our environment.

Purpose of environmental health

Environmental health is a key part of any comprehensive public health system. The field works to advance policies and programs to reduce chemical and other environmental exposures in air, water, soil and food to protect people and provide communities with healthier environments .

Why is Environmental health important?

Through strategic efforts to improve environmental health, public health professionals can enhance personal wellness for individuals, families and communities. Environmental health is the science and practice of preventing human injury and illness and promoting well- being by Identifying and evaluating environmental sources and hazardous agents and limiting and limiting exposures to hazardous physical, chemical and biological agents in water, soil, food and other environmental media or settings that may adversely affect human health. The relationship between the environment and the human health is an established fact clean; water and soil are the vital ingredients for a happy life. Their abundance or paucity has a direct bearing on the quality of life and the community.

The following Environmental Factors That Can Impact On Health

A number of specific environmental issues can affect on human health and wellness. They are as follows:

1. Air pollution and its adverse Health Effects
2. Many allergic diseases like bronchitis, bronchial asthma and other lung disorders in humans are caused by the inhalation of air –borne pollen grains, spores of bacteria and fungi.
3. Inhalation of polluted air causes heaviness, sleeplessness, headache and vomiting.

4. High concentration of sulfur dioxide in air cause burning and watering of eyes.
5. The hydrocarbons present in polluted air cause lung cancer.
6. Oxides of nitrogen decrease gaseous exchange in the blood and hinder the functioning of the lungs
7. chlorofluorocarbons which are used as coolants in refrigerators, air conditioners ,etc; cause damage to ozone umbrella .This in turn causes greenhouse effect and skin cancer.

Noise pollution and its adverse effects on Health

Hearing loss: Noise can cause temporary or permanent hearing loss.

1. Physiological and psychological changes : Continuous exposure to noise affects the functioning of various systems of the body .It may result in hypertension ,sleeplessness, digestive disorders ,blood pressure fluctuation ,behavioral changes, emotional changes etc.
2. Noise pollution damages students' studies sick people are more and cheaper and sleep deprived actually
3. In a noisy area, communicate is severely affected.
4. continuous exposure to noise affects the functioning of various systems of the body.
5. Water pollution and its adverse Health Effects

Typhoid, cholera, bacterial dysentery and enteric are the bacterial diseases that spread through water.

1. All these diseases cause severe vomiting and diarrhea.
2. In typhoid, there is enlargement of spleen and inflamed intestine. Enteritis causes severe stomach pain.
3. Cholera and dysentery if untreated can cause
4. Dehydration and it may prove fatal for young
5. Radiation and its adverse health effects.
6. Genetic damage: It is caused by radiations, which include mutations in the DNA, thereby affecting genes and chromosomes.
7. Global warming and its adverse effects on health
8. Global warming will lead to changes in the rainfall pattern in many areas. It will affect the distribution of vector – borne diseases. The spread of tropical climate from the equator would bring malaria, yellow fever, dengue and other insect borne diseases to temperate zones.

Climate change and its adverse effects on health.

Rise in the global temperature would directly and indirectly cause impact on human health .Heat waves, cold waves of extreme climatic conditions may cause threat to human life. Floods, drought, rising sea level could bring eruptions of infectious diseases making human population more susceptible .The spread of tropical climates to equator may bring diseases such as malaria, dengue ,yellow fever and other in-sect borne diseases to temperate regions. Sea level rise can cause flooding of sewage and sanitation systems and can cause hazards of health. All of the above factors have adversely affected on human health .It is the responsibility of all human beings to protect and nurture the environment, it also requires the management of environmental resources only then can our health remain unaffected.

Conclusion –

Maintaining a healthy environment is essential for helping people live longer and for enhancing their quality of life. As Healthy People points out, 'Poor environmental quality has its greatest impact on people whose health status is already at risk.''

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Thermodynamic properties of aqueous solution of Isoniazid at different temperatures.

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Abstract

In view of pharmaceutical applications, thermodynamic properties of hypoglycemic drug Isoniazid in aqueous solutions were measured at different temperature in the wide range of concentration. The contribution due to the structural changes of solvent to the thermodynamic properties of aqueous solutions of drug molecules has been reported.

Keyword*:, Isoniazid, Gibbs Energy, Enthalpy, Entropy.*

Introduction

The extensive information on the thermodynamic properties of drug molecules is needed for the advancement of theoretical developments through an understanding of the intermolecular forces-solution structure-property relationship. The thermodynamic properties of several electrolytes in different solvents have been studied by many workers [1-4]. The drug-solvent molecular interaction plays an important role in the understanding of drug action and solute–solvent interactions in the solution phase. Such results can be helpful in predicting the absorption of drugs and transport of drugs across the biological membranes. Therefore, it may be interesting to investigate variation of their properties with concentration for understanding the mechanism of drug action. [5-7]. The detailed literature survey reveals that physicochemical properties like density, viscosity and ultrasonic velocity of the natural macromolecules in alcohol-water mixtures at different temperatures have been studied by Arbad et.al[8]. However physicochemical and thermodynamic properties like entropy, enthalpy and Gibbs energy of the drug are less studied in aqueous solution. This prompted us to investigate the thermodynamic properties of Isoniazid in aqueous solution having different concentrations at temperatures of 298.15K, 303.15K, 308.15K and 300.15K.

Experimental

Materials:

Drug Isoniazid of high purity was obtained from pharmaceutical industries. Double distilled water was used for the preparation of solutions of different concentration (0.02, 0.04, 0.06, 0.08, 0.1M). The precision of balance used was ± 0.0001g. In the present work viscosity and heat of solutions of drug Isoniazid in aqueous solvent having different concentrations was measured at different temperatures. Using these data Gibbs Energy and Entropy of different solutions have also been evaluated.

Viscosity measurements:

The solutions of Isoniazid having concentration of 0.02M, 0.04M, 0.06M, 0.08M, and 0.1M was prepared in aqueous system. The viscosities were measured at 298.15, 303.15, 308.15, 310.15 and 313.15K temperatures for different concentrations. To have more accuracy in the viscosity measurement, the specially designed Mansing Survismeter from Central University Gujrat, Gandhinagar was used to measure the flow time of different solutions. The flow time was measured at the accuracy of ± 0.01 s. The solution viscosities were measured with an uncertainty of ± 2.4×10-4 mPa.s by using Mansing Survismeter. The temperature was maintained by circulating water through Mansing Survismeter from an electronically controlled heated bath circulator (MAC-MSW-270). The uncertainty of temperature was ± 0.01oC.

Data Evaluation:

The thermodynamic parameters of aqueous solution of drug molecule have been calculated on the basis of Andrade equation which is quantitatively presented by Eyring [9].

$$\frac{1}{\eta} = \frac{V}{HN_A} e^{-\Delta H/RT} \times e^{\Delta S/R}$$

Where η = Viscosity
V = Molar volume of the medium,
ΔH = Activation energy,
H = Planck's constant =6.626 ×10-34 Js-1
NA = Avagadro number =6.022 ×1023
S = Entropy, R = Universal gas constant, T = Temperature.

In practice log form of above equation is used.

$$log\left(\frac{1}{\eta}\right) = \left[log\frac{V}{HN_A} + \frac{\Delta S}{2.303R}\right] - \frac{\Delta H}{2.303R}$$

The graph between log (1/η) verses 1/T is plotted, the good linear correlation is observed.(Fig-1).

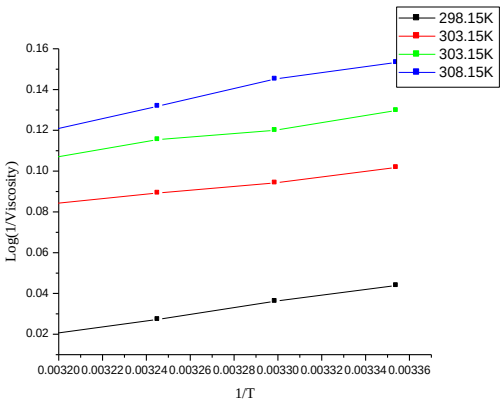

Fig.1.-The plot between log (1/Viscosity) and 1/T for Isoniazid.

From these linear plots, ΔH values were calculated from the slope of straight line by using equation, ΔH = slope X 2.303 R.

From the intercept of these plots, ΔS values were evaluated. Using these evaluated ΔH and ΔS values, the Gibbs energy of solutions (ΔG) were obtained from equation-

$$\Delta G = \Delta H - T\,\Delta S$$

Results and disussion:

The values of the Enthalpy (ΔH), Entropy (ΔS) and Gibbs Energy (ΔG) of drug Isoniazid in aqueous solution at different temperatures are shown in table no-1.

Table No.1: Enthalpy (ΔH), Entropy (ΔS) and Gibbs Energy (ΔG)

Sr.no	Drug Molecule	Temperature (K)	Enthalpy (ΔH) (cal.mol-1)	Entropy (ΔS) (cal.mol-1.K-1)	Gibbs Energy (ΔG) (kcal.mol-1)
1.	Isoniazid	298.15	697.771	-234.833	7.0713
		303.15	509.6259	-234.64	7.1640
		308.15	651.8219	-234.719	7.2980
		313.15	983.4451	-234.94	7.4555

It is evident from tables that for all the compounds ΔH and ΔG values are positive whereas ΔS values are negative. When stronger bonds are broken and weaker bonds are formed, energy is consumed and so, ΔH becomes positive. This indicates endothermic dissolution of compounds where the enthalpy term contributes to an unfavorable positive value of ΔG. Thus, positive values of ΔG indicate that the dissolution process is not Spontaneous [10-11]. The negative value of entropy indicates less randomness in solutions.

Conclusion

In the present study, thermodynamic properties of aqueous solutions of Isoniazid in aqueous system at different temperatures are systematically presented. It has been observed that there exist strong solute–solvent interactions in these systems, which increases with increase in drug concentration. Overall, strong drug-solvent interactions with significant structural changes in pure and mixed solvents have been confirmed.

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Road Transportation : Constructive Economical Means V/s Destructive ecological ends

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Abstract:

Commerce without morality *is amongst the one of seven sin principle Given by* ***father of nation****, implicitly explain while moving towards economical development one must focus on ecology. As we can have alternate plan for development but not an alternative planet. Moving ahead with this thought both development and environment are prima farcie requirement of society for being :* ***Prosperous, powerful and peaceful*** *in nature. striking balance between both is most challenging task in this era of Globalization. Although Road infrastructure is key Indicator of economic development simultaneously we can't run away from its impact on associated environment. After all road can be constructed within some days, month, year but to construct environment require decades, century, era. Thus think multiple times while destroying it just for sake of convince. This paper attempted to analysis Road Ecology using secondary data from available resources. Here it established co-relation between increase in % of road length and % of vehicle vis-à-vis provide Co_2 emission statistics from road Transport. Study resulted into finding of positive co-relation between both characters. It provides further scope to analysis Road from sphere of health, economy and socio-economic indicators. At last development must be inclusive and sustainable in nature.* ***Earth belongs to all late it for all…..***

Key words : *Inclusive, sustainable, road infrastructure, ecology.*

Introduction :-

World Risk Index 2020 Released by united Nations Environment and human security (UNU-EHS) Rank India 89th among 181 countries, and is 4th most at risk in south asia after Bangladesh, Afghanistan and Pakistan. (Ref.5), Most concerning risk associated is climate risk. This fact creates momentum, for taking a minute out of our busy walk of life and think for while about environment. India a nation being one of the top most length of road of network is also at front in disable ecology. Road Infrastructure put a strong foot print on our ecology right from planning up to-construction and operation – maintenance – dismantling phase. Land degradation, deforestation, changing landscape Patten, land-fragmentation, noise pollution, water pollution, air pollution, Genetic modification, human-animal conflicts and much many are impact of road infrastructure over ecology of region. Over- encroachment of development even not left animals corridors which leads to threaten their survivals. It is very disappointing fact that one of versatile democratic mode of mobility i.e. **road transport** are failed to accommodate ecology in its sphere. This paper attempted to throw light upon the concerning ecological issues associated with road infrastructure and provides way forward.

Literature Review:

As ecology V/s development are among the hot debating issue of this days many researches attempted to tackle issue on their own way. For constructing firm knowledge base study of available resources has undertaken. Few among them are follows: It estimated the benefits of LNG, long run use of liquefied natural Gas for transportation as alternative fuels. It emit 20% less greenhouse Gases. Ref.1

It highlighted a co-relation between Increased in rate of infrastructure and decrease in rate of mammals using metal analysis. Ref.2 There is research gap for finding relation between road ecology and road economy. respective work attempted to cementing the same.

Methodology:

For analyzing trends between ecology and economical development of a nation, respective work uses secondary data available form reviews of literature: Research article, ministry of road transport govt. India. Statistic 2016-2017, emission statistics, web blogs, morth. nic.in. etc. and established co-relation between Increase in % of length of road in Km. and % of increase in vehicle along with same it provide Co_2 emission statistic of India for metropolitan cities

Objective :

1. To established co-relation between % increase in length of Road V/s % in vehicles.
2. To analyze impact of road Transportation / construction of roads over associated ecology.
3. To provide way forward to reduce negative externalities of road transportation.

Result & Discussion :

Annual Growth Rate in % in vehicle and road length

Year	% increase in vehicle's	% increase in Road Length
1961/1951	8.1	2.7
1971/1961	10.9	5.7
1981/1971	11.2	5.0
1991/1981	14.8	4.6
2001/1991	9.9	3.8
2011/2001	9.9	3.3
2014/2004	10.1	4.1
2015/2005	9.8	3.7
2016/2006	9.9	3.7
2017/2007	10.11	3.9

Source: Road Transport Year Book 2016-2017, Table 2.2 Compound Annual Growth Rate in % in vehicle and road length

(r-Value=0.60)

The value for co-relation comes out 0.60, depicts positive co-relation between both.

Year	Total Number of Register Motor Vehicle in Million
2009	115.0
2010	127.7
2011	141.9
2012	159.5
2013	176.0
2014	190.7
2015	210.0
2016	230.0
2017	253.3

Source: Road Transport Year Book 2016-2017, Table 2.1

Sector-wise Assessment of Carbon Footprint across Major Cities in India

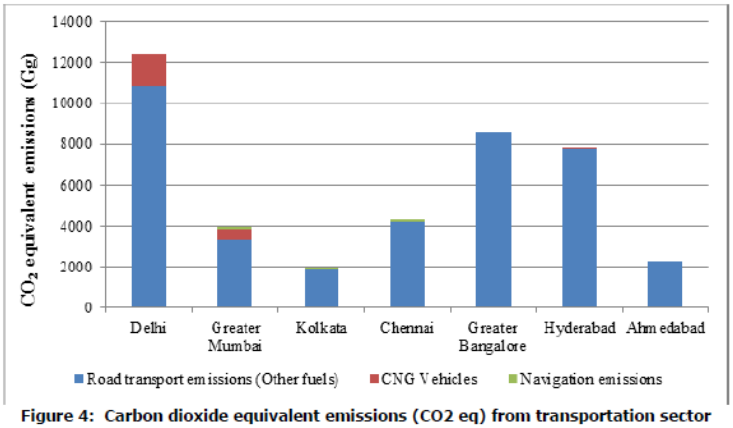

Figure 4: Carbon dioxide equivalent emissions (CO2 eq) from transportation sector

Source: ibems.nic.in

1. Calculated co-relation comes out to be positive depicted both are co-related with each other, but
2. increasing road length is not at par with increasing % rate of vehicle as co-relation value is 0.609. which ultimately leads to congestions and more pollution and destructing ecology.
3. Increasing % of vehicle will surely make to increase emission of green house gases as depicted into statistics.
4. 6% Growth in production of petroleum products also depicted increase in consumtion of fossils.
5. All these leads to disturbance in road ecology.

Impact of Road Transportation on ecology :

Landscape :

1. Fragmentation of land
2. Degradation of land
3. Conversion of forest land which disturb entire ecology associated with it.

Water Resource :

1. Construction of road degrade available water resource to full-fill requirement of development.
2. The oil leakages from Road vehicles pollutes water resources amplifically.

Atmosphere :

1. Road transport vehicle emit green house gases: Co_2, NO_x. So2, PM 2.5, lead etc.
2. Out of total sectors transportation alone account for 38% Share in pollution of atmosphere via green house gas emission. (Ref. 5)

Human Resource:

1. Unbearable sound of traffic during peak House create panic conditions.
2. Irritating Noise disturb a schedule for entire day.
3. To some extent there are genetic modification regarding nervous systems as excess in noise affect nervous system directly.

Living Creatures:

1. Entire disturbance of food nutrient cycle, food chain and food web.
2. Creation of new landscape may take encroachment of invasive species which Threaten to native one.
3. Not-only terrestrial but aquatic creature also disturbed to large extent.
4. Entire Bio-geochemical cycle gets hampered due to changes in landscape.

Waste Management

1. Construction facilities of road infrastructure associated waste.
2. Waste of Batteries from vehicles (specially of electrical vehicle)
3. Waste generated from road traffic collision.
4. Waste from manufacturing of construction raw material etc.

Way forward/Suggestions:

Direct shift to Bharat stage VI from BS IV by surpassing BS V indicate Govt. of India's commitment towards sustainable Road ecology. Moving ahead with same theme following are way forwards to achieve sustainable road ecology:

Environment Impact assessment

Opting for environmental Impact Assessment prior construction of roads.
Offer special advantage to venture at bidding process itself who gone through all sphere of EIA of projects.

Construction Material

1. Use Geotextiles, Fly ash, Plastic sheets etc. Reusable construction material instead of quarrying new via mining.
2. Use permeable construction material.
3. Use sound absorber in construction material

Reducing Noise via traffic management

1. Use intelligent traffic signaling system.
2. Attempt to provide alternate route for traffic during peak hours.
3. In long run India can opt for digital Integrated traffic data management system.

Reducing air Pollution :

1. Design vehicle with modern technology following govt. Norms to reduce SO_2 emission.
2. Opt for ethanol Blending in conventional fuel to reduce pollution from vehicle.
3. Ready with alternative fuel like CNG, ethanol blended fuel, LNG and at same instances provide Recharging station for same in frequent manner.
4. Increase use of public transport.

Increase efficiency of Health services :

1. Air purifier tower needs to established in future to avoid respiratory disease.
2. Not just focusing on health of Delhi NCR, region but also in other metropolitan cities.

Waste Management

1. Special guidelines for management of waste from road transportation like existing guideline on biomedical waste.
2. Convert waste material into reusable one like geotextile, plastic, fly ash etc.
3. Oil scrubber installed in road surface which prevent oil to penetrate into ground water.

Conclusion:

It is quite oblivious for any nation for bringing prosperity, economic development must have carried out. but simultaneously we can't run away from responsibility of environment. We can't reduce development at zero% Not at all but simultaneously, we can't destroy environment 100%. Pertains to same we need to opt for middle path i.e. sustainable development. Respective to work portray the negative externalities of road transportation on environment and provide way forward for same. After all road can be constructed within some days, month, year but to construct environment require decades, century, era. Thus think multiple times while destroying it just for sake of convince.

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COVID-19 Pandemic Crisis and the Way Forward for India

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Abstract:

The Corona virus has a health contagion effect worldwide, but it has brought economic contagion too whereby investors worldwide have become wary of investing their funds in shares and bonds. There is consensus that a concerted worldwide effort is necessary to stabilize world trade and economic growth again. This is a very wise sign and the common man along with investors has got the necessary boost to feel less insecurity. Long term strategies must take the global reality that is emerging in recent days. The government must come forward with innovative long term tax concession schemes on the value of sub-contracts given to the MSME sector.

Introduction

The unprecedented pandemic of COVID-19 has put the world trade and growth in jeopardy. It is now a global crisis of great magnitude and may be compared to the great depression of 1929. The similarity is obvious since the main problem seems to be loss of jobs and income, causing a huge drop in aggregate demand for all major economies. This is not really comparable to World War II which also brought untold economic misery to the world. This is because the crisis which followed World War II was the destruction of production facilities all over Western Europe which required massive infusion of American aid in the form of Marshall Plan. In case of COVID-19, just like the Great Depression, all the production units have not suffered any damage but they are locked down. As a result jobs were lost and people have a sudden loss of their income, causing a major drop of demand. ILO estimates a maximum possible loss of 230 million full time jobs of 40 hours worldwide and OECD estimates a fall in real GDP growth of world of around 1.5 per cent, given the spread of the Corona virus. The world trade already slowed down before the outbreak of Corona virus due to US-China tension by around 1.5 per cent in the last quarter of 2019. WTO estimates a conservative figure of -21.9 fall in world trade in 2020 due to COVID-19. The countries across the world have come forward with economic packages to rescue the economies. The US had already announced a 10 per cent of GDP package of US$ 2 trillion dollar which will go partly to low income individuals as direct income transfer as well as partly to boost up ailing MSMEs. The European Union is also planning a Euro 2 trillion package of similar nature. The major aim of this is similar to the traditional Keynesian prescription of 'pump-priming', whereby income transfer to people having higher marginal propensity to spend boosted up sagging demand. In addition, countries like India, apart from income transfer schemes, have expansionary monetary policy to ensure higher liquidity and lower interest rate in the economy to ensure investors have enough incentive to start investment for expansion of production. The COVID-19 crisis is not only a nightmare for health professionals. It combines characteristics of different types of global economic crisis the world witnessed so far. Apart from the depression it has brought worldwide, it has created an unprecedented crisis for the oil producers, which nobody has witnessed in the last 50 years or so. Oil futures are going at negative prices. This may well destabilize the financial structure of the world. The Corona virus has a health contagion effect worldwide, but it has brought economic contagion too whereby investors worldwide have become wary of investing their funds in shares and bonds. India witnessed a flight of capital of significant scale in the months of March and April of 2020. The mutual fund, hedge fund as well as pension funds have simply withdrawn their money worldwide to face the possible surge in encashment of deposits by individuals having their money in these funds. In addition, in countries like the USA, mortgage defaults again have become a distinct possibility reminiscent of the 2007-08 crisis, which engulfed the US economy. The world has managed to recover from major bouts of global crisis - be it 1929 great depression, 1973 oil price shock, 1997 East Asian contagion crisis or 2007-08 US mortgage crisis or global financial crisis. The economic managers worldwide have taken precautionary measures to tide over the crisis on each occasion. The financial superstructure is tightened by central banks and the governments in each country have taken quick measures to save vulnerable low income individuals as well as MSMEs from curtailment of production and jobs. In the present COVID-19 crisis also, some countries in Europe, UK and USA responded later than needed. Nevertheless, there is consensus that a concerted worldwide effort is necessary to stabilize world trade and economic growth again. This is a very wise sign and the common man along with investors has got the necessary boost to feel less insecurity.

Focus of Recovery:

Plan India is no exception with various estimates suggesting a rise of unemployment to unprecedented high levels along with a fall in real GDP growth to a record low level of less than 2 per cent in 2020. The government has come forward with economic packages to transfer income to the poorer

segments in the economy along with complementary liquidity enhancing measures of monetary authority. But, one must note that these are short term economic measures to keep the demand reasonably high along with an incentive to the MSME sector to carry on investment. Though these are necessary steps in the right direction (and need additional support in the coming days), one cannot expect such policies to continue indefinitely by recourse to deficit financing. One needs long term planning to sustain the growth. Long term strategies must take the global reality that is emerging in recent days. Given that the origin of the crisis was from China, global supply chains are severely disrupted. Major manufacturing nations in the world have given signals that they wish to diversify the sourcing for global value chains. There will be tough competition to attract investors to India, but this will give a golden opportunity to our struggling MSME sector to get a foothold in the global value chains. Looking at the massive quantitative support given in most of the major consuming economies, the year 2021 promises to be good for world trade. However, to exploit such an opportunity, one needs to identify sectors where our MSMEs can play an important role. The major beneficiary will be the engineering sector since some of the industries which may try to locate their parts and components and ingredients production in India will be automobile, electrical (including power sector), electronics, machine tools, machinery along with sectors like chemicals (including pharmaceuticals), agro-processing, garments, food and fruit processing and leather. For this, the government must come forward with innovative long-term tax concession schemes on the value of sub-contracts given to the MSME sector. The advantage of involving MSMEs is to create concurrent jobs in related services like transport, sales, repair, telecom, travel and tourism, finance, etc, without confronting difficult labour laws. The other important policy is to invest heavily on infrastructure like power, roads, ports, water, etc., possibly in a PPP mode to motivate the private sector to have some ownership of the infrastructure for long term sustainability. In addition, aggressive marketing by MSME associations in conjunction with Indian missions abroad can never be undermined given the competition from nations in Southeast Asia and Eastern Europe.

Concluding:

Remarks Overall, COVID-19 has brought untold misery to a large section of low income individuals across the globe. The uncertainty about future looms heavily in the mind of both consumers and producers. But, the concerted action by the countries in the world will surely turn the tide. India has great opportunities in this context, especially looking at the composition of global value chains in the world trade. The MSME sector, especially in our competitive engineering goods manufacturing, provides great prospects for employment and growth in the economy. The need of the hour is to carefully chalk out plans for the future resurgence of economic activity in the nation**.**

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Ayurvedic Remedies of Typhoid Fever

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Abstract:

Typhoid fever is endemic in many developing countries and still a major public health concern. Salmonella typhi is the causative agent of typhoid fever with humans only the carrier of these organisms. High fever and pain in abdomen are the typical symptoms for the disease. Serious complications may occur due to the late diagnosis or failure to respond to the treatment. Different Diagnostic tests are available for Typhoid fever among which widal test is widely used serological test. Salmonella typhi is gaining resistance over the synthetic antibiotics and hence created a need to find more effective drugs. Ayurvedic remedies has been used to treat various infections like typhoid fever from centuries. Different herbal drugs from root, stem, leaf, flower and fruits of medicinal plants are used in the Ayurvedic formulation. Medicinal plants contain phytoconstituents having chemical properties as of synthetic antibiotics which can be used for effective treatment against the typhoid fever. Ayurvedic drugs may be the better option for treatment of typhoid fever considering the developing resistance to synthetic antibiotics and side effect of allopathic drugs on human health.

Key Words: *Typhoid fever, Medicinal plants, Herbal drugs, Ayurvedic remedies.*

Introduction:

Typhoid fever or enteric fever an infectious disease caused by Salmonella typhi, a gram-negative bacterium, is still a major public health concern in developing nations. [1] Typhoid fever is endemic in many developing countries of Asia Africa and Latin America while the incidence of the disease is very low in developed countries such as Europe and North America. [1] Contaminated water and food is the most common source of infection with humans only the career of these organisms. [2] Case studies have related the type of Typhoid fever incidences with age, poverty, literacy, sanitation and water treatment.[3] The more susceptible age group to the disease is young children, most likely due to the fact that adults develop immunity from recurrent infection and subclinical cases. [4] Salmonella enterica serovar (*Salmonella Typhi*) is the gram-negative bacteria that causes the typhoid fever, paratyphoid fever is caused by *Salmonella paratyphi A* and less commonly by *Salmonella paratyphi B* (Schotmulleri) and *Salmonella paratyphi* C (Hirschefeldii). [2] Stool and urine of infected persons are main sources of infection through the contaminated water, food and flies which serves as important vehicles for transmission of the disease .[4] Generally the incubation period of typhoid fever is 1-14 days. High fever and pain in abdomen are the typical symptoms of typhoid fever. Non specific symptoms such as persistence headache, chills, abdominal discomfort, constipation, diarrhoea, nausea, cough, weakness and dizziness may be associated with the disease. Serious complications such as cerebral dysfunction, gastrointestinal haemorrhage and shock, perforation of the gut wall and terminal ileal perforation may result due to the late diagnosis or failure to respond to treatment .[4,5] Accurate and timely diagnostics of any disease is important in cure of that disease. Diagnostic tests for Typhoid fever includes Microbiological test- Blood culture (conventional, low sensitivity, regarded as gold standard), bone marrow culture, urine culture and stool culture; Molecular Diagnostic test- Polymerase Chain Reaction and nested Polymerase Chain Reaction; Serological Diagnostic tests- widal test (widely used), T-M Tubex, typhidot.[2]

Ayurvedic Remedies Ayurvedic remedies have been used to treat various infections like typhoid fever from centuries. Different herbal drugs from root, stem, leaf, flower and fruits of medicinal plants are used in the Ayurvedic formulations. Ayurvedic remedies for typhoid fever include the following formulations.

Sudarshana Ghana Vati with Patoladi Kashaya Churna [6 Sudarshana Ghana Vati along with Patoladi Kashaya Churna for 21 days period is given to treat the enteric fever. Deepana, Pachan, Anulomana, Krimighna and Swedajananana property increases the jatharagni and helped in reducing the ama, the main cause for Fever. The Malapravratana and Swedajanana facilitated by drugs reduces the body temperature. Microscopic and macroscopic krimi in the body were killed by Krimighna property of the combination which are the causative organism of the fever in enteric fever.

Agnitundi vati ¯Agnitundi vati is found effective to Salmonella typhi which contains Shuddha Parada and Gandhaka [used in the various chronic and sannipatik diseases], Vidanga(Embelia ribes), Triphala (Terminalia Chebula, Terminalia Bellirica, Emblica Officinalis) and Vatsanabha (Aconitum Ferox) [works as best krumighna], Vatsanabha [Yogvahi property and included in Visha dravya which has aashukari and yogvahi property which helps in sukshma stotoamitva and resulting in samprapti vighatana], Saindhav, Sajjikshar, Yavashar, Jirak and Ajamoda [Deepana, Pachana property].

Virechana treatment [8] In these treatment Tablet amritottara Kashaya and Tablet shaddharana for 3-5 days till nirama laxana seen; Indukantaghrita for 3-5 days; Murchitataila 1 times a day for 2 day; and Trivrittaleha with warmwater 1 day are given. Study has found that Virechana treatment for enteric ferver with Amapachana is very effective and highly significant in reducing the symptoms and also in reducing the biochemical parameter and other objective parameters.

Kiratadisapta kashaya [9] Kiratadisapta kashaya is decoction made by boiling 20 g of the herbal mixture in 80 mL water and reducing it to 20 mL. Kiratatikta helps to reduce fever and strengthen the stomach by its antipyretic, antihelminthic and hypoglycaemic properties.

Sudarshan churna [9] It is formulated by using 48 herbs and is known to destroy all types of fevers. Chirayata is the main herb in this churna. This formulation is also available in the form of sudarshan ghana vati, as a vati (tablet or a concentrated form of the medicine) which is discus earlier.

Sanjivani vati [9] Sanjivani vati contains many herbs including triphala (a combination of amalaki [Indian gooseberry vibhitaki [belleric myrobalan], and haritaki), shunthi, vatsanabha (Indian aconite), guduchi, yastimadhu (mulethi and bhallataka (Indian nut tree). Sanjivani vati is used in combination along with patoladi kashaya, kiratadisapta kashaya, and sudarshan ghana vati to treat enteric fever. Sanjivani vati aim to reduce the main symptoms of enteric fever that is reducing rashes, abdominal disturbances and fever.

Tribhuvankirti rasa [9] Tribhuvankirti rasa formulation contains a mixture of pippali (long pepper), maricha (pepper), shunthi (dried ginger), bhasma (borax), shuddha hingula (cinnabar) and other herbs. These herbs are mixed with aqueous extracts of adrak (ginger), tulsi (holy basil) and dhattura (devil's snare). Tribhuvankirti rasa have antipyretic, analgesic properties and also induces sweating in the body.

Sitopaladi churna (powder): [9] Sitopaladi churna is a mixture of ela (cardamom mishri (rock sugar), twak (cinnamon vanshlochan) [white-coloured formations in bamboos], and pippali (long pepper). Half a teaspoon of sitopaladi churna is administered along with warm water in enteric fever treatment. Sitopaladi churna have antipyretic properties. A number of different plant species are used in the anti-typhoid herbal formulations.

Medicinal Plants used in Enteric fever : [10-14]

Sr. No.	Medicinal Plants	Part used	Vernacular Name	Activity
1.	*Euphorbia prostratra*	Whole plant	Ground Spurge	Anti-typhoid activity
2.	*Tectona grandis*	Leaves	Teak	An anti-inflammatory, laxative, astringent, analgesic plant, anti-typhoid activity
3.	*Adhatoda vasica*	Leaves	Adosa	Anti-typhoid activity
4.	*Vitex negundo*	Leaves	Chinese chaste tree	Anti-typhoid activity
5.	*Azadirachta indica*	Bark	Buah Mimba	Antimicrobial
6.	*Aegel marmelous*	Fruit Pulp	Buah Maja	Strong antimicrobial agent
7.	*Punica granatum*	Fruit peel	Buah Delima	Strong antimicrobial
8.	*Myristica fragrans*	Fruit	Buah Pala	Strong antimicrobial
9.	*Crinum purpurascens*	Leaves	Lili Jawa	Bactericidal
10.	*Houttuynia cordata*	Powder	Pangkal	Phagocytic stimulation effect
11.	*Bidens pilosa*	Leaves	Ketus	Anti-typhoid activity
12.	*Carica Papaya*	Leaves	Pepaya	Anti-typhoid activity
13.	*Cocus nucifera*	Crude	Kelapa	Anti-typhoid activity
14.	*Cymbopogon citratus*	Leaves	Serai	Anti-typhoid activity
15.	*Mangifera Indica*	Leaves	Mangga	Antimicrobial activity against *Salmonella typhi*
16.	*Momordica charantia*	Leaves	Peria	Potent antimicrobial agents against *Salmonella typhi*
17.	*Psidium guajava*	Leaves	Jambu Biji	Ability to treat the clinical symptoms of salmonella infection in rats
18.	*Solanum lycopersicum*	Fruit	Tomat	Growth inhibition of *Salmonella typhi*
19.	*Zingiber officinale*	Leaves	Jahe	Low activity against *Salmonella typhi*
20.	*Aloe vera*	Leaves	Kumari	Immunostimulator, Anti-typhoid activity
21.	*Allium Sativum*	Raw	Putih	Antimicrobial
22.	*Euphorbia fusiformis*	Root stock	Patikan Kebo	Antimicrobial agent

23.	*Lagenaria siceraria*	Fruit Peel	Labu air	Antimicrobial agent
24.	*Solanum tuberosum*	Fruit Peel	Kentang	Antimicrobial agent
25.	*Ananascomous*	Fruit Peel	Nanas	Antimicrobial agent
26.	*Luffa acutangular*	Fruit Peel	Gambas	Antimicrobial agent
27.	*Ocimum sanctum*	Leaves	Tulasi	Antibacterial activity
28.	*Moringa oleifera*	Leaves, stem	Shigru	Antimicrobial agent
29.	*Manilkara zapota*	Leaves	Sawo	Antibacterial activity
30.	*Occimum gratissimum*	Leaves	SelasihMekah	Antimicrobial agent andantidiarrheal
31.	*Solanumnigrum*	Plants	Leunca	Antimicrobial agent
32.	*Apium graveolens* L	Plants	Seledri	Antimicrobial agent
33.	*Cichorium Intybus*	Roots	Semak Menahun	Antimicrobial agent
34.	*Citrus aurantifolia*	Fruit	Jeruk Nipis	Antimicrobial agent
35.	*Terminalia belerica*	Fruit	Pohonrimba	Anti-salmonella agent
36.	*Glycyrrhiza glabra*	Seed	Akar Manis	Antimicrobial activity
37.	*Abrus precatorious*	Seed	Gunja	Anti-typhoid activity
38.	*Achyranthes aspera*	Root, Leaf	Apamarga	Anti-typhoid activity
39.	*Actiniopteris dichotoma*	Whole plant	Mayurshikha	Anti-typhoid activity
40.	*Aerva lanata*	Whole Plant	Gorakshaganja	Anti-typhoid activity

Conclusion: Sudarshana Ghana Vati with Patoladi Kashaya Churna, Agnitundi vati, Virechana treatment, Kiratadisapta kashaya , Sudarshan churna , Sanjivani vati , Tribhuvankirti rasa and Sitopaladi churna (powder) are the Ayurvedic formulations which may be the better option over allopathic formulations along with the with life style modification and dietary habits in accordance with the principles of Ayurveda. Phytoconstituents in medicinal plants having anti-bacterial (anti-typhoid) activity can be the potential treatment in a typhoid fever. Ayurvedic remedies can be the effective way for the treatment of typhoid fever considering the developing resistance to synthetic antibiotics and side effect of allopathic drugs on health and high cost of the treatment. This review article gives an idea about available Ayurvedic formulations and medicinal plants which can be used for efficient and effective treatment of typhoid fever.

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Recovery of Adsorbed Metal ions from the Granular Activated Carbon

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Abstract:

Granular Activated Carbon (GAC) is widely used for the removal and recovery of toxic pollutants including metals because of its low cost and high affinity towards the scavenging of metal ions. Activated carbon derived from bituminous coal is preferred for wastewater treatment due to its considerable hardness, a characteristic needed to keep down handling losses during reactivation. The removal of Nickel from some Aqueous solution has been investigated using F400 Modified Granular Activated carbon (GAC) .Batch equilibrium experiments showed that the sorbents have maximum removal efficiency for Nickel 4 hours contact time and in ambient room temperature with 92 % recovery. For the Nickel metals, Langmuir and Freundlich isotherms has been also studied..

Keywords: *Adsorption Study ,Granular activated carbon, Heavy metals.*

Introduction:

In Egypt, the pollution by trace metal ions is one of the most serious environmental problems. Waste, resulting from daily domestic and industrial activities may induce considerable changes in the physical and chemical properties of water. These changes may greatly alter the environmental characteristics of river reaches [1].Industrial and municipal wastewaters frequently contain metal ions. When present in excess of stipulated values, these metal ions can be harmful to aquatic life and human health. Current methodsfor wastewater treatment include precipitation, coagulation, flotation, sedimentation, filtration, membrane processes, electrochemical techniques, ion exchange, biological processes, etc. All ofthese methods have their merits and limitations in practical application. The adsorption process using granular activated carbon (GAC) has attracted attention becauseof its effectiveness for the removal of dissolved heavy metal ions at trace quantities. Recently, aneffort has been made to develop new adsorbents as well as improving existing adsorbents such asGAC and other adsorbents such as iron oxide-coated sand [2] Most of the heavy metals are bound to particles in sediment, but only a small quantity becomes dissolved in the water and it can spread widely in the food chains. Heavy metal contamination exists in the aqueous waste streams of many industries like, metal plating, mining operations, metal smelters, microelectronics, radiator, alloy, storage battery, plastics and textiles manufacturers, wood preservatives producing industries, as well as agricultural sources where fertilizers, pesticides and fungicidal spray are intensively used [3] Metal adsorbates that are basically in the dissolved state although toxic often have a useful commercial value when recovered. The concentration of metal ions generated in solution dependsupon the solubility of the corresponding salt and the stability of the ions in an aqueous medium.Nickel ions were chosen for the present study, with their recovery using modified GAC being investigated. Several workers have used a number of adsorbents including GAC for adsorbing toxic metal ions from their aqueous solutions [4] [5] [6][7][8]. Nickel is moderately abundant and is used in large quantities for a wide range of ferrous andnon-ferrous alloys. It is mostly found together with the sulphides of iron or copper [9.Important emission sources of nickel into air include the combustion of coal and oil for heat andpower generation, the incineration of waste and sewage sludge, nickel mining and production,and electroplating industries (WHO 1991). The intake of nickel from food in most countries is100–300 μg/d. Nickel carbonyl is the most acutely toxic nickel compound. Poisoning can lead to headache,vertigo, nausea, vomiting and severe pneumonia. Chronic irritative effects observed in nickelrefineries and nickel-plating works include rhinitis, sinusitis, perforations of the nasal septumand bronchial asthma. Long-term exposure to low-solubility nickel compounds, e.g. nickel sub-sulphide and nickel oxide, pose a high risk of lung and nasal malignancies as observed in a numberof epidemiological studies [10].

Experimental Apparatus:

A digital spectrophotometer (type-166, Systronics India Ltd.) with matched cells of 1-cmoptical path length was employed for all absorbance measurements. A mechanical shaker (Remimodel No. RS-24, Remi Instruments Ltd., Mumbai) provided with a timer was used for agitatingsolutions in the experimental bottles. A digital pH meter (ELICO Pvt. Ltd., Hyderabad, India)was used as and when required for checking the pH values of the various solutions. Scanningelectron microscope (SEM) studies were undertaken using a Cambridge Steroscan S250 MK IIIinstrum

Materials and Methods :

Power requirement : All power needed for running electric appliances was obtained from an Automatic Servo stabilizer, 5 KVA capacity (M/s Dandekar Electricals Pvt. Ltd., Nagpur).

Distilled water : The present work involved estimation of metal ions in solution and hence good quality of distilled water was necessary for preparing experimental solutions. The distilled water obtained from laboratory distills water still (M/s. Kumar, Industries Mumbai, Capacity 1.5 lit/hour). Distilled water thus obtained was preferably prepared a fresh before use, as and when needed, and stored in a Borosil 5 liter flat bottom flask provided with a glass stopper.

Glasswares : All glasswares in laboratory were standard glass wares obtained from M/s Borosil, Bombay. Before use these glasswares were thoroughly washed with chromic acid & several times with distilled water & dried in oven.

Electric Oven : In this laboratory NEOLAB electric oven was used which had an arrangement toregulate the temperature to the required value.

Balance : The balance used for weighing was a electronic balance with an accuracy.

Mechanical Shaker : A mechanical shaker (Remi Model No. RS-24, Remi Instrument Ltd., Mumbai) was used for agitation of GAC with solution for some adsorption experiments. The shaker was especially useful for adsorbing the metals on Granular Activated Raw Carbon and Granular Activated Oxidized Carbon. Usually the experimental samples could be shaken for around 12 hours, but for certain system it was necessary to shake it for longer periods. For this purpose an electronic timer was fabricated in this laboratory with the help of electrical engineering section of this Institute. This timer helped in switching on the shaker for approximately 3 minutes while switching it off for same period during the next 3 minutes.

pH Meter : The digital pH meter used in this laboratory was an LI-120 model (M/s ELICO, Pvt. Ltd. Hydrabad , India) and standardized using potassium hydrogen phthalate buffer of pH 4.01 at 25° C.

Spectrophotometer: All Spectrophotometer measurements were done on a Systronics Digital Spectrophotometer Model 166, India Ltd that was readily available in this laboratory using 1 cm matched cuvettes.

Thermostat Bath :

A thermostat arrangement, which was an essential requirement for agitating the loaded carbon with metal ion solution and for all subsequent kinetic runs was fabricated in the laboratory using a 50 liter plastic through which employed distilled water and had provision for heating and cooling of the bath liquid. With the help of a contact thermometer the heater & the cooling pump were operated through an electronic relay separately. By this help, all systems run at a uniform temperature of 28° ± 0.1°C. Since the temperature in the course of experimentation was usually above the ambient temperature of the laboratory for most parts of year, it had to be cooled, for this purpose an old refrigerating unit provided with a heavy-duty compressor was employed. The cooling coils of the unit were dipped in a bucket of water. Cold water produced by this unit was circulated with the help of circulating pump through the thermostat bath liquid and with such a unit it was possible to run the thermostat continuously at the temperature of 28° ± 0.1°C during the entire work. Once all these facilities were readily available it was possible to plan adsorption studies as also to carry out rate of adsorption in the present work. A digital spectrophotometer (type-166, Systronics India Ltd.) with matched cells of 1-cmoptical path length was employed for all absorbance measurements. A mechanical shaker (Remimodel No. RS-24, Remi Instruments Ltd., Mumbai) provided with a timer was used for agitating solutions in the experimental bottles. A digital pH meter (ELICO Pvt. Ltd., Hyderabad, India)was used as and when required for checking the pH values of the various solutions.

Reagents and chemicals:

All the reagents and chemicals used in the present work were of A.R. grade (E. Merck/S.D. Fine).Standard solutions of the metal ion used in the present work were prepared from its A.R. grade reagent (E. Merck) employing the corresponding salts. Working standard solutions were preparedby appropriate dilution of the standard stock solution.

Experimental procedure:

The metal ions from the solutions could be scavenged by Granular Activated Carbon is well documented in our literature. The GAC containing the adsorbe metal ions was first washed by several times with double distilled water to free it of all extraneous ions wherever necessary and then transferred into small conical flask and 10 ml concentrated nitric acid was added. It was then boiled for 15-20 minutes frequently being topped up by adding a little distilled water.The carbon was then filtered off, and washed ,the filtrate and washing were collected in a flask and then diluted to a given volume in a standard flask.An aliquot of this solution was analyzed spectrophotometrically for the determination of metal ions. Such experiments were carried out for the System F-400 Ni^{2+}. As discussed above the transition metals are scavenged by granular activated carbon, it was thought if simultaneous recovery of these metals could be possible. For the recovery there was a need to modify the carbon. The carbon was modified in two ways as discussed earlier.

In second modified process the GAC containing metal ions after stirring was filtered off and was air-dried. The carbon was then transferred into small conical flasks and 10ml concentrated nitric acid was added to each flask. It was then boiled for 15-20 minutes by adding a little distilled water for sometime. The carbon was then filtered off, and washed; the filtrate and washings were diluted to a constant volume. An aliquot of this solution was analyzed calorimetrically for the determination of metal ions. The results are given in given table.

Result And Discussion:

From the batch experiments of the single solute adsorption system it was observed that the different metal ions were adsorbed up to different extent by the raw GAC. Digesting the adsorbed GAC in concentrated HNO_3 carried out the recovery of copper. In this process raw GAC adsorbed with Nickel ions was digested with a small amount of concentrated HNO_3 and then the solution diluted to a fixed volume and analyzed for Nickel ion. In this process the Nickel ons are converted to their corresponding nitrates. The copper balance checked by this process was found to be very satisfactory. It is therefore evident that metal ions such as Nickel could be scavenged and recovered this way. The results are given in Table.

Adsorption of Nickel on raw F-400 GAC
Wt. of F-400 GAC = 0.5 gm
Volume of solution = 200ml

Sr No	Initial amount of Nickel in solution in mg/ml	Final amount of Nickel in solution in mg/ml	Amount of Nickel adsorbed by GAC in mg/gm
1	**791.2**	**459.2**	**332.0**
2	**791.2**	**458.0**	**333.2**
3	**791.2**	**455.2**	**336.0**

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A Study of Irrigation Facilities and Gross Cropped Area in Hingoli District (M.S.)

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Abstract:-
Irrigation has played an important role is transforming the rural landscape of study region. Major and Medium irrigation Project and its canals and other sources of irrigation played a vital role in transforming the cropping pattern of the area. Moreover entire economy has been influenced by the development of irrigation which in turn brought prosperity to the region. Irrigation is developed limitedly in the region, canals, wells, tanks and lifts are major sources of irrigation, Purna project, and Upper Penganga project are important water for irrigation to 57988 hectors of land. Out of total cultivable area, 18.55 percent area is under irrigation. Cereals (Jowar, Wheat, Rice and Bajara), Pulses Tur, Mug, Gram, Oilseeds Groundnuts, Sunflower, Soyabean), cotton, sugarcane and vegetables are the main crops cultivated in the study region Out of total land under irrigation 83.41 percent land is under well irrigation and 29.97 percent and other sources of irrigation. Dominance of well irrigation is found in Basmat, Kalmnuri and Sengaon tehsils. More area under other sources of irrigation is observed in Basmat and Kalmnuri tehsils. Out of total gross cropped area 10.12 percent land under irrigation, this is very low percent of area under irrigation to gross cropped area in the study region.

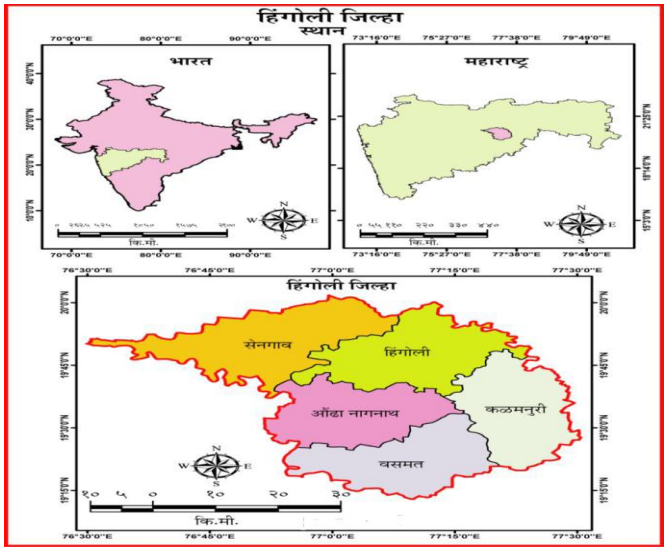
Keywords: Irrigation Facilities, Cropped Area, Planning, Rainfall, Irrigation Projects, etc

Introduction:

The concept of irrigation implies the existence of source of water supply within a reasonable distance and an arrangement to regulate the supply of water according to the day-by-day needs of the crops rose in the fields. Irrigation is human beings efforts to substitute for any inadequacy and deficiency in natural rainfall with purpose of expansion in crop output. Broadly speaking on one hand irrigation has become one of the fundamental need for agricultural output in area of scanty rainfall on the other hand irrigation act as an insurance against failure in rainfall during the wet crop season in the regions of favourable rainfall. Irrigation plays a vital role during the dry season in the rainless tracts, Where it provides water supply to the agriculture land and improves its utilization and crop also.

Study area:-

Hingoli district is situated in Northern part of Marathwada in state of Maharashtra it is bordered by Akola and Yavatmal District on the northern side, Parbhani is the eastern side and Nanded district in the south eastern sided and lies between 19°20'N to 20°00'N and 76°20'E to 78°00'E respectively. The district of Maharashtra is one of the newest districts in the state. It comes into existence as a result of the division of Parbhani district in ist may 1999 it consists of two sub division mainly Hingoli and Basmat and five talukas, Hingoli, Kalamnuri, Sengaon, Aundha Nagnath, and Basmat.



Location map of Hingoli District.

Objective:

The basic objective of the paper is to study the irrigation facilities and gross cropped area of the Hingoli district. Further, to analyze them basically to the geographical point of view.

Database and Methodology:

The study is entirely based on secondary sources of data. The required essential data has been collected from the District Census Handbook, Hingoli and Socio-economic Review of Hingoli District. The data collected from different sources has been tabulated and processed through statistical techniques. Quantitative methods and techniques are used to convert the data. These methods are useful for the analysis.

Discussion and Result:

Irrigation has played an important role is transforming the rural landscape of the study region. Major and medium irrigation project and its canals and other sources of irrigation played a vital role in transforming

the cropping pattern of the area. Moreover, entire economy has been influenced by the development of irrigation, which in turn brought prosperity to the region.

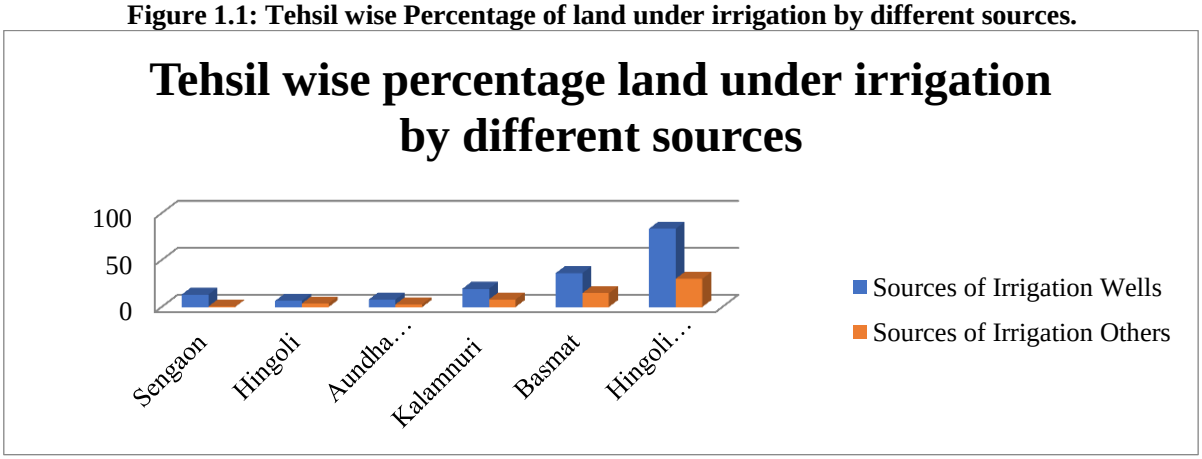
There are two major irrigation project, namely Purna project and upper Penganga project. Purna project or Dam is on Purna River in Kanad tehsil of Aurangabad district, watershed and this project provide large irrigation facilities to Aundha Nagnath, tehsils in the study area. Upper Penganga project or Dam is on Penganga river in Madh in Buldhana district. Lift irrigation project, Kolhapur type reservoirs and wells. The Table 1.1 shows the tehsil-wise percentage of land under the irrigation by different sources.

Table 1.1: Tehsil wise percentage of land under irrigation by different sources.

Sr. No.	Tehsil	Sources of Irrigation	
		Wells	Others
1	Sengaon	13.26	0.49
2	Hingoli	6.63	3.8
3	Aundha Nagnath	8.02	2.95
4	Kalamnuri	19.46	8.04
5	Basmat	36.05	14.69
6	Hingoli District	83.41	29.97

Source: Data is compiled by researcher on the basis of district Socio- Economic review and statistical abstract of abstract of Hingoli District 2013-2014.

Figure 1.1: Tehsil wise Percentage of land under irrigation by different sources.



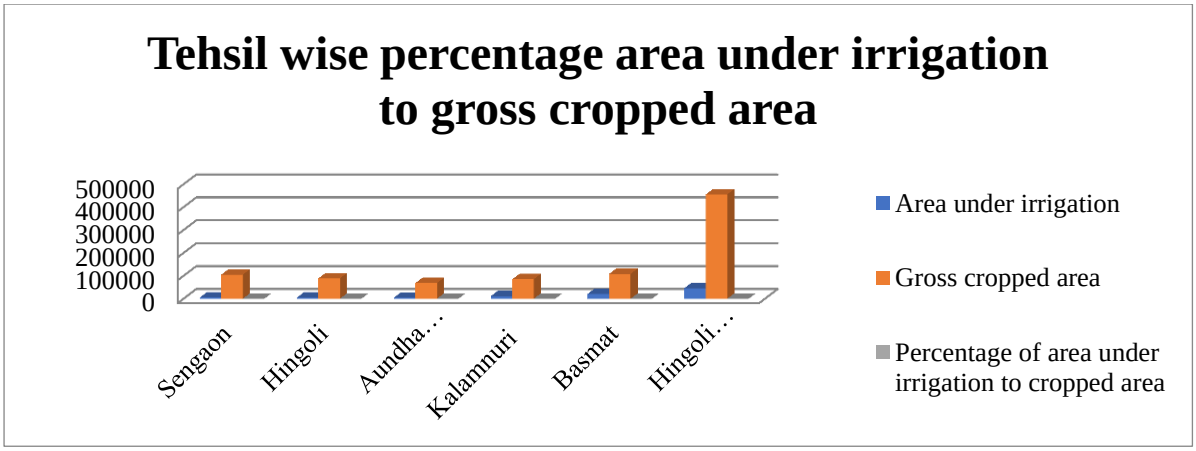
The Table 1.1 shows that, out of the total land under irrigation, 83.41 percent land is under wells irrigation, and 29.97 percent land other sources of irrigation. Dominance of well irrigation is found in Basmat, Kalmnuri, Sengaon that is above 08 percent. More area under other sources of irrigation is observed in Basmat and Kalmnuri tehsils in the study region. Above 06 percent well irrigation of observed in Aundha Nagnath and Hingoli tehsils and below 04 percent other sources of irrigation in Hingoli, Aundha Nagnath tehsils in the study region (Fig. 1.1).

Table 1.2: Tehsil wise percentage of land under irrigation to gross cropped area.

Sr. No.	Tehsils	Area under irrigation	Gross cropped area	Percentage of area under irrigation to cropped area
1	Sengaon	4800	105100	4.57
2	Hingoli	4500	88800	5.07
3	Aundha Nagnath	4400	68300	6.44
4	Kalamnuri	11400	85100	13.4
5	Basmat	21000	108100	19.43
6	Hingoli District	46100	455400	10.12

Source: Data is compiled by researcher on the basis of district Socio- Economic review and statistical abstract of abstract of Hingoli District 2013-2014.

Figure 1.2: Tehsil wise percentage of land under irrigation to gross cropped area.



The Table 1.2 reveals that out of total gross cropped area 10.12 percent land under irrigation, this is very low percent of area under irrigation to gross cropped area in the study region. Relatively high percentage of land (above 12 percent) under irrigation is noticed in Basmat and Kalmnuri tehsils, where major irrigation project facilities are more available through Purna project, and upper Penganga project and it cannels. Land under irrigation between 03 to 07 percent is found in Sengaon, Hingoli, Aundha Nagnath tehsils in the study region (Fig.1.2).

Conclusions:

Irrigation is developed limitedly in the study region. Cannels, wells, tanks and lifts are major sources of irrigation. Purna and upper Penganga are major irrigation project of the region. These projects are providing water for irrigation to 57988 hectors of land. Out of total cultivable area, 18.55 percent area is under irrigation. Out of total land under irrigation 83.41 percent land is under well irrigation and 29.97 percent and other sources of irrigation. Dominance of well irrigation is found in Basmat, Kalmnuri and Sengaon tehsils. More area under other sources of irrigation is observed in Basmat and Kalmnuri tehsils. Out of total gross cropped area 10.12 percent land under irrigation, this is very low percent of area under irrigation to gross cropped area in the study region. Thus tehsils like Sengaon, Hingoli, Aundha Nagnath share comparatively less area under irrigation to gross cropped area. It is needs to be addressed to intensively to increase the net irrigated area in these three tehsils. It is also observed that because of scanty and inadequate rainfall in catchment area, irrigation project cannot attain optimum water level in some season. This is also the reason of underutilization of irrigation potential. It is also suggested to increase of the water use societies in command areas of irrigation projects and vesting the complete irrigation management towards water use societies and introducing water audit system which will lead to optimum use of irrigation potential.

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Synthesis of Radiolabeled ^{18}F-Fluoropropyl quinoline-5,8-diones under no-carrier-added (NCA) condition.

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Abstract:

We have described F-18 labeled [^{18}F]fluoropropylquinoline-5,8-diones [^{18}F]were prepared from the corresponding mesylate precursors by the radiofluorination with TBA[^{18}F]F generated under no-carrier-added (NCA) conditions, followed by direct oxidation reaction of the corresponding F-18 labeled dimethoxy compounds, resulting in 55% radiochemical yield of [^{18}F]27-29 (decay corrected) with total synthesis time (including the HPLC purification) of 65 min and high radiochemical purity (> 99%) as well as high specific activity (approximately 250 GBq/µmol).

Keywords: *Quinoline, Radiochemistry, Fluorine-18, Positron emission tomography (PET).*

Introduction:

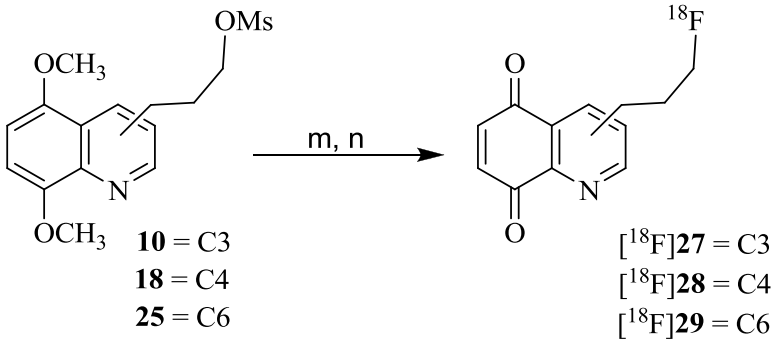
The quinoline-5,8-diones derivatives is the main structure have been the centre of interest to a large number of studies because of their large area of biological activity. Many structural version of quinolone derivatives showed that number of more complex antibiotic agents such as streptonigrin, streptonigrone, and lavendamycin, has been bring forward to be important in resolved their antitumor activity.

There is no evidance of the synthesis of a radiolabeled with quinoline-5,8-dione derivatives which are the pharmacophore of streptonigrin and lavendamycin with [^{18}F]fluorine radiostope. Despite the fact that positron-emitting tomography of radiopharmaceuticals labeled with the short lived positron emitting radionuclide like fluorine-18 which have half-life period is $t_{1/2}$ = 110 min are being gradually more used in clinical diagnosis, these are some chemical procedure suitable for the formation of fluorine-18 into the organic molecule in drugs. Several of the compounds are used in positron emission tomography (PET) contain active radioisotope functional groups, which further limit the choice of the synthetic pathway. The abality of beging put labeling method in radiofluoration, the synthesis of a radiotracer, including purification, usually has to be completed within short time compare with half-lives of the radionuclide. Accordingly, a general method for introduction of the radionuclide quickly and efficient reactions with purification that can be performed on a small scale and under mild conditions within time. To improve or grow radio tracer for imaging of body organs specially tumor, several [^{18}F]fluoropropylquinoline-5,8-dione derivatives were synthesised. Considering pharmacophore and stability of target in vitro and in vivo, the structure of quinoline-5,8-dione derivatives with [^{18}F]fluoropropyl group at C3, C4 and C6 positions are prepared for the synthesis of radiolabeled quinolone derivatives.

Result and Discussion:

The preparation of [^{18}F]fluoropropylquinoline-5,8-dione at C3, C4, and C6 position ([^{18}F]27, [^{18}F]28, and [^{18}F]29) was carried out in one-pot reaction: the displacement [^{18}F]fluoride ion using activated n-Bu4N[^{18}F]F complex reaction with mesylate 10, 18, and 24 in tert-amyl alcohol at 100 ^{o}C for 20 min and the second radiochemical step is the oxidative demethylation using NBS in the presence of water and a catalytic amount of sulfuric acid in THF proceeded for 5 min at room temperature.

Scheme 1.



Reagents and conditions: (m) n-$Bu_4N^{18}F$, t-amyl alc., 100 ^{o}C, 20 min; (n) NBS, H_2O, conc. H_2SO_4, 23 ^{o}C, 5 min.

[^{18}F]fluoride was produced in a cyclotron by the $^{18}O(p, n)^{18}F$ reaction. A volume of 100-200 µL of [^{18}F]fluoride (37-370 MBq) in water was added to a vacutainter containing n-Bu_4NHCO_3 (40% aq, 3.7 µL,

7.68 µmol). The azeotropic distillations were conducted with 200 µL aliquots of CH3CN at 75 °C under a stream of nitrogen. A [^{18}F]fluoride displacement reaction of 10 (2.5 mg, 7.68 µmol) with n-Bu_4N[^{18}F]F in tert-amyl alcohol (500µL) was carried out in a reaction vial at 100 °C for 20 min. After cooling to room temperature, a solution of NBS (5.6 mg, 30.73 µmol) in THF (300 µL), H_2O (100 µL) and a catalytic amount of sulfuric acid (50 µL) was added. The reaction mixture was stirred for 5 min at room temperature. After the content was basified with aqueous $NaHCO_3$ (pH = 5 - 6). The solvent was removed with a gentle stream of nitrogen. The crude compound was injected onto reverse-phase HPLC with the help of 10mM aqueous phosphoric acid (1 mL) and purified. The desired compounds [^{18}F]27 was collected from HPLC (tR = 12.33 min; C18 silica gel, 10 µm, 4.6 × 250 mm; 10 mM aqueous phosphoric acid/ethanol = 75:25 (v/v); 215 nm; 3 mL/min). For the identification of the radioproduct, the collected HPLC fraction was coinjected with the cold compound 12. The labeling of [^{18}F]27-29 was followed with the same procedure. The total reaction time of [^{18}F]27- 29 was 75 min, and the overall decay-corrected radiochemical yield was about 40-50%. Specific activity at the end of synthesis was calculated by relating radioactivity to the mass associated with the UV absorbance (215 nm) peak of cold compound.

Experimental Section:

Reagents and solvents are purchased from Sigma-Aldrich and used without further purification. [^{18}F]Fluoride ion was produced from a cyclotron (KIRAMS 13 MeV, South Korea) using the ^{18}O(p,n)18F nuclear reaction with 19 MeV proton irradiation of an enriched [^{18}O]H2O target. High performance liquid chromatography (HPLC) was performed with spectra system SCM100 degasser, P4000 pump, and UV/vis 3000 detector (Thermo Scientific, Waltham, MA) using Hypersil gold semipreparative column (C18 silica gel, 10 µm, 10 × 250 mm) and analytic column (C18 silica gel, 5 µm, 4.6 × 250 mm). ChromQuest 4.2 software was used to record chromatogram. The flow was 4 mL/min, with the mobile phase 10mM aqueous phosphoric acid/ethanol = 75:25 (v/v, pH 2.25). The eluant was simultaneously monitored by a UV detector (215 nm) and a NaI(Tl) radioactivity detector. Radioactivity was measured in a dose calibrator.

Conclusion:

The In summary, we have described the synthesis of a variety of fused 1,4-quinone molecules labeled with short half-life (t1/2 = 110 min) radionuclide fluoride-18 for PET molecular imaging study. We have obtained [^{18}F]27-29 in 45, 45, and 46% yields, respectively with radiochemical purity (> 99%) and high specific activity ([^{18}F]27; 230 GBq/µmol, [^{18}F]28; 220 GBq/µmol, [^{18}F]29; 240 GBq/µmol). The overall radiosynthesis of [^{18}F]27-29 with a total synthesis time (including the HPLC purification) was about 75 min..

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Impact of Air Pollution on Environment and Health: A Review

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Abstract

The greatest curse of this century is the air pollution as it has impacted the climate change, public health and resulted to increase in mortality. Many air pollutants are the cause of diseases in human beings. The climate change due to environmental pollution has adversely affected the distribution of infectious diseases. This problem has to be handled by creating awareness among the people and can be supported by identifying the threats and solutions at national and international level.

Keywords: environmental pollution, air pollutants, public health, threats

Introduction

Multiple human activities has adversely affected the environment in the last decade. The environment which comprises of the biotic and abiotic factors has a profound effect on the human life. The major pollutants which constitute hazardous solids, liquids and gases are produced at elevated levels which are responsible for reducing the quality of the environment. Due to the unjust human activities the adverse effect on the environment are seen by polluting the water we drink, the air we breathe, and the soil in which plants grow. The industrial revolution was considered as a great success, but the production of pollutants which were emitted into the air are considered to be much harmful to human health. The issue of global pollution has been an headache at the international level, especially with respect to issues related to health, economic and social activities. The natural particle sources including volcanoes, forest fires, biologic sources, anthropogenic sources from transportation, agricultural activities, solid waste disposal, fuel combustion and industrial processes, has accounted for about 9 million deaths per year (1).

The global warming has seriously affected our ecosystem by causing problems such as food safety issues, melting of iceberg, and damage to plants and animals(2). The ill effects of air pollution has been closely related to respiratory and pulmonary diseases in early stages of human life leading to mental and perinatal disorders in infants(3). The worst hit population due to air pollution lives in urban areas, where emissions of toxic gases contribute and degrade the quality of air.This problem is serious in developing countries, due to the uncontrolled urbanization. Large cities in developing nations have more air pollution than cities in developed nations. According to the WHO, some of the most polluted cities are Beijing, New Delhi, Karachi, Peru and Cairo. Some developed nations like Los Angeles and California also have air pollution problems.

Sources of exposure

Many pollutants are emitted by the use of cars, engines, machinery and power stations(4). Some human activities like cleaning procedures, cultivation techniques, gas stations, heaters in fuel tanks (5) have also added to the disaster. Many natural sources like the burning of fossil fuels, industrial emissions, microbial decaying process, wildfires or ash from volcanoes, open burning of garbage and waste and construction and demolition.

The four main sources of pollution are:

1) Water pollution
2) Air pollution
3) Soil pollution
4) Environmental pollution

Theme

Climate and pollution

Climate change also affect human health by making our air less healthy to breathe. Higher temperatures lead to an increase in allergens and harmful pollutants. Higher temperatures associated with climate change has also led to an increase in ozone, a harmful air pollutant. Air pollution is worsened by the increase in the CO_2 emissions and burning of fuel, which cause global warming. The generation of other pollutants, such as nitrogen oxides (NO and NO_2), sulfur oxides (SO_2 and SO_3) and particulate matter is also the main reason the air is contaminated.

Air pollution and climate change are closely related to each other (6). The rising levels of CO_2 and other gases increase the greenhouse effect, which is the cause of rise in temperatures due to global warming. So, climate change and air pollution have strong linkages between them.

The climate and weather has affected pattern of infectious diseases(7). The outburst of epidemics in the world is also a result of climate disasters and storms (8). The problems related to malnutrition are also due to the adverse effects leading to infections which is overall affecting the public health (9).

Air pollutants

The major air pollutants are,

Particulate Matter

Particulate matter is a complex pollutant which contains a variety of components. The principal sources are road traffic emissions from diesel vehicles, commercial and residential combustion, public power generation plants, quarrying etc. Natural sources include storms and volcanoes. As a result of chemical reaction between the pollutants, the particulate matter with diameters of 10 micrometers is usually formed in the atmosphere. These tiny droplets on inhalation causes serious health effects(10). They enter the lungs and cause health problems like asthma, respiratory problems, and premature death (11).

Ozone

Ozone(O_3) is a gas found near the ground (the troposphere) as well as in the upper atmosphere (stratosphere). The ozone in the troposphere is harmful, while the ozone in stratosphere screens out harmful ultraviolet rays and acts as a protective layer. Ozone is formed when nitrogen oxides and volatile organic compounds mix in sunlight due to electrical discharge (12) and thus ozone is mostly found in the summer. It arises due to chain reactions of photochemical smog in the troposphere(13). Ozone also affects the natural ecosystems, plants and animal species hence changing their composition(14). Ozone can lead to asthma attacks, sore throats, coughs, and breathing difficulty and thereby inducing disorders in immune system (15).

Carbon Monoxide

Carbon monoxide (CO) is released when combustion engines are not tuned properly. Cars, furnaces and heaters,old gas and fuel appliances, incinerators and cigarettes can emit high concentrations of carbon monoxide. CO has a great effect on the environment as it is extremely poisonous and can contribute to very dangerous ground-level air and ozone conditions.

CO makes it hard for body parts to get the oxygen they need to run correctly. Continous exposure to CO makes people feel dizzy and tired giving headaches. In high concentrations it is fatal leading to loss of consciousness, weakness, nausea, vomiting etc. The effects of global warming also leads to an increase in soil and water temperatures (16).

Nitrogen Oxide

Nitrogen oxide (NO_2) is reddish-brown gas that comes from burning of fossil fuels and has a strong smell at high levels. NO_2 mostly comes from power plants, automobile engines (17). It is formed in two ways- when nitrogen in the fuel is burned, or when nitrogen in the air reacts with oxygen at very high temperatures. High levels of NO_2 exposure can cause coughs, short of breath associated with respiratory infections, dyspnea, bronchospasm, and even pulmonary edema.

Sulfur Dioxide

Sulphur Dioxide (SO_2) is a corrosive gas that cannot be seen or smelled at low levels but has a rotten egg smell at high levels. SO_2 comes from the burning of coal or oil in power plants, from chemicals and paper factories. SO_2 exposure can affect people having asthma by making it more difficult for them to breathe (18). It can also irritate eyes, nose, and throats. Sulfur dioxide can harm trees and crops and damage buildings.

Lead

Lead is a heavy blue-gray toxic metal and is emitted from petrol engines, batteries, radiators, ores, aircraft and waste waters (19). Paint is an important source of lead, especially in houses where paint is peeling. Lead in old pipes can also be a source of lead in drinking water. Lead poisoning has hazardous effects on humans, animals, and the environment. High amount of lead can be dangerous to small children and lead to kidney problems. In adults, continous exposure to lead increases the chance of strokes.

Polycyclic Aromatic Hydrocarbons

PAH are found in coal and tar sediments and are generated due to incomplete combustion of organic matter(20). Compounds, such as benzopyrenes, acenaphthylenes, anthracenes, and fluoranthene are toxic and carcinogenic in nature.

Volatile Organic Compounds

The main source of atmospheric benzene is due to distillation, refining and evaporation of petrol from vehicles, synthetic rubber manufacture, from perfume and hair sprays, cleaning agents, dry cleaning fluids, paints, varnishes, copying and printing machines.

Volatile organic compounds, such as toluene, ethylbenzene, and xylene are associated with cancer in human bengs(21). A short-term exposure causes irritation of eyes, nose, throat (22).

Conclusion

In 2018, air pollution was declared as a "silent public health emergency" by Dr. Tedros Adhanom Ghebreyesus,Director,World Health Organization (23). Air pollution is a growing problem around the world. All the nations are pumping harmful pollutants into the atmosphere every day. These pollutants are not only dangerous to the health and wellbeing of plants and animals, but they are also a major contributor to recent climate shifts across the globe.We can manage the negative effects only by cutting down the volume of pollutants. Governments should educate and provide information to the masses and motivate NGO's to involve in the control of the problem. Recent technologies must be established and used in all industries and power plants. Some of the actions required to achieve these targets are by providing training, public awareness, and public participation(24). Also international cooperation by the view of research, development, administration policy and monitoring will be essential for effective pollution control. Thus the main purpose of this article is to promote and practice the policies for sustainable ecosystems.

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Climate Change and Sustainable Development

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Economic growth and sustainable development is not necessarily the same thing. The last century and a half, since the industrial revolution, has witnessed unparalleled material development. Unfortunately, such material development has come at a significant cost.

It is indeed a tragedy that more than half of the global population is still plagued by the worst forms of poverty, hunger and disease. A UNDP Report prepared few years ago, pointed out that 10% of the richest adults in the world own as such as 85% of the world's household wealth, while the bottom 60% have to contend with only 1% of the household wealth. These widening income inequalities are indeed a source of widespreal discontent and social alienation. This divide is of even more concern to developing nations with large number of people living on the edge of despair and insecurity, these disparities make them extremely vulnerable and create unstable societies.

As a consequence, in less than half a century, the world has lost a fourth of its top soil and a third of its forest cover. In the last 35 years alone, a third of global bio-diversity was forfeited. Scientific evidence today confirms that humanity's demand on the planet's living resources now exceeds its regenerative capacity by a wide margin. It now takes the Earth one year and four months to regenerate resources used a single year. And if this continues apace, the equivalent to two Earths will be needed to support humanity's resource requirements by mid 2030. The current global economic model is therefore clearly unsustainable.

Indeed, the world has been living for beyond its means. And the process, the future has been seriously compromised. The global economic model has perpetuated a system of rewards that focuses only a generation of financial returns. Particularly the capitalist conception of competition betrays the fact that the system is controlled by some big players who try to manipulate by some big players who try to manipulate the market parameters to inflate their profit margin. In such a situation, everyone try their best how to maximize the profit. So balance sheets and profit and loss account do not take account (care) the cost burden of social inequalities and ecological destruction. Unfortunately, such an approach has left a deferred cost burden to be brome by society and future generations. And that cost is today become (spiraling) out of control, so it threatening future economic progress.

The average global temperature has risen by about 0.8 degrees Celsius from the pre industrial level. Scientific evidence available today not only confirms the acceleration of global warming but warms that an increase beyond 2 degrees would trigger an irreversible "tipping point" exposing the planet to unmitigated disaster. Indeed, for once, the world has been unified by a common global threat, bringing home the reality that we have one planet to live together or prish together.

The stakes are unfortunately very high for developing nations like India global warming transcends geographical and political borders and does not distinguish between the rich and poor. However, its impact can be particularly severe for poorer nation. The large numbers of people living below the poverty line are particularly vulnerable to natural disasters. Agriculture, the mainstay for developing economies, is far more susceptible to climate induced disasters. The recent occurrence of heat waves, floods only signal that global warming is no longer an issue of the future. It is impacting us here and now.

Humankind is both driver of and responder to climate in its pursuit of well being. The pattern of development persued by the developed countries since the induralization epoch paid very little attention to the environmental issues and hence caused large scale damage to nature. The problem of climate change the outcome of cumulative emission of greenhouse gases, with carbon dioxide being the most dominant was brought about by industrialization based on the use of fossil fuels. A recent study by HSBC Global research states that at least 60% of historical Co_2 emissions have been generated by the industrialized world. The average global temperature has risen by about 0.8 degrees Celsius from the pre-industrial level. Climate change impacts decreased crop yields, the disappearance of mountain glaciers and snow packs, more extreme weather events such as floods, droughts and storms, increased coastal flooding which are likely impact on the poor. So there is need to rapidly reduce emission of greenhouse gases crop yields.

Glacier and Snow Pack Decline

Glaciers the world over are thinning and shrinking as the planet warms, and glaciers is the Himalayas are receding faster than anywhere else. If the earth keeps warming at the current rate, Himalaya's glaciers are likely to disappear altogether in 25 years (Ruz, Haraswa et al 2007). In the absence of glacier, rivers in the Indo-Gangetic plain will become much more seasonal, threatening the Rabi crop well as domestic and industrial water supplies in the non-monsoon months. In addition, more precipitation will fall as rain rather than snow and the greater water run-offs will increase flooding.

Extreme Weather Events

A warming climate is predicted to bring more extreme weather. The period 1951-2000 has witnessed an increase in the magnitude and frequency of high intensity rain in India and a decrease in the frequency of moderate rain (Goswami, Venugopal et al 2006). The record rainfall and consequent flooding in Mumbai in July 2005 was an example of this. The concentration of rainfall in a few events will tend to reduce groundwater recharge and accentuate droughts in water stressed regions. India is predicated to reach a state of water stress by 2025 in which per capita water availability falls below 1,000 cubic meters per capita. An increase in cyclone intensity of 10-20% for 2-3 degrees Celsius of warming is predicted for South Asia and adjoining regions. These cyclonic storms will particularly affect the poor in coastal areas like Orissa and Bengal.

Global warming has been raising the sea level because warm water has greater volume. In addition, there is the melting of Greenland and West Antarctic ice packs. A recent study that takes into account both thermal expansion of ocean and ice-pack melt suggests that the likely range of the rise by 2100 is 0.8 to 2 meters (Pfeffer, Harper et al 2008). This will lead to the permanent displacement of millions of people in coastal areas in India about 3 million for a 1-metre rise and more than double that mummer for a 2-metre rise (Das Gupata, Laplante et al 2007).

On eve of developing and developed countries in Copenhangen

Developing countries have asked that developed countries cut their emissions collectively by at least 40% by 2020 (compared to the 1990 level). The IPCC (Intergovernmental Panel on Climate Change) fourth assessment report has also been interpreted to conclude that developing countries need to cut their emission by at least 25% to 40% by 2020. The developing countries would be secondary or irrelevant if the developed countries do not commit to figures on emission reductions that are serious. The one point in the Bankok session the chair of the KP group remarked that if the low number is not improved, "We will be the laughing stocks of the world" At the end of the Copenhagen conference.

It has made clear it will sign on to an internationally binding agreement to cut emissions-unless China-India and other advanced developing countries also sign on to such an internationally binding agreement. This is highly unlikely as these developing countries are under no obligation to do so under the UNFCCC and moreover there is no clear or agreed criteria on why certain developing countries should be selected to join in. The developed countries, which are mainly responsible for the climate crisis, should be assisting developing countries, instead of passing the burden of adjustment into them.

These challenges can only be met by all section of society joining hands. What is the role we can play in this situation? Some as under

1) To promote sustainable plantation, through which we create large-scale forestry project.
2) Try our best to use solar and wind energy by the company and individuals.
3) Enhanced education and heightened awareness.
4) To increase agricultural productivity, enable better usage of scarce water resources and adopt best practices in crop management. A new thrust in R & D for development of agri-inputs, new varieties of seeds and climate resistant crops will secure.
5) To develop value-added processed food sector through that we can reduces wastes in agriculture.
6) To utilize surplus land, released as a result of higher productivity, for other diversified economic activity utilizing renewable raw materials.
7) Try our best to recycle solid waste.
8) Innovation in technology, processes and business models that enable achievement of a low carbon high growth economy.
9) Inclusiveness in aligning all force is it public, private and people partnerships or the power of supportive fiscal-policies, financial initiatives and market institution to achieve a common shared goal.

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Statistical Analysis of Some Fern Species in Western Ghats, Sahyadri Hills, *Maharashtra, India*

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Abstract

Western Ghat is a mega biodiversity region, with varied flora, fauna and landscapes. The area is one of the worlds "MEGA BIODIVERSITY HOTSPOTS". Diversity of life on earth has always remained a striking feature of troposphere and an important area of investigation for a biologist. This is one of the places that harbor rich diversity of endangered species both in the aquatic and terrestrial ecosystems. The present paper deals with the Statistical analysis of some general and families of ferns in Western Ghats, Sahyadri Hills, Maharashtra, India.

Key words: *statistical analysis, Sahyadri, Western ghat, Maharashtra.*

Introduction

Maharashtra is a state in the western peninsular region of India. The Sahyadri range is the physical backbone of Maharashtra which rises on an average to an elevation of 100m. The region between the Arabian Sea and the Sahyadri Range is called the Konkan. It is a narrow coastal low land, hardly 50-80 kms wide. Konkan is coastal lowland lying between the Arabian Sea and Sahyadri ranges with an average elevation below 200m. Majority of the forests area in Maharashtra is formed by Sahyadri hill ranges. Western Ghat is one of the 'Mega biodiversity hotspots of the world showing highest biodiversity of flora and fauna. Western Ghat shows many hill stations like- Matheran, Lonawala, Khandala, Mahabaleshwar, Panchgani, Amboli and Vengurla, which show high diversity of plants, particularly fern species. The Sahyadri Ghats are a succession of steep hills, most of the famous hill stations of the state are at the ghats. Sahyadri ranges with an elevation of 1,000 meters are known for its crowning plateaus. It runs approximately 1600 km through the states of Maharashtra, Goa, Karnataka, Tamil Nadu and Kerala which ends at Kanyakumari. Near about 60% of the Western Ghats are located in the states of Karnataka and Kerala. Konkan is the western coastal region, between the Western Ghats and the Arabian sea. Major cities including their districts located here are Kolhapur, Sindhudurg, Mumbai, Ratnagiri, Satara, Alibag, Pune, Nasik and Thane. The entire coastline of the Western Ghats of Maharashtra state - starts from the well known towns of Kihim and Alibag in the north to the town of Vengurla in the south where it merges.

The plateau has been carved by the major rivers Krishna, Bhima, Godavari and Tapi and their master tributaries, into alternating broad-river valleys. The Ghats are also the source of numerous small rivers which flow westwards, emptying to in the Arabian Sea.

The various vegetation types are tropical evergreen forests, moist deciduous forests, dry deciduous forests and scrub forests.

Major localities in the study area visited for exploration

Western Ghats mountain ranges have many hill stations like Matheran, Lonawala-Khandala, Bhor Ghats, Mahabaleshwar, Kolhapur, Trimbakeshwar, Kalsubai, Bhandardara, Pachgani, Koynanagar,

Radhanagri, Amboli Ghats, Alibag, Roha, Devrukh, Nagotne, Sakharpa, Rajapur, Kudal, Malvan, Kudremukh and Vengurla. etc. which were visited a number of times and specimens collected.

Geography, Soil and Climate

Topography of Western Ghat in Maharashtra is distinct. The entire range of Sahyadri hills in Maharashtra is covered by dense forest areas with highest biodiversity. The main rivers in the states are Krishna, Bhima, Godavari, Tapi-Purna and Wainganga. Soil in Western ghat varies from humus rich peat to laterite soil in the lower sides of hill slopes and high rainfall areas. It is generally acidic, derived from under line basalt. In the Sahyadri ranges the basaltic soil give rise to brick red laterite type of soil.

Climate of the study area is mainly influenced by high mountain ranges of Western ghat called Sahyadri hills which block the monsoon bearing winds and clouds coming from Arabian Sea and cause high rainfall in this area. Highest rainfall is in the months of July and August. Monsoon starts in June and ends in September. Winter starts in the month of November and ends in February followed by harsh summer.

Materials And Methods

The present project has been planned to start with survey and end with compilation like any taxonomic research project. Sahyadri ranges in Maharashtra begain from Kudal (Sindhudurg) and end in Nandurbar district of Maharashtra. Looking at the natural conditions, rainfall and altitude, the survey of ferns was conducted in hill ranges of Sahyadri. The exploration was conducted in the following three phases-

1) Exploratory or survey :-

This phase began the project with surveying of ferns in area under investigation. The survey began in 2016 and was completed at the end of 2018. During this phase intensive and extensive exploration was undertaken to various localities in different seasons. Main intension of such visits was to collect samples for further studies and photograph them. Thick forests and anticipated localities were given stress in this regard and it has yielded better results. Plant specimens collected during such tours were pressed and dried in blotters. Soil samples were collected in polythene bags to analyse physical and chemical properties of soil.

2) Preservation and Mounting phase:-

The plant materials collected from various localities of area under investigation were dried properly. These specimens were subjected to the treatment of suitable insecticide and pesticides to avoid insect attacks. Mercuric Chloride solution was used for this purpose. The specimens were glued on handmade herbarium sheet of international size (42 X 29 cm). These herbarium sheets are deposited at S.B.E.S. College, Aurangabd and served as the research data.

3) Compilation phase:-

The herbarium sheets prepared in the second phase were arranged by Pichi- Sermoli (1977) classification in almirah. All plants were described in detail which includes the morphology and ecology of plant. Dichotomous keys were devised for families, genera and species for their easy and correct identification. Each species was provided with latest nomenclature. The citations are spatially enriched with Indian references. The description of plants were also appended with additional information like distribution in

the region, economic importance etc. Similarly line drawing has been appended with this work which will help easy identification of plants.

Statistical Analysis

76 fern species belonging to 38 genera are identified and reported in the present investigation. These species belong to 21 families and the Statistical analyses of these species are provided.

Out of the 21 families eleven families are dominant and reported here. These families are arranged in order their dominance in the following table. Present investigation suggests that Cheilanthaceae is the dominant family as far as the species number is concerned. Following table shows number of species in decreasing order along with their families.

Table 1

Sr. No.	Families	Genera	Species
01	Cheilanthaceae	1	12
02	Pteridaceae	4	11
03	Theypteridaceae	8	9
04	Dryopteridaceae	2	6
05	Adiantaceae	1	6
06	Lomariopsidaceae	1	3
07	Oleandraceae	1	3
08	Microsoridaceae	2	2
09	Polypodiaceae	1	2
10	Lygodiaceae	1	2
11	Tectarioidaceae	1	2

The above families are compared with floristic investigation of Manickam and Irudayaraj (1992). Table no.2 shows the dominant families which are commonly shared in the three regions i.e. present study area (Sahyadri hills), Southern India and India.

Table .2 (comparison of family in the 3 regions (Manickam and Irudayaraj -1992)

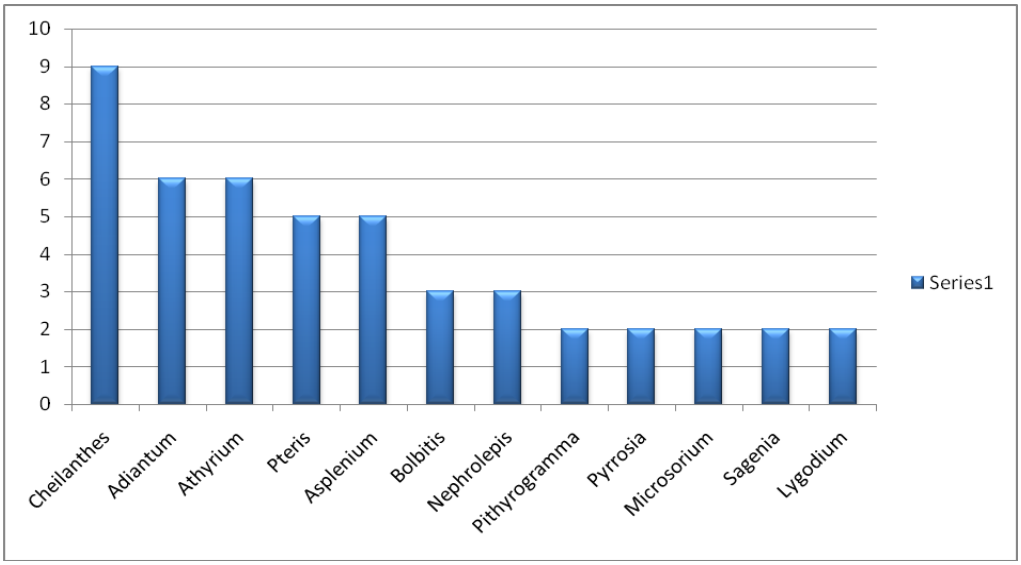
Sr. no	Family	Species no, in Sahyadhri Hills	Species no, in Southern India	Species no, in India
01	Cheilanthaceae	12	08	35
02	Pteridaceae	11	45	62
03	Theypteridaceae	9	02	02
04	Dryopteridaceae	6	06	09
05	Adiantaceae	6	15	22
06	Lomariopsidaceae	3	04	07
07	Oleandraceae	3	06	10
08	Microsoridaceae	2	01	01
09	Polypodiaceae	2	--	--
10	Lygodiaceae	2	10	05
11	Tectarioidaceae	2	--	--

The data shows 14 families present in all the regions Cheilanthaceae (12), Theypteridaceae (09), Pteridaceae (11), Dryopteridaceae (06), Adiantaceae (06), Lomariopsidaceae (03), Oleandraceae (03), Microsoridaceae (02), Polypodiaceae (02), Lygodiaceae (02), Tectarioidaceae (02) are well represented in all the regions but Polypodiaceae and Tectarioidaceae are represented only in Sahyadhri Hills.

Prominent genera representing two or more species from area under investigation is given in table 3.

Table 3 (Genera with two or more species in the study area.)

Sr. No.	Name of Genus	No. of species
01	*Cheilanthes*	9
02	*Adiantum*	6
03	*Athyrium*	6
04	*Pteris*	5
05	*Asplenium*	5
06	*Bolbitis*	3
07	*Nephrolepis*	3
08	*Pithyrogramma*	2
09	*Pyrrosia*	2
10	*Microsorium*	2
11	*Sagenia*	2
12	*Lygodium*	2



(Graph 1. showing number of species arranged in their decreasing order).

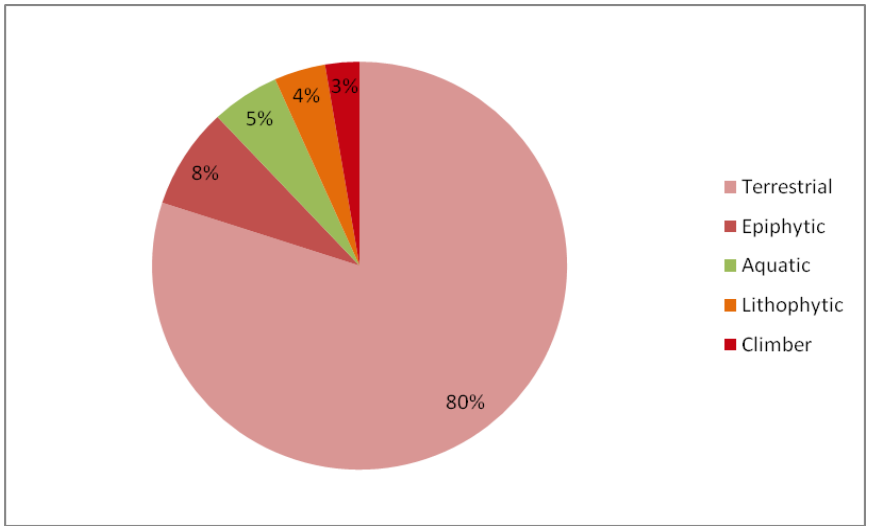
About 76 indigenous species are distributed over the Western Ghats area. This reveals relatively greater species density of 11 genera when compared with figure given for entire Western Ghat. These genera along with their decreasing order of species occurrence are depicted in graph 1. This calculation however, does not appear to be a relative figure, as much remains to be explored in the Western Ghats and the area under investigation is not significantly large for such a calculation. Western Ghats is a suitable working area to indicate richness of the flora. The richness of the present work area, the area not being significantly large for even such calculations for ferns.

The distribution of number of species in an area denote the floristic richness and pteridophytic diversity.

Table -4 (major life forms in the study area)

Sr. No.	Life forms	Number of species	%of species
01	Terrestrial	60	80.03%
02	Epiphytic	06	8.10%
03	Aquatic	04	6.85%
04	Lithophytic	03	4.05%
05	Climber	02	2.70%

Detailed analysis of life forms of pteridophytic species (Table-4) and pie chart is given. Terrestrial species are much dominant (80%) than the other life forms.



Pie chart. Analysis of life forms of pteridophytic species

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