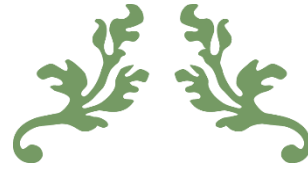


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# JAMSHEDPUR RESEARCH REVIEW

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*(Peer-Reviewed, Indexed, Refereed, Multi-Disciplinary Research Journal)*



*English Bimonthly, Year 11: Volume 5: Issue 6  
September-October 2023*



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## **EDITORIAL**

### **RUMI**

Today we hear the roar of people on social media. This roar is full of hatred, ignorance and rudeness. It seems as if these speakers will pierce our hearts. Rumi says elevate your words, not your voice! It is the rain from the clouds that allows the flowers to bloom, not their thunder!

When we are teenagers, we consider ourselves very intelligent and want to change the world single handedly. But as we look closely at the world, we realize that we are not intelligent but foolish. And, we need to change not the world but ourselves.

In fact, the fear, greed and jealousy within us makes us blind and foolish, and pushes us towards living hell. All our lives we keep wandering in search of answers to the questions surging in our minds. Kabir suggests you to look inside your mind. The answer to your questions is hidden in your questions themselves.

This world will neither change with new AI technology nor with economic development. This world will change with the love in our hearts. We look for something that brings a lot of comforts and luxuries in our lives. But, the search for happiness lies in ignoring things instead of finding them. We must learn to ignore it. If we ignore non-essential things, happiness knocks at our door.

There are many people in this world who call themselves atheists. I see that there are two types of atheists in this world, one is good atheist and the other is bad atheist. Theists also have good ones and bad ones. Good atheists do not seek God, but seek ways to improve people's living standards. The bad ones are atheists who insult people and brutally attack religious people's beliefs. They harass them by mocking their beliefs superstitions. They do all this with a thunderous roar. Bad theists are also like them. They hate everyone except their own religion. Bad theists and bad atheists have made the empire of hatred in the world. The whole thing is that no one knows whether God exists or not but some people believe that God exists and some people think that God does not exist. Both may be true. Because truth is nothing but a perspective. If you look into your heart you can find God there. If you search for God in a temple, it is possible that you may find your God there too. For you, God can reside even in a church or mosque. Or what you believe. It's a matter of your perspective. Whether you are a believer, an atheist or something else, you cannot hurt someone's sentiments on religious grounds. As long as any corner of this universe is beyond the reach of humans, no claim related to the existence/non existence of God is confirmed.

Smiling with a heart full of love is the most beautiful. The interesting thing is that every religion is love, yet love has no religion of its own. Love is the common factor in all religions. Which is found equally in all religions.

New Year is coming, next month we will enter 2024. Let us remember that in the New Year we will open our eyes and look at the beautiful world with our beautiful heart.

I greet you all with Happy New Year 2023

Yours truly  
**Dr M.K Choubey**  
**Editor-in Chief**

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# ROLE OF WUA IN AGRICULTURAL DEVELOPMENT OF COASTAL ODISHA

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**Abstract-** On the basis of a micro level study for coastal districts in Odisha, this paper finds that the Water Users' Association (WUAs) have played a positive and significant role in generation of employment and income of its members engaged in different agricultural activities such as Food Grains, Cash Crops, Plantation Crops and Horticulture Crops. The members are found to have a change in the quality of their lives. Promotion of WUAs therefore, not only helps foster agricultural development but also go a long way in attaining sustainable growth in India.

**Keywords:** Water Users' Association(WUA); Agricultural development; Quality of life; Employment; Income; Irrigation Management.

**JEL Classification:-Q25, Q10, O12, D04**

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Agricultural development is indispensable for overall development of Indian economy. More than 68 per cent of people in India are living in rural areas and depends mostly on agriculture for their livelihood. Agricultural Development can be achieved only with the upliftment of the farming community. Since agriculture is a promising sector and absorbing huge number of rural unemployed persons, the development of agriculture is very important. But due to lack of irrigation and its management, the production and productivity of agriculture is very much affected. So, irrigation management through Water Users Association is essential. Unless and until all the needy farming population is actively engaged in the formation of WUA and irrigation management, agricultural development will not be possible. Hence, the present study emphasizes on irrigation management through WUA and examines the role of WUAs in agricultural development. The study is confined to the coastal districts of Odisha.

## Objectives of the Study

The present work is pursued with the following objectives.

- To study the role of WUA in agricultural development of the coastal Odisha.
- To find out the impact of irrigation by Water Users' Association on the cropping pattern, income

## Hypotheses

- Irrigation management has a positive impact on employment and income of the WUA members.
- WUA helps beneficiaries shift towards profitable occupations in agriculture.
- WUAs have a positive impact on socio-economic development.

**Data and Methodology-**The work is based on both primary as well as secondary data. The secondary data are drawn mainly from the published and unpublished reports of the departments such as the Directorate of Economics and Statistics, Government of

Odisha, Department of Panchayati Raj, Government of Odisha, Department of Planning and Co-ordination, Government of Odisha, Irrigation department, Government of Odisha and Census publications, Government of India. The primary data are collected through canvassing a well-structured questionnaire. The primary data was collected during the period from October 2016 to March 2017. The study periods spread from April 2012 to March 2017. The Pre-WUA period data relates to information in respect of the respondents from April 2012 to March 2013 and Post-WUA period includes information from April 2016 to March 2017. Statistical tools such as ratios, percentages, annual compound growth rate, mean and standard deviation, correlation and regression analysis have been used for comparative analysis. The relationship between different variables has been examined through cross tabulation of the data. Further, Statistical inferences are drawn through the use of Paired t-test to check whether the cross-tabulated variables are significantly associated. Further, to know the impact of WUA participation on income, OLS (Ordinary Least Square) estimation is used.

In Coastal Odisha four districts are selected randomly. Out of those four districts, the Pipili, Aul, Barchana and Bhandaripokhari blocks were selected on the random basis for the study. From each of the selected blocks, again 75 farmers of Water Users' Association were selected as given below. Besides this, 25 officials concerned with Water Users' Association were taken to collect their opinion through interview schedule. Moreover, information from twenty-five non-WUA member in each sample block is elicited for comparative study. Annexure 1.1 indicates the sampling framework of the present study which is given at the end.

**Observations-**The present study outlines the following observations from the analysis of the socio-economic profile of the study area and that of the stakeholders. The economic profile of the state reflects certain peculiarities that need attention. The state possesses a varied physiography. The historical background of the state along with geographical diversities contains the seeds of underdevelopment. The state is found to be an economically poor state

with very low income and low per capita income compared to other states of the country. The average density of population in the state is less than that of the national average. Odisha is agriculturally dominated but the land holding pattern is very much un-even. It is found that the average size of holding in Odisha is less than that of the national average. Lack of irrigation acts as stumbling block on the path of agricultural development. All the macroeconomic characteristics epitomize the economic backwardness of the state. From the poverty profile of the state, it is understood that the percentage of the people below poverty line is much higher than that at the national level. The poverty is mostly concentrated in the rural areas and that too among the households belonging SEBC, SC and ST. The other indicators of relative backwardness and deprivation of the state are low HDI, high death rate, high teacher taught ratio (1:51). The picture of the state in terms of some of the above characteristics is much worse and despicable.

Human resource development and infrastructure penetration in the state are not satisfactory. A major percentage of villages lack all weather connectivity. The airport facility is found to be poor. The banking facility is very much urban centred. Thus, the infrastructural facility available is seen to be poor and a large number of people are unable to access the available opportunity. So WUAs are the need of the hour for widening the livelihood options among the rural people.

**Socio-economic Profile of Sample Households-** This section provides an analysis of the data collected by carrying out a primary survey of WUAs in Odisha. The sample includes 300 respondents from 4 blocks of Odisha.

**Social Group wise Distribution of Sample Beneficiaries-**The objective of WUAs in Odisha is to provide irrigation facilities to poor, deprived and weaker section of the population. Table-1.1 shows the social group wise distribution of sample respondents.

**Table 1.1 Social Group Wise Distribution of Sample Respondents**

Social Category	No. of Sample Beneficiaries in Odisha	% to Total
SC	61	20.33
ST	07	2.33
SEBC	143	47.67
General	89	29.67
Total	N = 300	100%

Source- Primary data

Caste system in the state Odisha particularly in rural area is very strong. It is found that majority of the WUAs respondents belong to socially and economically backward classes. Out of 300 respondents, 47.67 per cent belong to SEBC, 20.33 per cent belong to Scheduled Castes and 2.33 per cent belong to Scheduled Tribes. The respondents from General category constitute 29.67 per cent in the study area. It is a matter of great satisfaction that poor people, irrespective of their castes are coming together for self-help and mutual help by way of WUAs.

**Size of the Households**-It is seen that members of WUAs who have large family size and have

high number of defendants in the families, often face higher levels of financial hardships. It is found that most of the members showed interest in joining WUA because of lack of irrigation. Based on the number of members, the selected households are broadly classified into four categories which are given in Table1.2. It is found that, around 59.67 per cent members had four to six family members and 24.33 per cent members had seven to nine members. Very few WUA members had family size of ten or more members.

**Table-1.2 Distribution of the Households according to Family Size**

Size of the Family	No. of Households	% to Total
Up to 3 members	41	13.67
4-6	179	59.67
7-9	73	24.33
10 and above	07	2.33
Total	300	100

Source- Primary data

**Age of Members**-On the basis of age Groups i.e. 18-25, 26-35, 36-55 and above 55 years the distribution is framed. In Table-1.3 shows the sample WUA members classified according to different age categories. It can be observed from the table that the largest proportion of the sample WUA members were in the age group 36-55years. A very small percentage of

members belong to the age group above 55 in the sample WUAs. It appears that old people tend to leave WUAs. Some of the members revealed that these members left the WUAs as they could not work due to old age. Death of some members due to old age was also the reason for reduction of older members in some of the WUAs.

**Table -1.3 Distribution of WUA Members According to Age**

Age in Years	No of beneficiaries	% to Total
18-25	35	11.67
26- 35	101	33.67
36-55	154	51.33
Above 55	10	3.33
Total	300	100

Source- Primary data

#### **Economic Status of the Sample Households**

Table 1.4 reflects the distribution of the sample households on the basis of economic status. In

the present research the economic status is discussed under two heads such as BPL and the non-BPL or APL.

**Table- 1.4Distribution of Sample Respondents by Economic Status**

Category	No. of Sample respondents of Study Area	% to Total
BPL	275	91.67
Non- BPL	25	8.33
Total	300	100

Source- Primary data

Notes: A. BPL refers to people below the government specified poverty line, Poverty line income was kept at Rs. 65.75 per day which was the benchmarked poverty line followed by Government of India.

It is observed that out of 300 respondents, 275 (92.61%) are from below the poverty line (BPL) and only 8.33 per cent are from non-BPL category. This clearly indicates that the respondents are mostly from the BPL category.

In order to bring the poorest of the poor above poverty line, Water Users Association through irrigation management must be extended on a large scale.

**Size of Landholding of Sample Households-**Information is elicited from sample households on the size of the land they operate. The present research classifies the total sample in five categories in relation to status of land holding which is given below.

**Table -1.5- Distribution of Respondents according to their Land Holding Size**

Land holding size (in Acres)	No. of Sample respondents	% to Total
<1	115	38.33
1 – 3	148	49.33
3 – 5	26	8.67
>5	11	3.67
Total	300	100

Source- Primary data

As shown in Table 1.5, 38.33 per cent possessed land up to 1 acre only. While 49.33 per cent of the respondents own between 1 and 3 acres of landed property, 8.67 per cent of respondents own between 3 and 5 acres and only 3.67 per cent of respondents possess more than 5 acres of landed property. This indicates that almost all of the members of water users

association are either small or marginal farmers.

**Educational Status of the Beneficiaries of the Sample Households-**The availability and usage of any system depends on the level of understanding by the people for whom the system is meant for. Further the members can

(12)

take advantages of any system if they are well educated to understand and take advantages accordingly. But the incidence of illiteracy in remote rural areas is a matter of serious concern. Further, high incidence of illiteracy

among the WUA members caused higher dependency on leaders, poor management and inability to meet the demand for loans. Illiteracy is a big obstacle in growth of WUAs.

The distribution of respondents by their educational status is depicted in Table-1.6

**Table -1.6 Education-wise Distribution of Sample Beneficiaries**

<b>Educational Qualification</b>	<b>No. of Sample respondents</b>	<b>% to Total</b>
Illiterate	127	42.33
Primary	104	34.67
Secondary	44	14.67
Higher Secondary	22	7.33
Graduation or above	03	1.00
Total	300	100

Source- Primary data

As far as literacy level of the respondents under study is concerned, 57.67 per cent of the respondents are literates, while 42.33 per cent are illiterate. Out of 300 respondents, 34.67 per cent have studied up to primary level, 14.67 per cent up to secondary level and 7.33 per cent till

higher secondary standard. Only 1.00 per cent of the respondents are found to possess a graduate degree.

**Income status of sample Households**-The economic background of the 300 sample respondents is described in Table-1.7

**Table -1.7 Distribution of Sample Respondents by Daily Income Per-Capita**

<b>Income Class (Per Capita per Day in Rs.)</b>	<b>No. of Sample respondents</b>	<b>% to Total</b>
0 – 50	200	66.67
51 – 100	84	28.00
101 – 150	16	5.33
Above 150	0	0.00
Total	300	100

Source- Primary data

Out of the total respondents, while 66.67 per cent are earning per day Income up to Rs.50/-, 28.00 per cent found to be earning from Rs.51 to Rs.100 a day (Table- 1.7). The income distribution in the study area also indicates inequitable distribution pattern. While none of the respondents is found to be in the income class above Rs.150. It may, therefore, be construed that most of the sample respondents belong to BPL (Below Poverty Line) category.

From the analysis of socio-economic profile of the sample respondents, it is observed that more than half of the respondents belong to socially disadvantaged groups like SEBC, SC and ST. Most of the respondents are marginal farmers and small farmers with an income below poverty line. The respondents are less educated and lack scientific temper. Among the literate respondents, most of them have only primary education which is not sufficient to understand about the WUAs functioning and record keeping. Thus, it may be pointed out that the

state needs special attention for improvement of education, employment, irrigation and income so as to join the mainstream of development.

**Major Findings of the study-** The important findings that emerged from the present study are noted below.

**Employment-** It is observed that in pre-WUA period, the average employment which was 170 person days increased to 235 person days in post-WUA period and registered a growth of 40.59 per cent. But the growth of employment across activities is different. In case of Horticulture crop, there is highest percentage of increase in employment i.e. 60.54 per cent and in case of 'Plantation crop' there is lowest percentage increase in employment. So far as growth of employment is concerned, Horticulture crop is followed by Cash crop where growth of employment is more than the average growth. On the other hand, Food grain followed by Plantation crop have growth of employment less than the average growth. In case of 'Food grain' the growth of employment is 23.78 per cent. Though the growth of employment is less than the average growth yet, a large section of the population is engaged in Food grain. So, Food grain still dominates the employment absorbing sector of the agrarian economy. By applying paired t-test it is found that there is significant difference in employment generation between Pre & Post WUA Periods. In other words, there is a significant Change in the generation of employment due to participation in WUA. The activity wise results of paired t-test reveal that except Plantation crop, all other crops generated a significant employment opportunity due to WUA participation. Activities like Food grain, Cash crop and Horticulture crop are found to have potential to generate additional employment opportunities in the study area. **Income-**The average income of the respondents increased from Rs 15,097.67 in the Pre-WUA period to Rs 26,566.53 in the Post-WUA period registering a growth of 75.96 per cent. Activity wise growth of income reveals that in Cash crop, the generation of income is highest (i.e. 86.96 per cent) whereas in

Plantation crop, the generation of income is found lowest (i.e 26.73percent).

Application of paired t-test shows that there is significant difference in income generation between Pre & Post WUA Periods. In other words, there is a significant Change in the generation of income due to participation in WUA. Activity wise results of t-tests reveal that all the activities are proved effective in generating income. The activities like Food grains, Cash crops, Plantation crops and Horticulture crops have significant potential in generating income in the study area.

The regression of WUA participation on income shows that there is a positive and significant impact of the former on the latter.

**Impact on Income-** The determinants of income of the WUA respondents have been analysed by using the following OLS multiple regression model.

- $Y = \beta_1 + \beta_2 MWUA + \beta_3 LPROP + \beta_4 EDUYS + \beta_5 ALRUP + \beta_6 HDASSET + \beta_7 PNREGS + \beta_8 RDMIM + \beta_9 RAGED + \beta_{10} SAPLD + \beta_{11} SGHHD + U$
- Where Y = Income of the sample respondents.
- MWUA = Member of WUA = 1 and Non-member = 0
- LPROP = Landed Property in acres
- EDUYS = Education – Years of schooling
- ALRUP = Amount of loan in rupees
- HDASSET = Holding of assets in rupees
- PNREGS = Participation in NREGS dummy takes value 1 and 0 otherwise
- RDMIM = Dependency Ratio (Ratio of dependent members to independent members)
- RAGED = Age of the respondent
- SAPLD = Economic Status dummy taking values 1 for APL and 0 for BPL
- SGHHD = Gender of the Head of the Household if male = 1 and 0 for female
- U = Error Term

**Table -1.8- Factors determining Income of the Respondents : Regression Results**

Dependent variable Y=Income of the respondents	Regression Co-efficient	t-value
Independent Variables		
MWUA	0.27	4.47*
LPROP	0.25	3.69*
EDUYS	0.09	1.49
ALRUP	0.17	4.82*
HDASSET	0.13	3.89*
PNREGS	0.24	5.42*
RDMIM	-0.08	3.30*
RAGED	0.06	0.58
SAPLD	0.14	5.24*
SGHHD	0.03	1.73
Constant	0.137	
R <sup>2</sup>	0.653	

Notes- \* indicates significance at 1% level

The WUA has a significant impact on income which is evident from the estimation. The regression co-efficient of WUA participation is 0.653, which indicates that the income of the respondents has increased by 65.3 per cent due to WUA participation.

It is interesting to note that the WUA beneficiaries productively make use of their increased income. 39.33 per cent of the respondents reinvested their income on activities in which they are engaged, 9.67 per cent of them revealed that a major part of the income generated was utilized for educating their children and 10.67 per cent of them spent it on health care. 24.67 per cent of the respondents said that income generated was spent for meeting the consumption expenditure and 15.67 per cent told that income generated was used for creation of new assets. In general, the field experiences reveal that the strategy of WUAs is productive enough and had a favourable effect on employment and income generation. It is also observed that there is a quality improving effect on the families of sample respondents because majority of the beneficiaries utilized the income generated either for investing or improving the educational and health requirements. These expenditures resulted in qualitative improvement of human resources or in short it leads to human development.

**Social Impact of WUAs-** The present study reveals that 69 per cent respondents have learnt the lessons of co-operation and positive thinking after joining WUAs. 43 per cent members have developed sense of responsible citizens, 59.33 per cent have positive response to social changes, 67.33 per cent have self-respect and self-confidence and 60.67 per cent have developed leadership qualities. So, it is evident that WUAs through irrigation management are instrumental in all round development of so far under privileged and neglected sections of the society.

The WUA members are coming forward in exchanging their ideas, feeling and sharing the moments of happiness as well as sorrows with co-members. The members try to solve individual problems and extend helping hand to the needy members. The group members are found enough confident about their progress. Rural people are coming together and joining the process of their development.

It is found that WUAs are engaged in rooting out the social ills such as, alcoholism, dowry, child marriages etc. Impact of WUAs can be observed in the form of increased functional literacy. Most of the members are able to read and sign the documents of the group. Members have become aware about rules and regulations, business meetings and their rights and duties. Thus, the strategy of WUA has intervened in uplifting the socio-economic conditions of the



members and helped overall development of the economy.

**Problems-**The problems of WUAs are varied and far flung. They differ from block to block. The farmers of WUAs face very common problems like non-repairing and lack of supply of qualitative pipes by the Department of Water Resources, non-extension of pipeline up to the end of ayacut area, irregular payment of energy charge by farmers, non-co-operation of officials, frequent political interference, conflict among farmers, no provision of financial assistance by the department to repair machines and construction of office building for holding regular meetings. Further, the WUAs are facing a number of problems while undertaking income generating activities. The common problems in the sample blocks which need special attention are related to marketing, timely and adequate availability of irrigation, availability of infrastructure, availability of funds and facilitators' support.

#### **Conclusion and Policy Recommendations-**

On the basis of the above findings the following suggestions are made for successful working of the WUAs. A careful selection of key activities in a particular area based on local physical and human resources and market demand is vital for the successful operation of agricultural development. Further, crop insurance, purchase of crops by Govt., prohibition of frequent political interference, avoidance of excess irrigation and avoidance of wastage of water, judicious solution to the problem of water distribution through meetings should be made. Along with it, involvement of experts of NGOs to train farmers, sufficient distribution system of ayacut area, proper payment of taxes by farmers, co-ordination among WUAs, OLIC, Horticulture and Agriculture Department should be made. The WUAs should function as corporate agency to make themselves profitable with service motive. To make their organisation sustainable they should start agri-business. It is further emphasised on political will, Govt. patronage, long term land holding of farmers, timely release of grant in- aid, capacity building of WUAs, timely supply of water, conduct of election in the Association and autonomy to Pani panchayats are required for the success of WUAs. The farmers should involve themselves in the development schemes of Govt. and repair

and construction of damaged canals and structures. Other recommendations include adequate infrastructure, capacity building and skill upgradation, creation of adequate marketing facilities. There is also a need for effective supervision and monitoring of investment activities. Finally, a strong political will and inspection of the end use of the water are also important factors that determine the effectiveness of WUA as a strategy for inclusive growth.

From the analysis it is construed that the Water Users' Association have emerged as a powerful instrument for agricultural development. Especially, the WUAs in coastal Odisha have brought the disadvantaged and vulnerable groups into the realm of agricultural development through water management and other inputs. The beneficiaries of these groups have been able to generate additional income and employment by utilising the water in various agricultural activities. Unless these functionaries serve the rural poor with strong urge and devotion, the purpose of WUAs will be defeated. It is therefore imperative to take a holistic approach to bring about agricultural development which will not only foster socio-economic development but also go a long way in attaining sustainable growth in India.

#### **Note:**

1. Food grains (Rice, Wheat, Maize, Millets and Pulses),
2. Cash **Crops** (Cotton, Jute, Sugarcane, Tobacco, and Oilseeds),
3. Plantation **Crops** (Tea, Coffee, Coconut, bettle nut, bettle leaf and, Cashew nut) and
4. Horticulture **crops** such as Fruits and Vegetables (Banana, Watermelon, Guava, Cucumber, Tomato, Lady's finger, Pompkin).

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#### ANNEXURE-1.1

Name of the Block(s) of Coastal Odisha	Members of WUA (S)	No. of Officials	Non-Member
Bhandaripokhari	75	05	25
Barchana	75	05	25
Aul	75	05	25
Pipili	75	05	25
Total	300	25	100

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# WHY SUSTAINABLE FUTURE? : A STUDY IN THE CONTEXT OF PRESENT MODEL OF DEVELOPMENT

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Industrial Revolution in 18<sup>th</sup> Century Europe, taught big lies to the World about Nature i.e. (i) Nature is a commodity (ii) Society consists only of human beings and (iii) Man is to enjoy the nature.<sup>1</sup> As has been argued by Hegel and Marx, it is in the process of need fulfillment that man interacts with nature and technology served as a very apt means of this interaction<sup>2</sup>. The use of technology proliferated needs which in turn required more sophisticated technology for their fulfillment. This further proliferated needs, making it necessary to develop evermore sophisticated technology and so on. So unrestrained use of technology with insatiable desires (of human beings) divorced from morality became the dangerous weapon in the hands of mankind to endanger the nature to satisfy gluttony. Human beings enjoyed with their achievements. We saw unprecedented economic growth in the 20<sup>th</sup> century<sup>3</sup>. Value of goods and services produced each year worldwide grew 20-fold since 1990. The use of 'energy' has grown 30-fold. Products of industry have grown 50-fold. After world-war-II, we saw largest area of the world as undeveloped. The only path and aspire to reach development<sup>4</sup> was the optimum production and industrialization. With technology and industrialization humankind rejoiced with their achievements. But a heavy price<sup>5</sup> was paid for this.

- Within 25 years since 1950, 20% forests disappeared.
- 20% land lost its productivity due to salinity, water logging and desertification
- 36% of irrigated land was damaged.
- US lost 93% of its forest area since Columbus stepped in America.

- The plight of tropical forests particularly Amazonian Forest is very sad and it is known to all.

To FAO, 1982. We see loss of tropical forests as 11 million hectares per year:

- After 10 years it was 17 million hectare.
- Acid rains were seen.
- IX<sup>th</sup> World Forestry Congress. Mexico in 1958 says "Our collective future is at stake".
- Green Cover and lake waters were damaged by acid rains.
- Commercial reactors and nuclear irradiation damaged crop land in Ukraine and Belarus.

So radiation (Chernobyl, UK) depletion of Ozone layer, pollution and ecological crisis became the gift of development and industrialization. So human beings on this Earth became the butcher of Nature- the Prakriti. The society became perverted-Vikriti. The systems of Vikriti<sup>6</sup> are seen in:

**Rising Arms and Arms Expenses:** For fear of War and internal security countries joined in arms race. US, USSR (Russia), France, Germany, UK and China account for 90% of global arms market. Top scientists of the globe are busy in producing WMD (weapons of mass destruction). These weapons are as great threat to the Prakriti. It is proved today by Russia-Ukraine war for more than one year. These wars are a great threat to man-nature-society balance.

**Depletion of Natural Resources and Pollution:** Today, we are not getting clean air. Air is mixed with toxic gases from chimney, dust and many more dangerous elements. Trees are disappearing in the name of Highway, urbanization etc. Even

living soils die as cities expand. In China for Non-farm activities every year 1% crop land is used i.e one million hector. In Bangkok, they lose 3200 hectors a year. Renewable resources which sustains all life over our planet-earth have become non-renewable due to over-exploitation. Water is not available unless we go for deep boring. Col. Gadaffi of Libya went deep to make a river on surface. A total of 13972 habitations across the country are affected by arsenic contaminated drinking water, while 2,161 are affected by heavy metal pollution. Both arsenic and heavy metals pose serious health risks.<sup>7</sup>

Keeping in view the situations depicted above, in this paper an attempt has been made to analyse the impact of industrial hazards on environment in this era of Liberalization. Privatization and Globalisation as we see SEZs (Special Economic Zone) in different parts of India.

**Green house gas-** The harmful effect of industrialisation was not significantly visible in west during 18<sup>th</sup> and 19<sup>th</sup> Centuries. But after world war-II, the rapid pace of industrialisation created pollution through toxic gases emissions. These toxic gas emissions caused warming up of the globe, which is called Green House Effect. There are also man-made Green House Gases which include Ozone depleting substances such as Chlorofluoro Carbons (CFCs). A thin film of Ozone protects the whole earth from the Green House Effect. Extra warming gases penetrate hole in Ozone layer. Then the global warming will spell a disaster for the humanity. In the following a clear picture of Green House Effect and Global warming are given. The study on global warming has drawn the attention of social scientists, policy makers and researchers all over the world, today, on account of reports by various International as well as National Bodies / Committees / Commissions / Institutions The conference at RIO, Earth Summit at South Africa, the Assessment Report Inter governmental Panel on Climate Change, various studies by UN Environment Programme, Kyoto protocol and others have focused on the dangerous aspect of global warming and climate change. Former Chief

Economist of the World Bank Sir Nicholas Stern of UK said that the climate change may cause economic and social disruption at par with the two World Wars and the Great Depression. As a part of its official Report to the UN Framework Convention on Climate Change, the Ministry of Environment and Forests, Govt. of India is co-ordinating the details of scientific and economic studies undertaken by the government. In the process, 75 research, academic and government institutions are being coordinated into studying all kinds of possible impacts that global warming could bring to India. In this paper an attempt has been made to analyse (i) the cause of global warming and climate change, (ii) evidence of warming (iii) effect of Green House Gas and (iv) possible means to mitigate the effect of Green House Effect. The "Green House Effect" is caused due to the rise of the temperature of the Earth when the heat and light of sun is trapped in the Earth's atmosphere. It happens due to green house gases- carbon dioxide (water vapour, nitrous oxide and methane) as the light and heat get through the atmosphere but it cannot get out. CO<sub>2</sub> gas, generated by man's burning of fossil fuels and the forests is responsible for about half the green house gas warming. Other gases (CFCs. Methane, nitrous oxide, sulphur hexafluoride, perfluoro carbons troposphere ozone) are responsible for the rest. Increase in all these gases are due to mankind's explosive population growth over the last century and increased industrial expansion. Approximately, 80% of atmospheric CO<sub>2</sub> increase are due to man's use of fossil, fuels, oils, coal and gas. Many things cause GHGs but some important are:

- Electrical pollution (lighting, fan, electric geyser, TV, washing machine. AC, and other domestic appliances are responsible for greenhouse effect).
- Every day, over 5500 acres of rain forests are destroyed.
- Population Growth: To meet our demands we make effective use of technology and thereby, bringing a change in the environment. Industrialisation and the careless use of natural resources caused a great harm to atmosphere.

There is, no doubt, that climate is changing due to green house effect. There are both physical and biological evidences of climate change.

#### **Physical Evidence:**

- **Rising temperature and CO<sub>2</sub> level in atmosphere:** The average global atmospheric temperature has increased by 0.74°C between 1906 - 2005. CO<sub>2</sub> has increased from a pre-industrial value of about 280 ppm to 379 ppm in 2005.<sup>8</sup>
- **Imbalanced rainfall:** There is clear evidence of depleting ground water in many areas of our country. Even the annual rainfall at the global highest receiving place (Cherapunji of Meghalaya) has declined substantially compared to past.
- **Shrinking of cold days:** Earlier, winter is used to commence in the middle of the October and last until February, Presently the winter generally starts in the middle of November and ends earlier.
- **Changing monsoon:** For several years the arrival and continuance of monsoon has become very unpredictable, uncertain and erratic. There is no rain during rainy season without a low pressure. So far, in Bay of Bengal, there have been six low pressures.
- **Occurrence of natural disaster:** In comparison to past, the frequency and intensity of disasters like flood, drought, earth quakes, cyclones etc. have increased.

**Biological Evidence:** Early blossoming of Mango trees: Mango trees blossom according to thermal period in different parts of the country. Now, this has been changed.

In North we see blossoms in December, which indicates less cold during winter in North.

**Grass in Antarctica:** Apart from melting of ice caps and glaciers in the Antarctica region, there has been some evidence of growing grasses in these areas.

**Change in cropping pattern:** The traditional region of apple and other temperate crops which were earlier found suitable for cultivation may likely become unsuitable for

the cultivation, which require chilling for flowering. Now in Bihar maize is substituted to wheat.

The Inter-governmental Panel on Climate Change warned that if the production of green house gases continued to soar, global temperature could rise by 6.4 degree Celsius by the end of this century with far-reaching consequences for the climate. The study further projects more droughts, floods and rising sea-levels by 2100 and warns that the effects of greenhouse gasses in the atmosphere will last for centuries. (Report, Feb 02, 2007) Recently, Stefan Rahtnstorf of the Potsdam Institute of Climate Impact Research in Germany in the journal Science argued that a rise in sea level of over 1 meter by 2100 for strong warming scenarios cannot be ruled out.

A Report by Ministry of Environment and Forests warned that India's carbon dioxide emissions of greenhouse gases could increase to 3000 million tones by 2020 which would be about twice the emission level in 2000.

#### **Disasters caused by Green House Effect may take the following form:**

**Sea-level rise:** The UN Environment Programme included India among the 27 countries that are most vulnerable to a sea-level rise. About a quart of India's population lives within 50 km of the coast line. The megacities of Mumbai and Chennai with large and growing population and huge, investments in infrastructure are located on the coast<sup>9</sup>.

The Energy and Resources Institute in Delhi points out that much of the coastal region has fertile agricultural land in the form of river delta. Low level areas such as those in Orissa, West Bengal and Andhra Pradesh could be vulnerable to inundation. An increase in sea-level could also lead to salt water entering the ground water aquifers on which people depend for drinking water and to irrigate their fields.

**Cyclones:** The Bay of Bengal's warm shallow seas and still air provide ideal conditions for cyclones to rise. According to a finding by A.S. Unnikrishnan of National Institute of Oceanography, Goa, by the middle of the century powerful cyclones would arise more frequently in the Bay of Bengal during the post-monsoon period as a result of climate change.

Last year, the cyclone in Bay of Bengal changed its direction with a massive scale of loss of human life and habitats in Bangladesh. M. Rajeevan<sup>10</sup>, the Senior Scientist of Indian Space Research Organisation said the most significant changes due to rise in GHGs could be high intensity and rise in frequency of tropical cyclones, rise in frequency of low pressure depressions intensifying and turning into cyclones.

During 2015-20, 12 times cyclone came in Arabian Sea. In the desert area of Somalia there was a super cyclone and heavy rain with flood on 22th Nov. 2020 which is a record in the country and this is for the first time due to climate change.

**Rainfall :** M. Rajeevan in his address to a Seminar on “Climate Change: Its impact on different sectors in India” held at VSR and NVR College, Tenali, on 29th July, 2008 said that the imbalance in the quantum of rainfall in different regions will increase in future due to global warming. Rainfall over Andhra Pradesh, Kerala, Karnataka, Maharashtra, Goa and Madhya Pradesh will decline in the coming days.

K. Krishna Kumar<sup>11</sup> and his team of Indian Institute of Tropical Meteorology in Pune is finding that the annual cycle of rainfall is beginning some two weeks earlier than before across much of a northern India in the last two to three decades. The rainy period in central India could be ending earlier and that the duration of the rains might therefore be some what shorter than before. But due to imbalance in climate there may be heavy downpours in different parts and it may be in odd time also. Last (2005) rains in Mumbai, flood in Rajasthan (2007). rain and flood in Orissa in mid June (2008). Floods in Sutlej in Punjab

(2008) are the examples of imbalanced rain fall in India. J. Srinivasan<sup>12</sup> of Indian Institute of Science, Bangalore said, “any major changes in rainfall patterns will have far-reaching consequences for agriculture and water availability”. Heavy downpour in northern part of India, particularly in Uttarkashi, Himachal Pradesh and Jammu and Kashmir may bring heavy landslides along with change of course of rivers thereby washing away cultivable land with habitats. Imbalanced rain fall may lead to drought also.

**Melting glaciers:** Glaciers in the Himalayas feed important rivers such as Ganga, Indus and Brahmaputra for flow irrigation in Indo-Gangetic plain.

The Study by Anil Kulkarni<sup>13</sup> of the Space Applications Centre in Ahmedabad reported that the Gangotri glacier has been retreating rapidly in recent decades. From a study of 466 glaciers in the Himalayas the Report said that their surface has shrunk by about 21% since 1962. This shows that in future (in summer) those rivers flowing from Himalayas will be dry and there may be desertification. Paul Kramer<sup>14</sup> in his book Fighting Body Pollution, says that by conservative estimates, about 300 million people in India are directly or indirectly impacted by desertification. And we are losing productive land at a very alarming rate due to desertification’.

**Death from Sky:** Sunstroke and thunder-stroke or lightning are now the most dangerous hazards of climate change. Earlier it was rare, so they were not added in the list of disasters by different governments in India. But today they are part of natural calamities in India. The death from sky and its intensity can be realized from the following table.

**Table No.1 Year wise death in lighting and heat stroke in Orissa)\***

Sl. No.	Year	Lightning Deaths	Heat stroke deaths*
01	1998	183	2042
02	1999	220	91
03	2000	224	29
04	2001	279	25
05	2002	214	41
06	2003	204	68
07	2004	327	45

08	2005	362	236
09	2006	204	87
10	2007	345	100
11	2008	37 (Till May)	
12	2009		
13	2010		
14	2011		
15	2012		22
16	2013		86
17	2014		100
18	2015	389	
19	2016	102	
20	2017	460	
21	2021	213	

Source: Deptt. of Revenue Govt. of Orissa. \*Many cases are not reported in tribal areas due to ignorance.

**Air crash:** The weather between April to September in the last two to three years has surprised and alarmed to even veteran aviators. It has been a rock and roll up there. If it rains aircraft get lashed more furiously. If there are sharp winds they are more cutting. In Calicut Air Port, plane is buffeted so violently by cross winds it is difficult to control it. It is like a ship in stormy seas. It was not like this before. Wind speeds during approach can sometimes go up to 65-70 kmph as against the normal of 35-40 Kmph.<sup>15</sup>

R. K. Jenamani<sup>16</sup> Director Met office, IG International Air Port, New Delhi says that nitrous oxide and suspended particulate matter in the sky coupled with increased moisture content has led to increase in frequency and intensity of fog. Further, he says that in the mid 90's a pilot faced visibility greater than 5 km. for 17 hours daily in winter. Today, in January one hardly gets a visibility of over 2km. Fog hours have gone up 20-30 times. It was earlier 20 minutes average per day, but, now it is 10.3 hours daily, there by disrupting flight movement. Heat / rise in temperature plays a great role in the flight for fueling and flying also. In summer fuel temperature go up which is dangerous for the flight.

**Miscellaneous:** GHGs emissions will pose a challenge to society, where there will be massive scale of migration from one part of the country to other / from one part of the globe to other, thereby creating further problem of security, (human, regional and national) water availability for drinking purpose and also

question of food security as we see a shift from fossil fuel time to bio-diesel today. Over next 30 years, 143 million people may be uprooted by rising seas, draught, scaring temperature (The Statesman, 31<sup>st</sup> March 2022). There is likely to be more and more interstate and intra state competition over natural resources. At present, there is a fight between rich and poor countries at Summit level throughout the world regarding the carbon emissions and rich countries are blamed for this. So, they are asked to compensate. Similarly, within the national boundary there is a question of environment and development. Now we see the crisis between Tamil Nadu and Karnataka, Orissa and Andhra Pradesh, Odisha and Chhatishgarh India and Bangladesh, India and Pakistan, may be more vigorous. We see today war among people at Cuddapa District of Andhra Pradesh for water. A time will come when our careless way of life may lead to more terrorist activities and thereby creating terrorism. The blame may be put on 'climate injustice'<sup>17</sup>.

**Global warming-**Global Warming refers to a increase in average temperature of the Earth's near surface, air and ocean in recent decades. Impact on Agriculture: The frequent climate change particularly low rainfall and warming has posed serious threat to sustainable agriculture. Low rainfall has resulted in ground water depletion because of draining of water for irrigation and warming has affected the yield of rice and wheat. According to Sinha and Swaminathan increase of 2 degree centigrade temperature could decrease the rice yield by about 0.75 ton/ha in the high yielding areas and a 0.5 degree centigrade increase in winter

(22)

temperature would reduce wheat yield by 0.45 ton/ha.<sup>18</sup>

**Impact on food security:** According to FAO, Ocean warming, frequent tropical cyclones, flash floods and drought are likely to bring a devastating impact on food production systems in pacific island countries. The report on "Climate change and food security in pacific island countries" says climate change related disasters have already constrained the development of these islands and reduced food security, especially for households. Frequent changes in weather parameters, more importantly temperature and precipitation would not only threaten food production but also access stability and utilization of food resources.<sup>19</sup>

**Impact on fisheries and aquatic Ecosystem:** aquatic ecosystem are critical components of the global environment. The small scale fisheries may be faced with greater uncertainty as availability, access, stability and use of aquatic food and supplies would come down and work opportunities would dwindle. Seasonal variation in water volume strongly influences what kinds of species can flourish in an aquatic system. Therefore, a change in regional climate that alters the existing hydrogen regime has the potential to greatly modify habitat suitability for many species and cause significant ecological change.<sup>20</sup>

**Impact on water and water bodies:** Stream and river ecosystems comprise both the actual aquatic environment and the associated floodplain or riparian system. The expected impacts of climate change on these ecosystems will depend on how thermal and stream flow regimes deviate from present conditions. The amount of deviation will reflect both the region and local setting of the ecosystem.<sup>21</sup>

**Impact on human health:** The increase of chlorofluorocarbons in atmosphere leading to global warming will increase UV radiation in the atmosphere, affecting immune system and leading to infectious diseases. Skin infection such as leishmaniasis or leprosy might be increased by UV light. UV radiation affects the immune system the skin and hence there might be an increased number of cases of skin cancer. Increasing traffic and exhaust as well as industrial emissions are raising concentration of

SO<sub>2</sub>, NO<sub>x</sub>, O<sub>3</sub> and suspended particulate matter, which are known to be damaging human health. Cholera, kidney disorders, skeletal and brain damage, Alzheimer's are Parkinson's disease etc. are causes of climate change.<sup>22</sup>

**Impact on Biodiversity:** According to the "2005 millennium ecosystem Assessments" the climate change will cause loss of biodiversity by the end of this century. The significance and utility of biodiversity for food and agricultural purpose will increase as and when climate Genetic resources are the living materials that local communities, researchers and breeders use to develop high yielding crop varieties / strains that can adapt to needs. Maintaining and using this reservoir of genetic diversity will be the for coping with climate change.<sup>23</sup>

**Impact on ozone depletion:** The harmful effects of UV radiation are well understood and include both health and climatic aspect. Most notably, the more humans are exposed to UV radiation, the likelihood of skin cancer. The U.S environmental protection agency suggests 1 percent thinning of the ozone layer can produce as much as a 5.7 percent increase in skin cancer. Other health effects include potential increased instances of and weakening of the immune system. The increased solar ultraviolet radiation increases surface temperature and thus will change the global energy and radiation. Increase in temperature may change climate at local, regional and global levels.<sup>24</sup>

**Development and sustainable development-** So true Development or Sustainable Development should be Sustainable, meaning thereby the benefits enjoyed by this generation should also be enjoyed by the future generations and that is possible only through renewable resources. True development should be ethical. Whatever is useful to one should not harm other beings. The present model of development is destructive (to Nature) by nature where large number of species extinct. Gap between the rich and poor is widening more than 100 million people around the globe are homeless, living on side walks, in garbage dumps and under bridges. This is the result of centralized production. Production of essential commodities should be decentralized. It will also help in lessening pollution and exploitation. This is what Gandhi says in Sarvodaya Economy. This change cannot be brought by



Gov. Agency. The change can come through peoples' movements, being initiated by humanitarian scientist, artists and journalists. So in Indian tradition Gyana, Karma and Bhakti are essential. In the place of false propaganda by west, we have to preach the truth. These are:

- We, including all creations are part of nature.
- Society cannot be of human beings alone.
- All life is inter dependent.
- Nature fulfills the basic needs of all beings.

'Development' is the opposite of the term 'Envelopment' so development would include not merely material growth but more importantly the blossoming of cultural, intellectual, spiritual and other non-material aspects of human existence. Unfortunately, the western notion of 'Development' has sidelined all of these aspects and brought (put) materialism to the centre-stage and all intellectual and cultural growth aimed at making money and accumulating goods. So, the objectives of a truly developed society should be achievement of permanent PEACE, HAPPINESS AND FULFILMENT. The first and foremost social revolution arises, to challenge the false values (of industrialization, development, modernization and urbanization) was Buddha. To him the root cause of misery is desire (Trishna). He differentiated between 'Need' and 'Desire'. The present concept of development encouraged consumerism and keeps individual in a state of perpetual dissatisfaction. Gandhi, also arrived at the same conclusion- "Earth provides enough to satisfy every man's need but not every man's greed" (Pyarelal, Towards New Horizons, (Navjivan Publishing House, Ahmedabad, India 1959) P.12. So, there is urgent need to replace the present system, which is inhuman, hazardous and temporary, means not sustainable. The concept of sustainable development emerged as an important theme in the year 1987. <sup>25</sup>The Brundtland Commission on Environment and Development in its Report. "Our Common Future" says application of 'sustainability' as a criterion for all 'development' activities- Developed countries laid emphasis on economic and technological aspects. To them, the current development growth/ process can continue provided the technological innovations are rapid and appropriate enough to

reduce environmental side effects. In the view of developing countries, poverty is the greatest polluter of environment, hence they must accelerate economic growth to meet the basic needs of the people. To developed countries, it is they (rich countries) who have created the present environmental crisis not the poor countries, hence they should assist the later (poor countries) with financial and latest environment-friendly technological know-how for the continuance of the present model of development or economic growth. Interesting both (Rich and Poor) have a firm faith in economic growth and all goes with industrialization, urbanization and environmental deterioration. Both have hopes in science and technology to solve the emerging problems. So Rich countries want to maintain 'Status Quo'- economic and technological superiority with competitiveness, while poor countries want to change the existing world order to make it more egalitarian. <sup>26</sup> But the means for achieving the goals are the same. In this backdrop, sustainable development cannot be static and also cannot be static and also cannot be divined once for all. It is a dynamic process. It will be applied by different countries in tune with their own cultural political and economic perspectives. <sup>27</sup> So there is urgent need for a broad agreement on goals, directions and means of sustainable development

- Sustainable development is different from 'Development';
- Sustainable development cannot be achieved in a short run/ short span of time.
- It is based on equity and justice.
- It's approach is balanced and integrative.
- It has common goal but different routes.
- It considered Nature not only as a resource for development but also as the earthly womb for survival and development of human kind.
- It is participatory in nature. <sup>28</sup>

So it is both (i) a continuous process as well as (ii) long term process as the economic, political, technical, social structure and super structure of the 'Rich' countries cannot be dismantled in a day. Similarly, we cannot allow 'Poor' countries also to follow the same path as by

‘Rich’. Equity and Justice are sine qua non of Sustainable development. It is four dimensional.

- Equity among ‘Rich and Poor’ as well as ‘developed and developing’ is necessary.
- Equity within countries between regions, classes, genders, sectors of activities are also necessary.
- Equity between generations
- Equity between economics and ecology, science and spirituality are highly required.

Goals of sustainable development is to (i) fulfill the basic needs of all human beings. Development process should not disturb the ecological balance of environmental purity. All nations and people must join hands to support each other to achieve above two goals.<sup>29</sup> Change in attitude towards nature is very much urgent. Earth is the capital. If capital is depleted, we cannot run the business for long by running down and living off its capital- i.e Earth.<sup>30</sup>

#### **Attempt at national level**

Chapter-IV-Art 48 A of The Constitution of India<sup>31</sup> says, “to protect and improve the environment and to the safeguard the forests and wildlife of the country. Art 51-A Says “it shall be the duty of every citizen of India to protect and improve the natural environment including forests, lakes, rivers and wildlife and to have compassion for living creature.” In India there are many rules to stop waste of Natural Resources.

So the Ministry of Environment, Forest and Climate Change has implemented:

- The National River Conservation Programme.
- Conservation of Natural Resources and Eco-systems.
- Green India Mission.
- National Afforestation Programme.
- National Coastal Management Programme.
- National Mission on Himalayan Studies.
- Ministry also implements UN convention to combat desertification.

28<sup>th</sup> July every year is observed as World Nature Conservation Day. For conservation of Nature to stop deforestation and loss of wildlife. India has taken initiatives-

- Nagar Van Udyan Scheme: (City Forest in 200 cities of India).
- Swachh Bharat Abhiyan (For waste management since 2014).
- Project Tiger (for eco-development since 1973)
- National Wetland Conservation Programme (to conserve and make acute use of wetlands in the country).
- Green Skill Development Programme, 2017

The Wildlife Protection Act, 1972 also included the constitution of the India Board of Wildlife. Wildlife is transferred from the state list of Concurrent list in 1976. Forest Conservation Act, 1980 & amended Forest Act, 1992. Water Prevention and control of Pollution Act, 1974, 1977, 1991- are in operation. The Act prevents the polluting matter in the flow of the water. In Kalinga Nagar, the water contains 26 poisons elements (Hexavalent- 6 most dangerous even fatal for cattle/ animals). Air (Prevention and Control of the Pollution) Cess Act 1981 says presence of any solid, liquid and gaseous substance to be prevented. Section 19 of Act, can prevent any industry to operate. Section 20 of Motor Vehicle Act, 1939 Prevent emissions noise pollution which comes under Air Pollution Act since 1987. Environment Protection Act, 1986 consists of 26 sections. Waste Management in India is done through i) Swachh Bharat ii) National Water Mission waste to wealth mission (to treat waste to generate energy and recycle materials).

#### **Attempt at international level**

International Level Conferences on Environment and Sustainable Development are:

- UN conference on the Human Environment Stockholm Conference, 1972- (109 recommendations) 114 Govt. joined.
- UN Conference on Environment and Development, 1992 (Rio Conference / Earth- Summit) 178 countries joined.

- UN General Assembly Spl. Session on Sustainable Development, Earth Summit-II (N.Y 1997)
- World Summit on Sustainable Development, 2002 Johannesburg
- UN Environment Assembly took 14 resolutions at Nairobi 2<sup>nd</sup> March 22
- 1<sup>st</sup> World Climate Conference, 1979
- Inter-Governmental Panel on Climate Change, 1988.
- Conference on the Protection of the Ozone Layer, Vienna, 1985, (197 countries approved)
- Conference of parties 1995 (cop)- Berlin
- Cop-3-1997- Kyoto Japan put Emphasis on GHG\*. It came into force from 2005.
- The Millennium Summit-2000, (8-Millennium Development Goals with Millennium Declaration.) 7<sup>th</sup> goal was to encourage environmental sustainability.
- Cop-15, 2009, Copenhagen, Denmark
- Cop-2015, UN announced Sustainable Development Goals- (17goals), Goal - 13 deals with climate change, 174-countries signed. It came into force from 2016. India is always supporting to all these global discussions.

Since the beginning of COP (Conference of parties) at Bonn of Germany in 1995 (1<sup>st</sup> Conference), till date 27 conferences have taken place. The last conference i.e COP-27 took place at Egypt from 6<sup>th</sup> Nov. to 20<sup>th</sup> Nov 2022. In this meet heads of 92 states, representatives of 190 states and 35,000 delegates participated. Everyone present agreed to the decision at Paris Conference(2015) to limit the rise of temperature at 1.5degree Celsius. Discussion took place to control the use of petrol, diesel and gasoline in transportation and use of coal in energy sector. The second issue was methane gas coming from industrial west. The discussion in COP-27 can be divided into.

\*Carbon dioxide, methane, nitrous oxide, hydrochlorofluorocarbons, perfluorocarbons, sulphur hexafluoride.

- Collectively all countries of the world would agree to reduce GHG (Green House Gas).
- To adjust in the changing situation from grass root level with a change in our habit.

- Financial aid to developing and poorer countries.
- Cooperation of all is necessary in right time and right place.

But unanimous decision was taken on raising – “Loss and Damage Fund” to compensate the loss of poorer countries due to climate change. But no consensus decision was taken on reducing Green House Gas. To face the rising sea level a Small Island State Organisation has been developed. But the COP-27 is not success in toto<sup>32</sup>.

### **Findings and suggestions**

From the idea of “you broke it, you fix it”, we have to adopt an integrated approach at the global level where there is urgent need of a policy (i) to stop encouraging the waste of natural resources however hard it may be politically, (ii) to arrest or slow down deforestation, (iii) public transport needs to be vastly improved and private transport deterred. At present, developed countries do possess considerable Clean Energy Technologies that are commercially viable. Germany is the world leader in solar technology. A Canadian company has commercialized a turbine that generate electricity from ocean current. While on the one hand, globalization has dismantled trade barriers across the national boundary, it has also erected new boundaries in the form of Intellectual Property Rights and Patent Rights. So India along with China Brazil and South Africa should lobby for access to Clean Energy Technologies, particularly in the case of coal, because coal-fuelled electricity generation accounts for half of all carbon emissions in the world and in India. To quote ‘Prithivi Sukta’ of Atharva Veda “The Earth is the mother and we are her children... human history is inseparately linked with that of the Earth. It is therefore, our duty to maintain the nature of Nature. It is in our self interest, if nothing else.”

<sup>33</sup> Eco-system has been disturbed by present model of development. Eco-system is complex, stable, diverse and resilient. If any one element is weaker then the system collapses. So we need Environmental Planning<sup>34</sup> which may be four fold:

- Protection of Environment.
- Restoration and Rehabilitation of degraded eco-systems.

- Augmentation of the carrying capacity of both natural and man-made eco-systems.
- Creation, expansion and development of New Eco-systems -minor and major.

So we need

- Forest Management:<sup>35</sup>
- Mahavana- Dense forest, Amazonian Forest, Tropical Forest world over.
- Tapovana- Where hermits and sages meditate.
- Srivana- Village/ Town Forests
- Water Management:
- Reasonable use of water is inevitable
- No pollution by industrial or man-made waste
- Soil: ave soil is the slogan today. No chemical fertilizer in Agriculture is to be applied.

The task is difficult. Still we have to try on ecological path. If the planet –Earth is to survive, our development process and models will have to be drastically transformed. There is no conceivable alternative to sustainable development. This will be possible under a Rainbow Coalition<sup>36</sup>.

- Greens Groups
- Women's Groups
- Peace Movements Groups
- Students Movements Groups
- Indigenous movements groups
- Human Rights movement groups
- Peasant and Trade union movements groups

All human behavior aims at satisfying a need or an aspiration and people will only agree to change their habits when they are convinced, that it will be to their advantages. So it is through informing motivation and encouraging the people that we can best hope to improve. Acharya Vinoda Bhawe, the walking saint of India thought of 5-Powers<sup>37</sup>

- Sajjan (Good People)
- Mahajan (Money Power)
- Vidwajan (Learned People)
- Rajya shakti (Government)
- Jana Shakti (Common People)

To M.K. Gandhi <sup>38</sup> social and economic order based on material values alone is not-acceptable. He upheld the 'ideal of plain living and high thinking and worked for a higher standard of life and not merely for a higher standard of living. Civilization consists not in the multiplication but in the deliberate and voluntary restriction of wants.' To curb GHGs emission (to have a carbon free India) we have to work on a partnership basis with developed countries in (a) adjusting economic plans and targets to reflect the impact of climate change .(b) developing new technology (to reduce the cost of low carbon technologies and use of solar panels) (c) developing strategies to improve energy efficiency as the energy cost of economic activity varies hugely from country to country and (d) reducing CO<sub>2</sub> emissions by 2050 and India should try not to exceed the emissions rate in developed countries. Government of India has to work on a partnership basis with civil society to create a greater degree of awareness among the people of this country on many issues involved in this complex problem. The fight against global warming is to go down to every village in the country. The government-civil society alliance should train and appoint 'climate managers' in villages, whose task will be to create awareness and take steps for sustainable development at the local level. They will also be trained to handle natural disasters and prepare the villages. Here, there should be a link with State Disaster Management Authority to develop the project. In this process, Panchayati Raj Deptt., Deptt. of Rural Development, Deptt. of Science and Technology, Deptt. Revenue and Disaster Management Authority of Government will establish a co-ordinating committee headed by Deptt. of Science and Technology. Deptt of science Technology will train the villagers and will lead the programme with Civil Society Groups working in various states. So in the concluding remark we can say that we have compiled some ideas to turn it in to action. Let's start today. Even small efforts/ changes will add to the battle to preserve our planet for future generations. So, if not unitedly today, let us individually, which will put impact on others to join us tomorrow.

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# NEURO-ECONOMICS: INVESTIGATING THE NEURAL CORRELATES OF DECISION MAKING AND ECONOMIC BEHAVIOUR

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**Abstract**–Neuro-economics is an interdisciplinary field that merges principles from neuroscience, economics, and psychology to explore the neural underpinnings of decision-making and economic behaviour. This research aims to uncover the fundamental mechanisms that govern how individuals make choices and engage in economic transactions. By employing a variety of neuro-imaging techniques, such as functional magnetic resonance imaging (fMRI) and electroencephalography (EEG), researchers can investigate the neural correlates associated with different economic phenomena. This study presents an overview of the current state of research in neuro-economics, focusing on key findings and methodologies employed. First, it examines the neural processes involved in economic decision-making, including the evaluation of rewards and costs, risk assessment, and inter-temporal choices. Studies have identified brain regions such as the prefrontal cortex, striatum, and insula as critical nodes within decision-making networks. Furthermore, the study highlights the role of emotions in economic behaviour. Emotion regulation and affective responses have been shown to significantly influence economic decisions, and neuro-imaging studies have provided insights into the neural circuits underlying emotional processing during economic tasks. The interaction between emotional and cognitive systems plays a pivotal role in shaping economic behaviour. Additionally, the study emphasizes the influence of social factors on economic decision-making. Researchers have examined how social preferences, fairness considerations, and trust impact economic behaviour, and neuro-imaging techniques have provided valuable insights into the neural mechanisms underlying social interactions and their economic outcomes. Lastly, the study discusses the potential applications of neuro-economics in various domains, including public policy, marketing, and finance. Understanding the neural correlates of economic behaviour has the potential to inform interventions and policies aimed at improving decision-making and optimizing outcomes in both individual and societal contexts. Thus, neuro-economics represents a promising approach to unraveling the intricate relationship between the brain, decision-making, and economic behaviour. By combining insights from neuroscience and economics, this field offers valuable insights into the neural processes that shape human choices, emotions, and social interactions, paving the way for new advancements in understanding economic behaviour and its applications in diverse domains.

**Keywords:** Neuro-Economics; Decision-making; Economic behaviour; Neural correlates, Neurological processes; Cognitive neuro-science; Behavioural economics

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**Introduction**–Neuro-economics is an interdisciplinary field that combines insights from neuroscience, economics, and psychology to understand the neural processes underlying decision-making and economic behaviour. This

research aims to investigate the neural correlates of decision-making processes and economic behaviour by utilizing advanced neuro-imaging techniques and economic experiments. The findings from this study can

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provide valuable insights into the mechanisms that drive economic decision-making and inform policy interventions aimed at improving economic outcomes. Neuro-economics is a fascinating and interdisciplinary field that merges principles from neuroscience, economics, and psychology to explore the neural underpinnings of decision making and economic behaviour. By combining insights from these diverse disciplines, neuro-economics seeks to unravel the intricate relationship between the human brain and economic choices. Traditionally, economics has primarily focused on the study of rational decision making, assuming that individuals act in their best self-interest to maximize utility. However, real-world observations often defy these assumptions, revealing the complexity and variability of human behaviour. This discrepancy has sparked the interest of researchers who aim to understand the underlying cognitive and neural processes that influence economic decision making. Neuroscience, on the other hand, offers powerful tools and techniques to investigate the functioning of the brain. Advances in brain imaging technologies, such as functional magnetic resonance imaging (fMRI), electroencephalography (EEG), and transcranial magnetic stimulation (TMS), have provided researchers with unprecedented opportunities to explore the neural correlates of decision making. These techniques allow scientists to observe the brain in action and examine how different brain regions and networks are involved in economic choices. Psychology contributes to neuro-economics by providing insights into the cognitive and emotional factors that influence decision making. Emotions, social influences, cognitive biases, and heuristics all play significant roles in shaping economic behaviour. By integrating psychological theories and experimental paradigms, neuro-economics attempts to uncover the underlying mechanisms that drive our economic decisions. The overarching goal of neuro-economics is to develop a comprehensive understanding of how the brain processes economic information, evaluates options, and ultimately makes choices. By identifying the neural substrates and mechanisms involved, researchers hope to shed light on the neural basis of economic phenomena, such as risk-taking, impulsivity,

intertemporal choice, social decision making, and cooperation. The implications of neuro-economics are far-reaching. The insights gained from this field can inform various domains, including economics, public policy, and marketing, finance, and consumer behaviour. Understanding the neural mechanisms that drive economic choices could help in designing more effective interventions and policies, improving financial decision making, and enhancing overall well-being. In this exploration of neuro-economics, the fundamental concepts, key findings, and methodologies employed in this interdisciplinary field have been discussed. In this study the brain processes economic information, the role of emotions and social factors in decision making, and the implications for understanding economic behaviour in real-world settings have been explored. Neuro-economics holds great promise for unraveling the mysteries of economic decision making and providing valuable insights into human behaviour. By merging the disciplines of neuroscience, economics, and psychology, this emerging field offers a unique perspective on the complexities of choice, paving the way for new understandings and applications in a wide range of domains.

### **1. Neuro-economics-**

The credit for founding the field of neuro-economics goes to Dr. Glimcher. This emerging discipline integrates neuroscience, economics, and psychology to investigate the neural mechanisms that underlie economic decision-making. The history of neuro-economics can be delineated into two distinct periods: the neoclassical economic revolution of the 1930s and the cognitive neuroscience revolution of the 1990s. The term "neuro-economics" gained traction in the United States during the late 1990s, coinciding with the rise of experimental and behavioural economics in the 1980s. The emergence of these economic branches provided a solid foundation for early investigations in neural economics. By offering well-defined experimental designs and practical economic paradigms, they facilitated the exploration of financial decision-making issues in both individual and collaborative settings. From around 2005, neuro-economics experienced an explosive growth phase, witnessing the establishment of dedicated

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journals, conferences, and research programs. As a result, the field has continued to expand and evolve, embracing new techniques and theories from diverse disciplines. Today, neuroeconomics remains an active and dynamic area of study, pushing the boundaries of understanding the neural underpinnings of economic behaviour. Neuroeconomics or Neuromarketing is an interdisciplinary field that combines insights from neuroscience and economics to gain a deeper understanding of how the human brain makes decisions in social and economic settings. It represents a fusion of neuroscience methodologies with experimental economics techniques. In essence, Neuroeconomics seeks to explore the biological underpinnings of economic cognition. These biological micro foundations include various neuro-chemical mechanisms such as brain systems, neurons, genes, heart rate, skin resistance, and neurotransmitters. The scope of economic cognition encompasses mental representations, emotions, expectations, learning, memory, preferences, decision-making, and behaviour. This innovative field has attracted the collaboration of approximately 100-200 neuroscientists and economists who actively contribute to its development. Beyond academic circles, various companies have also recognized the potential of Neuroeconomics in enhancing their marketing strategies, utilizing its tools to understand consumer behaviour on a deeper level. It is crucial to distinguish Neuroeconomics from behavioural economics, as the former brings together expertise from economists and a broader range of professionals, including psychologists, to investigate the neural foundations of economic decision-making.

## **2. Definitions of Neuro-Economics given by Different Neuro-Economists**

- 1) **Paul Glimcher:** Paul Glimcher, one of the pioneers in neuroeconomics, defines it as "the study of the brain on the choice." He emphasizes the neural basis of decision-making and how economic behavior arises from neural processes.
- 2) **Colin Camerer:** Colin Camerer, another prominent neuroeconomist, describes neuroeconomics as "the combination of psychology, neuroscience, and economics to study how people make choices." He

highlights the integration of these three disciplines to gain a comprehensive understanding of decision-making.

- 3) **Antonio Rangel:** Antonio Rangel defines neuroeconomics as "the study of choice behavior using the methods of neuroscience." He focuses on the utilization of neuroscience techniques to investigate and shed light on economic decision-making.
- 4) **Read Montague:** Read Montague, a well-known neuroscientist, describes neuroeconomics as "the study of how the brain decides." His emphasis is on understanding the neural processes that underlie decision-making and how they relate to economic behavior.
- 5) **Drazen Prelec and George Loewenstein:** Prelec and Loewenstein refer to neuroeconomics as "a new discipline that combines economic modeling with biologically plausible constraints." Their focus is on integrating economic models with neurobiological knowledge to create more realistic models of decision-making.
- 6) **Ernst Fehr:** Ernst Fehr, a prominent economist and neuroscientist, defines neuroeconomics as "the search for the neural basis of economic decision-making." His definition centers around finding the neurological foundations of economic choices.

Thus, while these definitions may vary slightly in their wording and emphasis, they all converge on the idea that neuroeconomics is an interdisciplinary field that seeks to understand the neural processes that underlie economic decision-making. By combining insights from neuroscience, economics, and psychology, neuroeconomists aim to gain deeper insights into human behavior in economic contexts

## **3. Different theories of Neuroeconomics**

There are several theories and frameworks within neuroeconomics that aim to understand and explain decision-making processes. Here are some of the key theories:

- 1) **Prospect Theory:** Prospect theory, proposed by Daniel Kahneman and Amos Tversky, suggests that people's



decisions are based on potential gains and losses rather than final outcomes. It introduces the concept of "loss aversion," where individuals are more sensitive to potential losses than gains, leading to risk-averse behavior for potential gains and risk-seeking behavior for potential losses.

- 2) **Expected Utility Theory:** This classic economic theory assumes that individuals make decisions by assessing the expected value of different options and choosing the one with the highest expected utility. However, in real-life scenarios, individuals often deviate from this rational model, leading to the development of behavioral economics and, subsequently, neuroeconomics.
- 3) **Dual-Process Theory:** Dual-process theories propose that decision-making involves two distinct cognitive systems: one being intuitive and automatic (System 1), and the other being reflective and deliberative (System 2). Neuroeconomics explores how these systems interact and influence economic decision-making.
- 4) **Neural Value Systems:** Neuroeconomics investigates brain regions involved in processing rewards, punishments, and value signals. The mesolimbic dopamine system, including regions like the ventral striatum, plays a crucial role in encoding value and guiding decision-making based on anticipated rewards.
- 5) **Emotion and Decision-Making:** Emotions have a significant impact on economic decisions. Neuroeconomics explores how emotions, such as fear, pleasure, or regret, can influence choices and how these emotional responses are represented in the brain.
- 6) **Social and Behavioral Game Theory:** This theory focuses on understanding economic decisions in social contexts and how individuals strategize when interacting with others. Neuroeconomics explores the neural mechanisms underlying social decision-making and the role of empathy, reciprocity, and cooperation.
- 7) **Neurobiological Models of Addiction:** Neuroeconomics has also contributed to understanding addiction

by investigating how neural pathways involved in decision-making and reward processing are affected by drugs and other addictive substances.

- 8) **Neuroeconomics of Trust and Trustworthiness:** This area of research explores the neural basis of trust and trustworthiness in economic exchanges and interactions

#### **4. Neuro-economics & Behavioural Economics**

Neuroeconomics and Behavioural Economics have given rise to novel approaches in understanding economic behaviour. Behavioural economics has introduced alternative models, such as prospect theory, hyperbolic discounting, and learning models, along with fairness and reciprocity models. These models, however, are considered black box models since their primary focus lies in predicting behaviour rather than comprehending the underlying cognitive processes that drive such behaviour. This raises important questions:

- 1) Are the components of these behavioural models reflected in specific brain structures?
- 2) Can knowledge about the inner workings of the brain enhance economic modeling?
- 3) Do these neuro-scientific insights enable us to distinguish between different alternative models effectively?

By exploring the neural basis of economic behaviour, researchers seek to bridge the gap between behavioural economics and neuroscience. The hope is that a deeper understanding of how the brain processes economic decisions could lead to more refined and accurate economic models, shedding light on human behaviour and decision-making in economic contexts.

#### **5. Neuroeconomics is an utterly captivating field for several compelling reasons:**

- 1) **Remarkable Advancements in Brain Research:** Over the last decade, there has been tremendous progress in brain research, mainly attributed to the development of non-invasive techniques that enable the observation of the

brain's activity while it is functioning.

**2) Understanding the Link between Behaviour and Brain Processes:**

Thanks to these non-invasive methods, researchers can now systematically study the relationship between human behaviour and brain processes in healthy individuals.

**3) Bridging the Gap between Economics and Neuroscience:**

Neuroeconomics offers the opportunity to provide neurological evidence for standard economic theories, thereby deepening our comprehension of behavioural economics findings.

**4) Unveiling the Neurobiological Drivers of Human Behaviour:**

The field of neuroeconomics goes beyond traditional economics, offering genuinely new insights into the neurobiological determinants that underlie human behaviour.

In essence, the convergence of neuroscience and economics in neuroeconomics promises not only intriguing and thrilling discoveries but also an entirely novel perspective on what drives our actions and decisions.

**6. Functional Magnetic Resonance Imaging (fMRI)-Functional Magnetic Resonance Imaging (fMRI)** is a neuroimaging technique that was pioneered in the early 1990s. This advanced apparatus enables the precise tracking of brain regions that become activated in response to various stimuli. The 3D-Encode feature visually represents the activated areas using multiple colours. Initially utilized to detect the specific locations of illnesses such as headaches, paralysis, and seizures within the human brain.

The traditional economic theory, prevailing until the 1970s, offered a simplified model of the firm's functioning, focusing on the basic combination of capital and labour to generate output. This model, however, overlooked several crucial factors, such as principal-agent relationships, gift exchange dynamics, efficiency wages, hierarchy and authority

structures, communication networks, and more. Despite its usefulness in deriving industry supply curves and conducting macroeconomics, this simplistic approach proved inadequate when exploring a wide range of intriguing and complex questions related to firms and their operations.

**7. Opening the black box of the firm Contract theory**

"Opening the black box of the firm" and "Contract theory" are two related concepts in economics and management that seek to understand how firms operate and how contracts play a crucial role in shaping their behaviour. Let's explore each concept in more detail:

**1) Opening the black box of the firm:** In economics, a firm is often treated as a "black box" where inputs go in, and outputs come out, but the internal workings and decision-making processes are not well understood. This concept refers to the attempt to shed light on what happens inside this "black box," aiming to uncover the factors that influence a firm's behaviour, decision-making, and overall performance. Traditionally, economists have focused on studying firms' external behaviour, such as their production levels, pricing strategies, and market interactions. However, understanding the internal workings of firms is equally important as it can provide insights into their organizational structure, managerial practices, innovation processes, and the allocation of resources. By "opening the black box," researchers and analysts aim to gain a deeper understanding of how firms function and how they respond to various economic incentives and external factors.

**2) Contract theory:** Contract theory is a branch of economics that examines the design and implications of contracts between different economic agents, such as firms, individuals, or governments. Contracts are essential tools for allocating resources, establishing relationships, and reducing uncertainties in economic

interactions. These contracts can take various forms, such as employment contracts, supply agreements, partnership agreements, and more. Contract theory seeks to explore how contracts are formed, what elements they contain, how they are enforced, and how they influence the behaviour of the parties involved. Key concepts in contract theory include:

- a) **Incomplete contracts:** In many real-world scenarios, it is impossible to anticipate and specify all possible contingencies in a contract. As a result, contracts are often incomplete, leaving room for flexibility and adaptation in the face of unforeseen circumstances.
- b) **Agency theory:** This branch of contract theory focuses on the relationship between principals (e.g., firm owners) and agents (e.g., managers or employees) who act on behalf of the principals. It examines potential conflicts of interest between the two parties and explores mechanisms to align their incentives to maximize overall welfare.
- c) **Moral hazard and adverse selection:** These are important considerations when designing contracts. Moral hazard refers to the risk that one party may act in a way that is detrimental to the other after the contract is signed. Adverse selection, on the other hand, occurs when one party has more information than the other before entering into the contract, leading to potentially unfavourable outcomes.

By studying contract theory, economists and researchers can gain insights into how to structure contracts effectively, which can help improve economic efficiency, mitigate risks, and enhance cooperation between parties. Overall, "opening the black box of the firm" and "contract theory" are interconnected concepts that contribute to our understanding of how firms function, how they interact with other economic agents, and how contracts play a fundamental role in shaping economic outcomes.

## **8. Opening the black box of the human brain Neuroeconomics**

"Opening the black box of the human brain" is a metaphorical expression often used to describe the pursuit of understanding the inner workings of the human brain. In the context of neuroeconomics, this phrase refers to the interdisciplinary study that combines neuroscience, economics, and psychology to gain insights into the decision-making processes of individuals and how these processes influence economic behaviour. Neuroeconomics emerged as a field of study in the late 1990s and has since gained significant attention. Traditionally, economists have relied on models that assume humans are rational decision-makers who always act in their best interest. However, real-world human behaviour often deviates from these idealized models, and understanding the underlying neural mechanisms behind economic decisions has become a key focus for researchers.

## **9. Key elements of Neuroeconomics include:**

- 1) **Decision-making processes:** Neuroeconomics seeks to uncover the cognitive and neural processes that occur when individuals make economic decisions. This involves investigating how different regions of the brain interact and contribute to choices related to risk, reward, and social interactions.
- 2) **Brain imaging techniques:** Neuroeconomics relies on advanced brain imaging techniques such as functional magnetic resonance imaging (fMRI) and electroencephalography (EEG) to observe brain activity while individuals are engaged in economic tasks. These techniques allow researchers to correlate neural activity with specific decision outcomes.
- 3) **Prospect theory:** Prospect theory is a fundamental concept in neuroeconomics, developed by psychologists Daniel Kahneman and Amos Tversky. It explains that individuals' decision-making is influenced more by potential losses and gains relative to their current state,

rather than their absolute levels of wealth or well-being.

**4) Behavioural economics:**

Neuroeconomics intersects with behavioural economics, which examines how psychological biases and heuristics influence economic decisions. The neuro-scientific perspective provides a deeper understanding of the underlying neural processes behind these biases.

**5) Social decision-making:**

Neuroeconomics also explores how the brain processes social interactions and the influence of social factors on economic choices. This includes studying behaviours related to trust, fairness, reciprocity, and cooperation.

The insights gained from neuroeconomics have practical implications across various domains, including marketing, public policy, and finance. For instance, marketers can better understand how consumers respond to different pricing strategies or advertising techniques based on their neural responses. Policymakers can design more effective interventions to promote pro-social behaviours and reduce economic disparities. Financial institutions can develop strategies that align with the cognitive biases of investors. However, it is essential to recognize that "opening the black box" of the human brain is an ongoing and complex endeavour. The human brain is immensely intricate, and while neuroeconomics has made significant strides, there is still much to discover and understand about the neural basis of economic decision-making. Furthermore, ethical considerations surrounding privacy and potential misuse of such knowledge also need to be carefully addressed as this field advances.

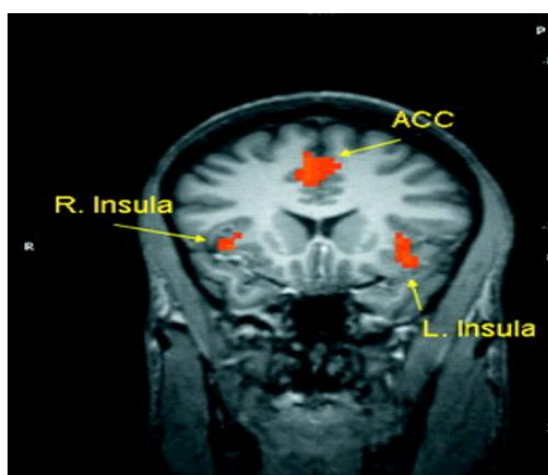
**10. Brain evidence provides a deeper understanding of behavioural economics results**

Behavioural economics is a field that combines insights from psychology and economics to better understand how individuals make decisions and choices in various economic situations. It often challenges traditional economic assumptions of rationality and self-interest, acknowledging that people's decisions

are influenced by a range of cognitive, emotional, and social factors. In the context of social preference phenomena, the question arises whether these phenomena are better explained by individual "preferences" or by "bounded rationality." Preferences refer to individuals' subjective evaluations of different options, while bounded rationality recognizes that people have cognitive limitations that prevent them from making perfectly rational decisions. To investigate this question, researchers often turn to neuroscience and brain evidence to gain a deeper understanding of how social preferences manifest and how the brain responds to various decision-making scenarios. One way to explore this is by examining the brain's reward mechanisms when individuals make other-regarding choices, where they consider not only their own self-interest but also the interests of others. The ultimatum game is a classic experimental paradigm used in behavioural economics and neuroeconomics research. In this game, there are two players: a proposer and a responder. The proposer is given a sum of money and must decide how to split it with the responder. The responder can either accept the proposed division, in which case both players receive the allocated amounts, or reject it, resulting in neither player receiving anything. Studies using brain imaging techniques, such as functional magnetic resonance imaging (fMRI), have shown that during the ultimatum game, the brain's reward centres are activated not only when receiving money but also when making offers to others. This suggests that individuals experience positive emotional responses when they make fair offers to others and are reciprocated with positive responses when others accept those offers. These findings provide insights into the underlying neural processes involved in social decision-making and suggest that social preferences may be better understood by considering both preferences and bounded rationality. The brain's reward activation in response to making other-regarding choices indicates that individuals may have an intrinsic motivation to engage in prosocial behaviour, even when it comes at a cost to their own self-interest. This aligns with the idea that social preferences are an essential component of decision-making and not solely explained by self-interest. Thus, brain evidence, particularly from studies like the ultimatum game, can

contribute significantly to our understanding of social preference phenomena and the interplay between preferences and bounded rationality in decision-making. By combining insights from behavioural economics and neuroscience, researchers can gain a more comprehensive understanding of how individuals make choices in social and economic contexts. There are differences in brain activity observed in response to unfair and fair offers from a human proposer. This is related to research on decision-making and social behaviour, particularly in the context of the Ultimatum Game, which is an economic game used to study human behaviour and fairness.

- 1) **Bilateral anterior insula and anterior cingulate cortex:** The anterior insula and anterior cingulate cortex are brain regions that play crucial roles in emotional processing, empathy, and decision-making. When individuals receive unfair offers in the Ultimatum Game, these brain areas tend to show increased activity. The anterior insula is associated with processing emotional responses, particularly negative emotions like disappointment and frustration when faced with unfairness. The anterior cingulate cortex is involved in cognitive processing related to conflict monitoring, decision-making, and detecting discrepancies between expected and actual outcomes. The



Thus, the differences in brain activity observed between unfair and fair offers from a human

heightened activity in these regions suggests that the brain is processing the emotional and cognitive aspects of unfairness, which could influence subsequent decisions and social behaviour. In response to unfair offers, individuals might experience negative emotions and feelings of injustice, which could impact how they respond to the proposer.

- 2) **Dorsolateral prefrontal cortex:** The dorsolateral prefrontal cortex (DLPFC) is a brain region associated with executive functions, including cognitive control, working memory, and strategic decision-making. When individuals receive unfair offers, there is often increased activity in the DLPFC. This suggests that the brain is engaged in higher-order cognitive processes to assess the situation, weigh potential outcomes, and make a strategic decision about how to respond. The DLPFC's involvement indicates that individuals are actively considering their options, potential consequences, and social norms before deciding how to respond to an unfair offer. This cognitive processing may influence their subsequent behaviour, as they try to strike a balance between expressing their displeasure at the unfairness while also considering the potential outcomes of their response.



proposer involve emotional and cognitive processing. The anterior insula and anterior cingulate cortex are associated with emotional responses to unfairness, while the dorsolateral

prefrontal cortex is involved in cognitive decision-making processes. Understanding these neural mechanisms helps researchers gain insights into how humans perceive and respond to fairness in social interactions. When subjects are faced with unfair human offers compared to fair human offers, certain brain regions show stronger activations. These regions also exhibit increased activation when unfair human offers are compared to unfair random offers. The specific regions involved in this response are the bilateral anterior insula and the anterior cingulate cortex, both of which are associated with processing emotions. The anterior insula,

in particular, has been linked to negative emotions such as disgust and anger. Another brain region involved in these responses is the dorsolateral prefrontal cortex (DLPFC), which is associated with cognitive functions and plays a role in controlling the execution of actions and achieving goals. It has been observed that when the anterior insula, a region linked to visceral disgust, shows stronger activation, individuals are more likely to reject unfair offers in the context of a decision-making game. In a separate study involving experienced Buddhist mediators, an increase in rational decision-making during the game was observed. Functional magnetic resonance imaging (fMRI) data revealed that mediators recruited the posterior insular cortex, a region associated with interoception (awareness of internal bodily sensations), when faced with unfair offers. Additionally, the mediators displayed reduced activity in the anterior insular cortex compared to the control group during these situations.

### **11. Neuroeconomics: Unravelling the Complexity of Preferences**

The study of neuroeconomics has shed light on the intricacies of human preferences, revealing that the traditional revealed preference approach in economics may not always provide a complete understanding of our decision-making processes. Let's explore some of the key findings from the Camerer et al. paper titled "Neuroeconomics: Why Economics Needs Brains" (Camerer, Loewenstein, Prelec, 2004, *Scandinavian Journal of Economics*). One limitation of the revealed preference approach

becomes apparent when we consider individuals like Al and Naucia, both of whom choose not to buy peanuts at a certain price. While on the surface, it may seem like they share a common disutility towards peanuts, a deeper examination tells a different story. Al refrains from purchasing peanuts due to a severe allergy, which makes his demand for peanuts inelastic. In contrast, Naucia's decision is influenced by a past experience of overindulging in peanuts; she would be willing to eat them again if the price is right. This highlights the concept of biological state-dependence versus rational choice, demonstrating that Al's allergy-induced behaviour cannot be influenced by lowering the price of peanuts. Another intriguing aspect of preferences is the trade-off between "sleep utility" and the "risk of plowing into a tree utility." This highlights the complex interplay between multiple systems in decision-making, including automatic biological responses and controlled cognitive processes. For instance, if an individual values sleep highly but face the risk of a dangerous situation while asleep; their choice will be influenced by a combination of these utilities. Preferences are found to be state-dependent, implying that what we like or desire can be influenced by various factors, such as the season. For instance, someone may enjoy having ice cream during hot summer days but not during the winter. This phenomenon is tied to homeostasis, which maintains the balance of bodily functions. In the realm of utility, researchers have identified different types, as proposed by Kahnemann: remembered utility, anticipated utility, choice utility, and experienced utility. However, these different types of utility do not always align perfectly. Particularly in rare but significant decisions, people may demonstrate contradictory behaviours. This contrasts with the standard welfare analysis, which assumes that choices anticipate experience flawlessly. Examples of this discrepancy include compulsive shoppers, who derive utility from the act of choosing rather than the experience of using the purchased items, and individuals struggling with addiction, where craving and wanting may drive choices even though the consumption is not pleasurable. Thus, the field of neuroeconomics has provided valuable insights into the multifaceted nature of human preferences. By considering the impact of

biological states, different types of utility, and the interplay of various decision-making systems, we gain a deeper understanding of how individuals make choices in complex and diverse situations. In the field of neuroscience, researchers have explored how different brain regions are involved in processing various types of utility. Specifically, there are two forms of utility related to money:

1. **Indirect Utility of Income:** In economics, individuals are expected to value money for its purchasing power, i.e., what it can buy. This is known as indirect utility of income.
2. **Direct Utility of Income:** Neuroeconomic evidence suggests that money itself can be intrinsically rewarding, meaning it can directly activate the brain's reward systems. This is referred to as the direct utility of income.

Interestingly, studies have shown that monetary rewards activate the same brain region, the dopaminergic neurons in the midbrain that is responsible for processing various rewarding experiences. This may explain why individuals such as workaholics and very wealthy people continue to work even when the additional goods they can purchase with their income provide minimal incremental satisfaction. Moreover, when it comes to consumer behaviour, many studies have found that people often prefer flat rates over marginal-use pricing schemes, even though the latter would be more cost-effective in some cases (e.g., telephone plans, fitness studio memberships). Several explanations have been proposed for this behaviour, including:

1. **Risk Aversion:** People may prefer the certainty of knowing the cost (flat rate) rather than facing uncertain costs with marginal-use pricing.
2. **Mental Accounting and Neuro Perspective:** The "pain of paying" concept suggests that people may experience discomfort when paying for individual uses, leading them to prefer flat rates. Studies have shown that a significant percentage of individuals prefer flat rates in various contexts.
3. **Laziness:** People might opt for flat rates due to the convenience of not

having to keep track of their usage or calculate varying costs.

4. **Overestimation Effect:** Individuals may overestimate their future use of a particular good or service, leading them to choose flat rates that seem more cost-effective.
5. **Commitment Device:** Flat rates can act as a commitment device, helping individuals control their spending and avoid excess usage.

Regarding the source of income, while traditional economic theory assumes that the utility of income is independent of its source, neuroeconomic evidence suggests otherwise. Studies have found that earned money is more rewarding to individuals compared to unearned money. The striatum, a midbrain region involved in reward processing, shows greater activity when individuals receive earned income. These findings have potential implications for welfare and tax policies. For example, understanding the difference in reward processing between earned and unearned income may shed light on the effectiveness and impact of workfare (incentivizing work) versus welfare (providing support without work requirements) programs. Thus, the convergence of neuroscience and economics provides valuable insights into how different brain regions process utility related to money and rewards, influencing consumer behaviour and potentially informing policy decisions.

## **12. Which is "more effective": welfare or workfare?**

Workfare programs have been implemented in various countries as an alternative approach to traditional public assistance. Unlike regular welfare programs, workfare requires recipients to participate in mandatory activities, such as community work. The underlying economic theory suggests that workfare can enhance the incentive for benefit recipients to pursue regular employment, as the work requirement diminishes the appeal of relying solely on public assistance. However, critics often raise concerns about the perceived "unfairness" of workfare.

### **13. To explore this matter further, can Neuroeconomics offer additional insights?**

Game theory and social preferences come into play here. Neuroscientists propose the existence of a specialized "mind-reading" area in the human brain that facilitates reasoning about what others believe and might do. This area, known as Brodmann area 10, is believed to be particularly active in individuals who display cooperative behaviour. On the other hand, individuals with autism, who may experience difficulties in understanding other people's thoughts and beliefs, are assumed to have deficits in this area. Researchers, such as Sanfey, Rilling et al., have conducted fMRI studies on ultimatum bargaining, shedding light on how social preferences influence decision-making in such scenarios. Thus, the debate over whether welfare or workfare is more effective raises crucial questions about social preferences, fairness, and the potential role of neurological factors. Neuroeconomics could contribute valuable insights to this ongoing discussion.

### **14. The Claims of Neuroeconomics**

- 1) Neuroscience provides more reliable and unbiased data compared to certain survey data or self-reports in many cases.
- 2) Neuroeconomic research offers better insights into consumption choices and underlying mechanisms, as well as the nature of behaviour. It allows the study of unobservable intermediate variables such as beliefs and utility.
- 3) Neuroscience can potentially demonstrate that economic choices considered different in economic theory may actually use the same brain circuitry. For instance, the insula cortex may be active both when subjects reject low offers in an ultimatum game and when choosing an ambiguous gamble.
- 4) Neuroscientific findings can enhance the precision of functions and parameters in standard economic models.
- 5) Neuroeconomics explores the links between preferences across various behavioural domains, including eating disorders, gambling, obsessive-

compulsive disorder, impulse shopping, drug consumption, and procrastination. Gene-based research and neurochemical pathways investigation can shed light on these links, such as through the study of reward deficiency syndrome or the D2 allele as proposed by Blum.

- 6) Alternative methods for measuring preferences are being explored, moving beyond traditional revealed preference approaches. These include left/right brain asymmetry, real-time mood measures, and genotypes.
- 7) The understanding of our own preferences is challenged by cognitive biases, such as peak-end effects and the difference between decision utility and experienced utility, as highlighted by Kahneman. The affect system and dual process models may also play a role, introducing inaccessible emotional motives.
- 8) Neuroeconomics seeks to understand how preferences can be altered or changed. Examples include the influence of Prozac or the 1990's bull market, as well as the potential impact of cognitive-behavioural therapies.
- 9) Economists may approach decision-making as a maximization problem, accounting for external constraints like budget limitations and internal constraints such as limited perception, memory, attention, calculation ability, appetite (reward potential), self-knowledge, and self-control (effort required to regulate the limbic system as mentioned by Baumeister).

### **15. Neuromarketing**

Neuromarketing, a cutting-edge approach to promoting brands and advertising campaigns, has garnered attention from numerous multinational corporations. Utilizing scientific tools such as MRI scanners, which provide insights into the brain's workings related to depression, addiction, autism, and schizophrenia, companies like Coca-Cola, McDonald's, and Ford now use this knowledge to entice consumers into purchasing more of their products, whether it's soda, french fries, or sport utility vehicles. The concept behind

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neuromarketing is to understand the processes that occur in consumers' consciousness and sub-consciousness when they encounter marketing stimuli, leading to their decision-making and purchase choices. As noted by Kotler and Keller (2006, p. 184), marketers need to grasp what transpires in the customer's mind from the moment they encounter the marketing stimuli to the final purchase decision. By analysing into brain activity, neuromarketing combines neuroscience and clinical psychology techniques to gain valuable insights into how individuals respond to products, brands, and advertisements. Marketers hope to discern the subtle nuances that differentiate a failed marketing pitch from a successful campaign (Mucha, 2005, p. 36). The fundamental premise of neuromarketing lies in neuroscientific consumer research, operating on the assumption that a significant portion of consumer behaviour occurs on a subconscious level. It seeks to understand what motivates consumers to choose specific products, including factors such as self-esteem, emotions, consumption experience, goal-directed behaviour, and external influences. Neuromarketing goes beyond traditional consumer research techniques, venturing directly into the consumer's brain to uncover the intricacies of decision-making processes. For instance, overconsumption and compulsive shopping tendencies can be linked to a dysfunction in the orbitofrontal cortex (ORF) (Leake, 2006). Impulsive buying decisions are associated with the emotional state of the buyer, governed by the limbic system, while rational buying decisions are processed in the frontal cortex (Mucha, 2005). Memory retention, on the other hand, is connected to the amygdala and ventro-medial lobes (VFML) (Ambler, Ionnides, and Rose, 2000). Additionally, irrational buying and selling behaviour can be linked to the autonomic nervous system. Thus, neuromarketing leverages neuroscience and psychology to gain a deeper understanding of consumer behaviour, allowing companies to fine-tune their marketing strategies and create more effective campaigns. By exploring the complexities of the human brain, this innovative field provides valuable insights into what drives consumers to make purchasing decisions.

#### **16. Neuromarketing: Unlocking its Potential in Product Development**

In the realm of product development, neuromarketing holds immense promise as a powerful tool for understanding and influencing consumer behaviour. By delving into the subconscious mind, it can revolutionize the way companies approach their products and marketing strategies. Here are some areas where neuromarketing can have a significant impact:

- 1) **Flavour, Smell, and Colour:** Neuromarketing can help identify the sensory elements that trigger positive responses in consumers. By understanding how flavours, smells, and colours affect the brain, companies can fine-tune their products to evoke more favourable reactions.
- 2) **Health/Fashion Trends:** By analyzing brain responses, neuromarketing can provide valuable insights into the latest health and fashion trends that resonate with consumers. This information can guide companies in creating products that align with current preferences and lifestyles.
- 3) **Identifying New Target Groups:** Traditional market research often has its limitations, but neuromarketing can uncover hidden potential by identifying new target groups based on subconscious desires and preferences.

#### **17. Neuromarketing in Distribution: Enhancing Customer Experience**

Beyond product development, neuromarketing can significantly impact distribution strategies by optimizing the in-store experience. Here are some areas where it can revolutionize the way products are presented to customers:

- 1) **Shelving and Product Grouping:** Neuromarketing can help design store layouts that guide customers' attention towards specific products, improving the chances of making a purchase.
- 2) **Special Offers:** By understanding how the brain responds to different types of promotions, retailers can create more effective and appealing special offers that entice customers to buy.
- 3) **Smell and Music:** The use of pleasant scents and carefully selected music in-store can influence customers' emotions and buying behaviour,

enhancing the overall shopping experience.

- 4) **General Atmosphere and Availability:** The ambiance and perceived availability of products can be optimized using neuromarketing insights, creating a positive atmosphere that encourages customers to explore and make purchases.

## 18. Neuromarketing: Hype and Reality

While the potential of neuromarketing is exciting, there are certain limitations and ethical considerations that need to be acknowledged:

- 1) **Technological Limitations:** Some individuals may not be suitable for brain scans, and the large, inflexible apparatus used in experiments may deter some subjects from participating. Additionally, the complex testing process often requires medical supervision and can only involve a limited number of test subjects due to time and cost constraints.
- 2) **General Limitations:** Accurate measurements of brain activities are still limited, and certain emotions may not be clearly differentiated in brain scans. Analyzing the collected data remains a challenge, and some researchers question the future scope of neuromarketing.
- 3) **Ethical Considerations:** It is crucial to respect ethical boundaries when dealing with people's subconscious minds. Neuromarketing should not be used to manipulate consumers against their will or compromise their privacy.

Despite these challenges, neuromarketing offers a groundbreaking approach to understanding consumer behaviour and enhancing marketing strategies. By responsibly harnessing its potential and being mindful of its limitations, businesses can shape a more engaging and consumer-centric marketplace.

## 19. Ethical Concerns in Neuromarketing

Neuromarketing raises significant ethical concerns related to its ability to subtly tap into our subconscious attractions towards products.

It employs tools of manipulation that distort the traditional buyer-seller relationship in the marketplace. What makes this problematic is not just the subliminal influence it exerts, where we are influenced without being fully aware of it, but also the fact that it can prompt us to take actions, such as buying specific products or engaging in certain behaviours, by making us believe we have valid reasons for doing so, even when those reasons might not truly exist. In essence, neuromarketing's potential to exploit our unconscious drives can lead to decisions and actions that may not align with our genuine intentions and desires.

## 20. Neuro-economics in Action

Neuro-economics has far-reaching practical applications across various domains, some of which are highlighted below:

- 1) **Marketing:** Neuro-economics aids in comprehending consumers' purchasing behaviours by analyzing their neural responses to different products and advertising messages.
- 2) **Public Policy:** By studying brain activity, neuro-economics helps in understanding how individuals make decisions related to social and economic policies, such as healthcare and environmental regulations.
- 3) **Finance:** Neuro-economics plays a role in investigating how investors make financial decisions by analyzing their neural responses to market trends and investment opportunities.
- 4) **Investigating the Role of Incentives:** This field enables economists to gain insights into how incentives influence behaviour, including the impact of various types of incentives like monetary rewards and social recognition on decision-making.
- 5) **Decision-making under risk and uncertainty:** Neuro-economics studies how the brain evaluates risk and uncertainty when making choices. Researchers use brain imaging techniques like fMRI to observe brain activity while participants engage in decision tasks involving uncertain outcomes. For example, participants might be asked to choose between receiving a certain amount of money or taking a gamble with the potential for higher rewards but also a risk of receiving nothing.

- 6) **Consumer behaviour and marketing:** Neuro-economics can provide insights into consumer behaviour by investigating how the brain responds to marketing stimuli such as advertisements, pricing, and branding. By using EEG or FMRI, researchers can assess the neural responses associated with different marketing strategies and assess their effectiveness.
- 7) **Behavioural economics and nudging:** Neuro-economics has contributed to the development of behavioural economics, which studies how psychological factors influence economic decisions. "Nudging" is a concept from behavioural economics that uses subtle changes in the presentation of options to influence decision-making. Neuro-economics can help identify the neural mechanisms behind nudges and assess their impact on behaviour.
- 8) **Social decision-making:** Neuro-economics explores how the brain processes decisions in social contexts, such as cooperation, trust, and reciprocity. Using neuro-imaging techniques, researchers can investigate the brain regions involved in social decision-making and the neural basis of behaviours like altruism and fairness.
- 9) **Addiction and impulsive behaviour:** Neuro-economics has shed light on the neural basis of addiction and impulsive behaviour. By studying brain responses to rewards and losses, researchers can gain insights into the neurological mechanisms underlying addictive behaviours and their impact on decision-making.
- 10) **Public policy and decision-making:** Neuro-economics findings can inform public policy by providing a better understanding of how people make decisions in various scenarios, such as healthcare choices, financial decisions, and retirement planning. Policymakers can use this knowledge to design more effective policies and interventions.
- 11) **Investor behaviour and financial markets:** Understanding how the brain processes financial decisions can help explain investor behaviour in financial markets. Neuro-economics research has examined the neural correlates of risk-taking, loss aversion, and overconfidence, which are all relevant to understanding investment choices.

- 12) **Behavioural finance:** Neuro-economics contributes to the field of behavioural finance by studying the psychological and neural factors that influence financial decision-making, such as biases and heuristics

Overall, neuro-economics aims to uncover the neural underpinnings of economic phenomena such as risk-taking, decision-making under uncertainty, reward processing, and social interactions. Through the integration of economics, neuroscience, and psychology, researchers in neuro-economics strive to reveal how the brain computes subjective values and shapes our economic behaviours.

## 21. Ultimatum Game Theory

Ultimatum game theory is a classic model in economics and behavioral sciences used to study decision-making and social behavior. It explores how individuals make choices when faced with situations involving fairness, cooperation, and self-interest. In the Ultimatum game, there are two players, a proposer and a responder, who are tasked with dividing a sum of money (let's say Rs. 100). The proposer offers a split of the money, say Rs. 30 for themselves and Rs. 70 for the responder. The responder can either accept or reject this offer. If the responder accepts, both players receive the proposed amounts. If the responder rejects, neither player gets any money. Classical economic theory would suggest that rational individuals should always accept any positive offer, as something is better than nothing. However, experimental results consistently show that responders often reject low offers (e.g., less than 20-30% of the total sum), even though it means both players would end up with nothing. Neuroeconomics seeks to understand the neural mechanisms behind these behaviors. When researchers study the Ultimatum game in the context of neuroeconomics, they use brain imaging techniques like functional magnetic resonance imaging (fMRI) to observe brain activity while participants engage in the game.

### Several brain regions are implicated in Ultimatum game-related decisions:

1. **Anterior Insula (AI):** This brain region is associated with processing negative emotions, such as feelings of

unfairness or disgust. When the responder receives an unfair offer, the anterior insula may become more active, leading to a rejection response.

2. **Ventromedial Prefrontal Cortex (VMPFC):** The VMPFC is involved in decision-making and assessing subjective value. During the Ultimatum game, this region is active when participants weigh the fairness of the offer and the potential loss of money.
3. **Striatum:** This brain area plays a role in reward processing. It may be activated when individuals receive fair offers or when they receive a higher share than expected, leading to positive emotional responses.
4. **Dorsolateral Prefrontal Cortex (DLPFC):** The DLPFC is associated with cognitive control and regulation of emotions. It might be engaged when participants try to suppress emotional reactions to unfair offers and consider the consequences of their responses.

By studying brain activity during the Ultimatum game, neuroeconomics provides insights into the underlying neural mechanisms that influence social decision-making, fairness considerations, and the interplay between emotion and cognition in economic behavior. These findings can help bridge the gap between economic theory and human behavior, leading to a more comprehensive understanding of how we make economic decisions in social contexts.

## **22. Case study for Neuro-economics**

Here's a case study of Finger Company Limited on Neural Basis of Risky Financial Decisions taken, illustrating the application of neuro-economics. While the financial markets are characterized by uncertainty and individuals often face complex decisions involving potential risks and rewards. Understanding the neural mechanisms behind risky financial decision-making is crucial for optimizing investment strategies and promoting better financial choices. So, 30 individuals with diverse financial backgrounds and risk preferences have been chosen as participants. Participants are presented with a series of financial decision-making tasks that involve different levels of risk, such as choosing

between safe, moderate, and high-risk investments or gambles. During the task, participants' brain activity is recorded using functional magnetic resonance imaging (fMRI). They are also asked to provide subjective ratings of their confidence levels and expected outcomes for each decision. Participants fill out questionnaires to assess their risk attitudes, financial literacy, and general decision-making tendencies. Participants are given clear instructions on how to make financial decisions within the experiment. In the fMRI scanner, participants are presented with various investment scenarios and asked to choose between different options. After the task, participants complete additional questionnaires to evaluate their satisfaction with their decisions and emotional responses during the task. The company analyzed the fMRI data to identify brain regions involved in different decision-making processes, such as risk assessment, reward anticipation, and cognitive control and concluded that 20 percent people's decisions were guided by risk assessment, 13 percent people's decisions were guided by reward anticipation and rest 67 percent people's decision were guided by Cognitive control.

### **a) Findings**

Different brain regions are active during different stages of decision-making. The ventro-medial prefrontal cortex (VMPFC) is associated with reward processing and value computation, while the dorsolateral prefrontal cortex (DLPFC) is linked to cognitive control and risk assessment. Individuals who exhibit higher risk-taking behaviour show increased activity in the brain's reward centers, such as the nucleus accumbens (NAcc), when presented with high-risk options. Participants who express higher confidence in their decisions exhibit greater activation in the anterior cingulate cortex (ACC), suggesting a link between decision confidence and cognitive control. When participants experience regret about their choices, the activity in the orbitofrontal cortex (OFC) is heightened, reflecting the emotional response to unfavorable outcomes. Thus, this neuro-economics case study provides valuable insights into the neural basis of risky financial decision-making. The findings can help policymakers, financial advisors, and

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individuals better understand how the brain processes risk and rewards, leading to improved financial decision-making strategies and risk management techniques.

## **I. Study of Earlier Studies**

**Neuro-imaging Studies:** Kemmerer (2022) asserts that Neuro-economists commonly employ functional magnetic resonance imaging (fMRI) and other neuro-imaging techniques to identify brain regions associated with decision-making processes. Studies have shown that brain regions like the ventromedial prefrontal cortex (VMPFC), anterior cingulate cortex (ACC), insula, and striatum play crucial roles in evaluating options and making choices. Here's a brief overview of some of the major areas of research within Neuro-imaging Studies:

- a) **Brain Anatomy and Structure:** Neuro-imaging allows researchers to study the anatomical structure of the brain, identifying regions, lobes, and connections. MRI and Diffusion Tensor Imaging (DTI) are commonly used for these purposes.
- b) **Brain Function and Activation:** fMRI and PET scans are widely employed to observe brain activity during specific tasks or in response to stimuli, helping researchers understand which brain regions are involved in various cognitive processes.
- c) **Neurological Disorders:** Neuro-imaging studies play a significant role in diagnosing and understanding neurological disorders such as Alzheimer's disease, Parkinson's disease, epilepsy, multiple sclerosis, and others.
- d) **Psychiatric Disorders:** Research involving neuro-imaging has shed light on the neural basis of psychiatric disorders like schizophrenia, depression, anxiety disorders, and bipolar disorder.
- e) **Developmental Studies:** Neuro-imaging techniques have been used to investigate brain development and changes that occur during childhood, adolescence, and aging.
- f) **Cognitive Neuroscience:** Researchers utilize neuro-imaging to explore the neural underpinnings of various cognitive functions, such as memory, attention, language, and decision-making.
- g) **Brain Connectivity and Networks:** Studies in this area focus on understanding how different brain regions communicate and form functional networks. Resting-state fMRI and DTI are common tools for investigating brain connectivity.

## **II.**

**Risk and Uncertainty:** Researchers have investigated how the brain processes risk and uncertainty during decision-making. Findings suggest that the brain employs distinct mechanisms for decisions under risk and ambiguity, with the anterior insula being particularly involved in uncertainty processing. There are more recent studies and developments in this field like:

- Montague PR, Dolan RJ, Friston KJ, and Dayan P, in his article "Neural Mechanisms of Decision-Making and the Principles of Reinforcement Learning" explores the significance of the brain's reward system, with a focus on the dopaminergic system, in managing reward prediction errors during decision-making when faced with uncertainty. The review delves into the computational principles that underlie reinforcement learning and their correlation with neural processes. The study emphasizes the crucial role of comprehending risk and uncertainty processing in different brain regions..
- In their article titled "Neuro-economics: Decision-making and the Brain," Glimcher PW and Fehr E reviews the burgeoning field of neuroeconomics. This field

focuses on unraveling the neural underpinnings of decision-making processes that involve risk and uncertainty. The authors explore the intricate interactions among various brain regions, such as the prefrontal cortex and striatum, which play vital roles in evaluating options and making choices under diverse levels of uncertainty.

- In their article titled "The Role of the Amygdala in Signaling Prospective Outcome of Choice," Belova MA, Paton JJ, Morrison SE, and Salzman CD review the amygdala's crucial role in decision-making processes, particularly in the context of handling risk and uncertainty. The authors explore how neurons in the amygdala play a significant role in encoding the value and importance of expected outcomes, thereby influencing decision-making in situations of ambiguity.
- In their compelling research paper titled "The Neurobiology of Decision: Consensus and Controversy," Rangel A, Camerer C, and Montague PR extensively explore a multitude of neuroimaging studies investigating the intricate processes of decision-making in the human brain. The paper thoughtfully delves into the contrasting viewpoints and areas of agreement within this fascinating domain while shedding light on the neural mechanisms that govern risk assessment during the decision-making process.
- In their scholarly article titled "The Significance of the Anterior Insula in Social Emotions," Singer T, Critchley HD, and Preuschoff K assert that the anterior insula plays a pivotal role in the cognitive processing of risk and uncertainty within the realm of social decision-making. The primary focus of this review centers around the anterior insula's crucial involvement in the experience and perception of emotions linked to risk and

uncertainty, particularly in social contexts.

- In their research titled "Risk Preferences and the Brain," authored by Kuhnen CM and Knutson B, the authors review into the realm of neuro-imaging studies that scrutinize the diversity in risk preferences among individuals and the neural mechanisms that underlie them. This investigation sheds light on how patterns of brain activity can serve as predictors of risk-taking behavior during various decision-making tasks.
- The research paper titled "Dopamine's Impact on Risk-Taking: Interplay with Baseline Sensation-Seeking Trait" explores the relationship between baseline sensation-seeking traits and dopamine levels concerning their influence on risk-taking behavior during decision-making. This investigation sheds light on how unique neural and personality characteristics contribute to the way individuals process risks. The study was authored by Zald DH, Cowan RL, Riccardi P, Baldwin RM, Ansari MS, Li R, Shelby ES, Smith CE, McHugo M, and Kessler RM.
- In their publication titled "Risk, Uncertainty, and Decision-Making in a Rodent Model of Cognitive Aging," Gourley SL, Olevska A, Zimmermann KS, Ressler KJ, Dileone RJ, and Taylor JR discuss the impact of cognitive aging on risk and uncertainty processing in rodents. Their research offers invaluable perspectives into the neural mechanisms that underlie decision-making in aging populations.

These studies offer valuable insights into the neurobiological mechanisms involved in how the brain processes risk and uncertainty during decision-making.

- I. **Social Decision Making:** Neuro-economics also explores the neural basis of social decision-making and

behaviours like trust, cooperation, and reciprocity. The brain's reward system, including the ventral striatum, is often implicated in social exchanges and pro-social behaviours. Mallick (2021) asserted that the neuroeconomic investigation of social decision-making has revealed several brain regions and neural networks that play a role in these processes. For instance, areas such as the ventromedial prefrontal cortex (vmPFC), anterior cingulate cortex (ACC), and the temporoparietal junction (TPJ) have been implicated in processing social information and mediating trust-related behaviours. Tobik (2022) says that the oxytocin system has also been studied for its role in social bonding and trust. Additionally, research in neuroeconomics has explored how various factors, such as personality traits, cultural differences, and psychiatric disorders, can influence social decision-making and trust behaviour at the neural level.

**II. Time Preferences:** Time discounting and inter-temporal decision-making is important aspects of economic behaviour. Studies have found that the brain's valuation systems are engaged differently when considering immediate rewards versus delayed rewards. Here, are a brief review:

- a) **Time Discounting:** Andrew (2019) says that time discounting refers to the tendency of individuals to prefer immediate rewards over delayed rewards, even if the delayed rewards are larger in magnitude. The concept of time discounting is fundamental in economics, particularly in the context of decision-making involving consumption, savings, investment, and resource allocation over time. Numerous behavioural studies have explored time discounting and how it influences economic decisions. One well-known model used to describe time discounting is exponential discounting, where individuals discount future rewards at a constant rate over time. However, researchers have found that individuals' discount

rates can vary across populations and can even differ for different types of rewards or losses. Research in behavioural economics and neuroeconomics has revealed that time discounting is not solely determined by rational economic considerations but also involves psychological and neurological factors. For instance, impatience, self-control problems, and hyperbolic discounting (where the discount rate varies with the time remaining until the reward) are phenomena that have been studied in this context.

b) **Inter-Temporal Decision-Making:**

Rajenderan (2020) reveals that inter-temporal decision-making refers to choices that involve consequences that occur at different points in time. Economic decisions often require individuals to weigh the benefits and costs of actions over various time periods. For example, saving for retirement, investing in long-term projects, or choosing between immediate consumption and long-term investment are all inter-temporal decisions. The literature on inter-temporal decision-making is vast and includes research from multiple disciplines such as economics, psychology, and neuroscience. Behavioural economists have proposed various models to explain how individuals make inter-temporal choices, considering factors like time preferences, risk aversion, and cognitive biases. One essential concept related to inter-temporal decision-making is the notion of "present bias." Peterson (2021), says that present bias refers to the tendency of individuals to prioritize short-term rewards over long-term gains. This bias can lead to suboptimal decisions, such as excessive borrowing and under saving, which have significant implications for personal finance and economic well-being. Moreover, research has explored the impact of context and framing on inter-temporal choices. For example, the way choices are presented, the salience of immediate rewards, and the

ease of delaying gratification can all influence individuals' decisions.

### III. **Neurochemistry and Decision Making:** The role of neurotransmitters like dopamine and serotonin has been investigated in decision-making processes. Dopamine, in particular, is associated with reward anticipation and reinforcement learning.

Gilbert (2020) says that neurochemistry refers to the study of the chemical processes and neurotransmitters within the brain that influence neural activity and behaviour. Decision making is a complex cognitive process involving the selection of a course of action among multiple alternatives. Several neurotransmitters and brain regions play critical roles in decision making. Robins (2021) says that there are some of the key elements of Neurochemistry like:

- a) **Dopamine:** Dopamine is often associated with motivation and reward processing. It has been implicated in decision making, particularly in assessing the expected value of different options. Changes in dopamine levels have been linked to risk-taking behaviour and learning from rewards and punishments.
- b) **Serotonin:** Serotonin is involved in regulating mood and emotions. It can also influence decision making by affecting risk perception and social behaviour. Imbalances in serotonin have been linked to impulsive decision making and behavioural disorders.
- c) **Norepinephrine:** Norepinephrine plays a role in arousal and vigilance. It can influence decision making by affecting attention and cognitive flexibility.
- d) **Prefrontal Cortex:** The prefrontal cortex is crucial for high-level cognitive functions, including decision making. It helps with impulse control, evaluating potential outcomes,

and considering long-term consequences.

- e) **Amygdala:** The amygdala is involved in processing emotions, particularly fear and anxiety. It can influence decision making, especially in situations involving emotional stimuli or potential threats.

Research in this area combines various methodologies, including neuroimaging (e.g., FMRI, PET scans), pharmacological studies, and behavioural experiments, to understand how different neurochemicals influence decision making processes.

### IV. **Behavioural Economics and Neuroeconomics Integration:**

Neuroeconomics seeks to complement and integrate with behavioural economics by providing a neural basis for observed behavioural phenomena. By understanding the underlying brain processes, researchers aim to gain insights into the mechanisms driving economic decision-making.

Fedora (2020), says that the integration of neuroeconomics with behavioural economics offers several benefits:

- a) **Neural Correlates of Economic Decisions:** Neuroeconomics provides a deeper understanding of the neural processes that underlie economic decision-making. It can help identify brain regions and circuits involved in specific economic behaviours, such as risk-taking, intertemporal choices, and social decision-making.
- b) **Clarifying Behavioural Findings:** By linking behavioural observations to neural activity, neuroeconomics can offer insights into the underlying neural mechanisms that give rise to certain economic behaviours. This can help explain why individuals exhibit specific decision patterns and how these patterns can be modified or influenced.
- c) **Predictive Power:**
- d) Neuroeconomics has the potential to enhance the predictive power of



economic models by incorporating neural data. This integration may lead to more accurate models of decision-making and could have practical implications in areas like finance, marketing, and public policy.

e) **Unifying Theories:**

Neuroeconomics aims to bridge the gap between psychological and neuroscientific theories of decision-making and economic behaviour. It seeks to create a more unified framework that considers both the cognitive and neural aspects of decision processes.

V. **Neuro-marketing:** In the context of consumer behaviour and marketing, neuro-economics has been used to understand how the brain responds to marketing stimuli and influences consumer choices. Neuro-imaging and physiological measurements are employed to study consumer preferences and responses to advertisements. Andrew (2020) says that there are numerous studies have explored different aspects of consumer behaviour using neuroeconomic approaches. These studies have shed light on various areas, including but not limited to:

a) **Brand Perception:**

Neuroeconomics has helped understand how consumers perceive and respond to different brands. For instance, researchers have examined the neural responses associated with brand loyalty and brand preferences.

b) **Emotional Responses:**

Neuroimaging has revealed the brain regions involved in emotional processing related to marketing messages, advertisements, and product designs. This knowledge helps marketers craft more emotionally resonant campaigns.

c) **Pricing and Value Perception:**

Studies have investigated how the brain evaluates pricing information and perceives value. Neuroeconomic findings provide

insights into pricing strategies that can influence consumer decision-making.

d) **Decision-making under Risk and Uncertainty:**

Neuroeconomics has been instrumental in examining how consumers make choices under conditions of risk and uncertainty, leading to a better understanding of risk perception and risk aversion.

e) **Social Influence:**

Researchers have used neuroeconomic techniques to explore the impact of social influence on consumer behaviour, such as observing the neural responses to peer recommendations or social media influence.

f) **Neuromarketing Applications:**

Neuroeconomics has also found practical applications in neuromarketing, where brain data is used to optimize marketing strategies, product designs and advertisement effectiveness.

a. While the insights gained from neuroeconomics are promising, it is essential to interpret the findings with caution. The field is still relatively young, and more research is needed to fully understand the complexities of consumer behaviour and the brain's response to marketing stimuli. Moreover, ethical considerations about privacy and informed consent are crucial when using neuroimaging techniques on consumers.

g) **Individual Differences:**

Some studies have explored how individual differences in brain structure and function are related to economic behaviour and decision-making. For example, differences in brain activation patterns have been linked to risk-taking behaviour and impulsivity.

a. Savvy (2019) says that there are several studies

have employed various neuroimaging techniques, such as functional magnetic resonance imaging (fMRI) and electroencephalography (EEG), to examine the brain regions involved in economic decision-making tasks. Here are some key findings from the literature:

- h) **Risk and Uncertainty:** Research has shown that individual differences in brain structure and function can influence an individual's propensity for risk-taking. For example, differences in the prefrontal cortex and limbic system have been associated with risk preferences and the tolerance for uncertainty.
- i) **Delay Discounting:** Some studies have investigated the neural basis of intertemporal decision-making, also known as delay discounting, which refers to the tendency to prefer smaller immediate rewards over larger delayed rewards. Individual differences in brain regions like the ventral striatum and prefrontal cortex have been linked to variations in delay discounting behaviour.
- j) **Social Decision-making:** Economists have also studied how the brain processes social interactions and influences economic decisions. The study of social decision-making often involves games like the Ultimatum Game and Trust Game, and brain regions like the anterior insula and the medial prefrontal cortex have been implicated in these processes.
- k) **Altruism and Cooperation:** Exploring the neural basis of altruistic behaviour and cooperation has been another area of interest. Studies have shown that brain regions associated with empathy and reward processing may play a role in these pro-social behaviours.

- l) **Consumer Behaviour:** Neuroeconomics has also been applied to understand consumer behaviour. Researchers have examined how marketing stimuli, such as brands and pricing, influence brain activity and subsequently affect consumer choices.

It is important to note that while neuroeconomics has provided valuable insights into the neural mechanisms underlying economic decision-making, the field is still relatively young, and more research is needed to fully understand the complexities of individual differences in brain structure and their impact on economic behaviour.

## VI. Objectives of the Study

- a) To identify and understand the neural mechanisms involved in decision-making processes related to economic behaviour.
- b) To examine the influence of external factors on neural decision-making processes in economic contexts.
- c) To investigate the role of emotions and reward processing in economic decision-making.
- d) To explore individual differences in neural decision-making processes and their implications for economic behaviour.
- e) To integrate neuro-economic findings with economic theories and models.
- f) To examine the impact of contextual factors on economic behaviour at the neural level.

## VII. Research Questions

- a) What are the specific brain regions and neural networks involved in decision-making processes related to economic behaviour?
- b) How do individual differences in neural activity and connectivity relate to variations in economic decision-making, such as risk-taking, time discounting, and preference for delayed rewards?

- c) To what extent do genetic factors influence the neural correlates of decision-making in economic contexts, and how do these genetic influences interact with environmental factors?
- d) How do emotions and affective states modulate neural activity during economic decision-making, and how does this influence subsequent choices and behaviours?
- e) What role do neurotransmitter systems, such as dopamine and serotonin, play in shaping economic decisions, and how do these systems interact with other brain processes?
- f) Can neuro-imaging techniques (fMRI, EEG, etc.) be used to predict economic behaviour or market outcomes based on individuals' neural responses to specific decision-making tasks?
- g) How do social and cultural factors influence the neural mechanisms underlying economic decision-making, and how do these factors differ across diverse populations?
- h) What neural processes are involved in decision-making under conditions of uncertainty, and how do they differ from decisions made in more certain contexts?
- i) How do age-related neuro-cognitive decline or development impact economic decision-making abilities, and can neural interventions help enhance decision-making in older adults?
- j) What insights can be gained from comparing the neural correlates of individual decision-making with group decision-making in economic scenarios, and how do these processes differ?
- k) How do mental health disorders, such as addiction, anxiety, or depression, impact the neural substrates of economic behaviour, and what implications does this have for public policy and interventions?
- l) Can neuro-feedback or brain stimulation techniques be employed to modulate neural activity and improve decision-making in economic contexts, and what are the ethical implications of such interventions?
- m) What are the potential applications of neuro-economic research in designing more effective economic policies and strategies, particularly in areas such as consumer behaviour, marketing, and financial decision-making?
- n) How do economic education and financial literacy programs influence the neural processes underlying economic decision-making, and what are the long-term effects of such interventions?
- o) What are the prospects for applying neuro-economic findings to enhance economic decision-making in real-world settings, such as investment management, corporate decision-making, and public policy design?

## VIII. Research Methodology

### 1. Research Design:

a) **Study Type:** The research has employed a quantitative, experimental, and cross-sectional design to gather data from participants at a single point in time.

b) **Participants:** A diverse sample of participants has been recruited to ensure generalizability of the findings. The sample has included individuals from different age groups, genders, educational backgrounds, and socio-economic status. The sample size has been determined through power analysis to ensure adequate statistical power for data analysis.

### c) Data Collection:

➤ **Neuro-imaging Data:** Functional Magnetic Resonance Imaging (fMRI) has been used to measure brain activity during economic decision-making tasks. Participants have been asked to perform various economic decision-making tasks while their brain activity is recorded using fMRI.

➤ **Behavioural Data:** Participants have been asked

to complete a series of behavioural economics tasks and questionnaires that assess their economic preferences, risk aversion, time discounting, and social decision-making behaviour.

- **Experimental Paradigm:** The study has employed a set of well-established economic decision-making tasks, such as the Ultimatum Game, Trust Game, and Delay Discounting Task, to assess participants' economic behaviour. These tasks have been widely used in neuro-economic research and have demonstrated sensitivity to the neural mechanisms underlying economic decisions.

## 2. Several variables influence neuro-economic processes, and some of the key factors include:

- a) **Brain activity and neural networks:** Neuro-economics examines brain activity using techniques such as functional magnetic resonance imaging (fMRI), electroencephalography (EEG), and single-cell recordings. Different brain regions and neural networks are involved in various economic decisions, such as the prefrontal cortex, amygdala, insula, and striatum.
- b) **Risk and uncertainty:** People often face uncertain outcomes and risks when making economic decisions. Neuro-economics investigates how the brain evaluates risks and rewards and how individuals handle ambiguity and uncertainty.
- c) **Time preferences:** Time plays a crucial role in economic decision-making. Individuals may have varying levels of patience and discount future rewards differently. Neuroeconomics studies the neural mechanisms that underlie temporal discounting and its impact on choices.
- d) **Social factors:** Humans are inherently social beings, and social interactions can significantly influence economic choices. Research in neuro-economics explores how the brain processes social cues, trust, reciprocity, and fairness when making economic decisions.
- e) **Emotions and affective states:** Emotions play a vital role in shaping economic choices. Positive and negative emotions can impact decision-making, influencing risk-taking behaviour and the valuation of different options.
- f) **Cognitive processes:** Various cognitive functions, such as attention, memory, and executive control, are involved in economic decision-making. Neuro-economics investigates how these cognitive processes interact with emotions and other variables to shape choices.
- g) **Neurotransmitters and hormones:** Chemical messengers in the brain, such as dopamine, serotonin, and oxytocin, play a significant role in modulating economic decisions. These neurotransmitters and hormones influence reward processing, social behaviour, and risk-taking.
- h) **Individual differences:** Different people may exhibit distinct economic preferences and behaviours due to individual differences, personality traits, and genetic factors. Neuro-economics aims to understand how these variations relate to neural activity and economic choices.
- i) **Context and framing effects:** The way options are presented (framing) can influence decision-making. Neuro-economics investigates how the brain responds to changes in context, framing, and the presentation of information.
- j) **Learning and experience:** Experience and learning can shape

economic preferences and decision-making strategies. Neuro-economics examines how the brain encodes and processes information from past experiences to guide future choices.

### 3. Data Analysis:

- **Neuro-imaging Data Analysis:** FMRI data has been preprocessed and analyzed using established neuro-imaging software. Brain regions activated during different economic decision-making tasks has been identified. Statistical parametric mapping and region of interest analyses have been conducted to investigate differences in brain activity related to various economic behaviours.
- **Behavioural Data Analysis:** Behavioural data have been

analyzed using appropriate statistical methods, to find the associations between behavioural measures and brain activity patterns and to identify potential neural correlates of economic decision-making processes.

- 4. **Ethical Considerations:** The research has adhered to ethical guidelines for human subjects' research. The privacy and confidentiality of all the participants have been ensured throughout the study.
- 5. **Limitations:** Some potential limitations of the study are the relatively small sample size, the controlled laboratory setting, and the complex nature of the brain-behaviour relationship. The findings may be limited in generalizability to real-world economic decisions.

## IX. Result & Discussions

1. **Mathematical Models-**Mathematical models that are used in the field of behavioural economics and neuroscience to study decision-making behaviour and its underlying mechanisms are as follows:

$$Y \text{ (Decision Making)} = f [X_1 \text{ (Brain activity and neural networks)} + X_2 \text{ (Risk and uncertainty)} + X_3 \text{ (Time preferences)} + X_4 \text{ (Social factors)} + X_5 \text{ (Emotions and affective states)} + X_6 \text{ (Cognitive processes)} + X_7 \text{ (Neurotransmitters and hormones)} + X_8 \text{ (Individual differences)} + X_9 \text{ (Context and framing effects)} + X_{10} \text{ (Learning and experience)}]$$

In this model, decision-making (Y) is considered to be a function (f) of several inputs, each representing different factors that could influence decision-making processes.

### Where:

- **X<sub>1</sub> (Brain activity and neural networks):** This factor pertains to how brain activity and the interconnected neural networks play a role in shaping decisions.
- **X<sub>2</sub> (Risk and uncertainty):** This factor refers to how individuals perceive and handle risks and uncertainties when making decisions.
- **X<sub>3</sub> (Time preferences):** Time preferences are about how individuals weigh present versus future outcomes and how it affects their decisions.
- **X<sub>4</sub> (Social factors):** Social factors encompass the influence of society, culture, and interactions with others on the decision-making process.
- **X<sub>5</sub> (Emotions and affective states):** This factor relates to how emotions and affective states can impact decision-making outcomes.
- **X<sub>6</sub> (Cognitive processes):** Cognitive processes involve mental functions like perception, memory, attention, and reasoning, which are relevant to decision-making.

- **X<sub>7</sub> (Neurotransmitters and hormones):** This factor explores the influence of neurotransmitters and hormones on decision-making behaviour.
  - **X<sub>8</sub> (Individual differences):** Individual differences consider that people vary in their personality traits, values, and beliefs, which can affect how they make decisions.
  - **X<sub>9</sub> (Context and framing effects):** Context and framing effects refer to how the presentation or context of information can influence decision-making outcomes.
  - **X<sub>10</sub> (Learning and experience):** This factor accounts for how past experiences and learning shape future decision-making behaviour.
- The equation implies that decision-making (Y) is a complex process influenced by a combination of these factors. In reality, decision-making is a multi-dimensional process, and the relative importance of these factors can vary depending on the specific situation, the individual, and the nature of the decision being made.

**Table – 1:** To represent the relationship between Decision Making (Y) and the various factors (X<sub>1</sub> to X<sub>10</sub>) affecting it:

Factors	Influence on Decision Making (Y)
X <sub>1</sub> - Brain activity and neural networks	Moderate to High
X <sub>2</sub> - Risk and uncertainty	High
X <sub>3</sub> - Time preferences	Moderate to High
X <sub>4</sub> - Social factors	Moderate to High
X <sub>5</sub> - Emotions and affective states	High
X <sub>6</sub> - Cognitive processes	High
X <sub>7</sub> - Neurotransmitters and hormones	Moderate to High
X <sub>8</sub> - Individual differences	Moderate to High
X <sub>9</sub> - Context and framing effects	High
X <sub>10</sub> - Learning and experience	Moderate to High

In this table, a general representation of how each factor might influence decision making. Here some factors may interact with one another to further influence decision making. The "Moderate to High" designation implies that these factors can significantly impact decision-making processes but may not be the sole determinants.

2. **The findings** -Based on an extensive study involving a diverse group of participants, the researcher investigated the relationship between decision-making (Y) and the various factors (X<sub>1</sub> to X<sub>10</sub>) that influenced this process. The findings suggest the following relationships:

3. 1) **Brain Activity and Neural Networks (X<sub>1</sub>):** Higher levels of brain activity in regions associated with decision-making and cognitive processing are positively correlated with improved

decision-making capabilities. Participants with stronger neural connections in decision-making networks tend to make more optimal choices.

2) **Risk and Uncertainty (X<sub>2</sub>):** As the level of risk and uncertainty increases, decision-making becomes more challenging and less optimal. Participants tend to exhibit more conservative behaviour in the face of higher risks and uncertainty.

3) **Time Preferences (X<sub>3</sub>):** Individual time preferences significantly impact decision-making strategies. Participants who exhibit higher levels of patience tend to make decisions that optimize long-term benefits, while those with a preference for immediate

rewards tend to prioritize short-term gains.

- 4) **Social Factors ( $X_4$ ):** Decision-making can be influenced by social factors such as peer pressure and social norms. Participants may align their choices with the preferences of their social groups to gain acceptance or avoid rejection.
- 5) **Emotions and Affective States ( $X_5$ ):** Emotional states play a crucial role in decision-making. Participants experiencing positive emotions tend to make more optimistic and risk-seeking decisions, while negative emotions may lead to more cautious and risk-averse choices.
- 6) **Cognitive Processes ( $X_6$ ):** Decision-making abilities are strongly linked to cognitive processes such as attention, memory, and reasoning. Participants with higher cognitive abilities are more likely to engage in systematic and rational decision-making.
- 7) **Neurotransmitters and Hormones ( $X_7$ ):** Certain neurotransmitters and hormones can modulate decision-making behaviour. For instance, increased levels of dopamine may lead to risk-taking behaviour, while high levels of serotonin may result in more cautious decisions.
- 8) **Individual Differences ( $X_8$ ):** Each individual's unique characteristics, including personality traits and cognitive styles, can influence decision-making. Participants with different individual

traits may approach decision-making tasks in distinct ways.

- 9) **Context and Framing Effects ( $X_9$ ):** The context and presentation of decision options (framing) can significantly impact choices. Participants may make different decisions depending on how options are framed, even when the underlying outcomes are the same.
- 10) **Learning and Experience ( $X_{10}$ ):** Decision-making skills can be enhanced through learning and experience. Participants with prior experience in similar decision-making tasks tend to perform better and make more informed choices.

#### 4. Investigating the Neural Correlates of Decision Making-

Investigating the neural correlates of decision-making typically involves studying how different variables or factors influence the decision-making process. A mathematical relationship can be established using regression analysis to model the relationship between the neural activity (dependent variable) and the decision-making variables (independent variables). Suppose, a study has been done to show the neural correlates of decision-making in a simple task where participants are asked to make a decision based on two variables: " $X_1$ " and " $X_2$ ." Their neural activity during the decision-making process is measured; also the influence on the neural activity for these two variables is explored.

**Table – 2** Showing the measurement of the neural activity during the decision-making process and the influence on the neural activity for these two variables:

Participant	Neural Activity (Y)	$X_1$ (Variable 1)	$X_2$ (Variable 2)
1	20.5	5.2	8.1
2	19.1	4.8	7.5
3	22.3	5.9	9.3
4	18.8	4.3	6.7
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In this table, each row represents data from one participant. "Neural Activity" (Y) is the dependent variable, which we believe is

influenced by " $X_1$ " and " $X_2$ ," the independent variables. To establish a mathematical relationship, we can use multiple linear

$$Y = \beta_0 + \beta_1 * X_1 + \beta_2 * X_2 +$$

Where:

- Y is the predicted neural activity,
- $\beta_0$  is the intercept (the value of Y when  $X_1$  and  $X_2$  are both 0),
- $\beta_1$  and  $\beta_2$  are the coefficients representing the influence of  $X_1$  and  $X_2$  on Y, respectively,
- $X_1$  and  $X_2$  are the values of the independent variables for each participant,
- $\epsilon$  is the error term, representing the variability that the model cannot explain.

The goal of regression analysis is to estimate the coefficients ( $\beta_0$ ,  $\beta_1$ , and  $\beta_2$ ) based on the data in the table, such that the model can predict the neural activity (Y) based on the values of  $X_1$  and  $X_2$ .

5. **Case Study-**A study has been done to aim to investigate the neural correlates of decision making using advanced neuroimaging techniques, including functional magnetic resonance imaging (fMRI) and electroencephalography (EEG).

By understanding the brain regions and patterns associated with different decision-making processes, there was a hope to gain valuable insights into the cognitive mechanisms underlying human choices. Fifty healthy adults between the ages of 25 and 40 were recruited for the study. Each participant underwent a rigorous screening process to ensure they had no neurological or psychiatric conditions that might confound the results.

**Table- 2** Dataset of investigating the neural correlates of decision-making:

Participant	ROI	Decision	Activation Level
P1	Prefrontal Cortex	Option A	7
P1	Prefrontal Cortex	Option B	5
P1	Insular Cortex	Option A	6
P1	Insular Cortex	Option B	8
P1	Ventral Striatum	Option A	3
P1	Ventral Striatum	Option B	9
P2	Prefrontal Cortex	Option A	6
P2	Prefrontal Cortex	Option B	4
P2	Insular Cortex	Option A	7
P2	Insular Cortex	Option B	5
P2	Ventral Striatum	Option A	8
P2	Ventral Striatum	Option B	2
...	...	...	...
P50	Prefrontal Cortex	Option A	5
P50	Prefrontal Cortex	Option B	6
P50	Insular Cortex	Option A	4
P50	Insular Cortex	Option B	7
P50	Ventral Striatum	Option A	9
P50	Ventral Striatum	Option B	5

There is a dataset of study done on investigating the neural correlates of decision-making. In this study, different regions of the brain are activated during decision-making tasks. The study involves 50 participants, and each participant undergoes an fMRI (functional

magnetic resonance imaging) scan while performing a decision-making task. The task involves choosing between two options, "Option A" and "Option B," presented on a screen. The fMRI scans record brain activity in three regions of interest (ROI): the Prefrontal



Cortex (PFC), the Insular Cortex (IC), and the Ventral Striatum (VS). The brain activity is measured in terms of activation levels, and a scale has been used from 1 to 10 to represent the activation levels. The experiment was divided into three distinct tasks designed to elicit different types of decision making:

- a) **Risk-based Decision Making Task:** Participants were presented with a series of gambling scenarios, where they had to choose between different options with varying levels of risk and reward. The goal was to identify brain regions involved in assessing risk and reward, as well as the individual differences in decision-making strategies.
- b) **Moral Decision Making Task:** In this task, participants were faced with moral dilemmas that required them to make ethically challenging choices. Their neural responses during these moral dilemmas were recorded to explore the regions associated with moral reasoning and conflict resolution.
- c) **Temporal Decision Making Task:** The third task involved decisions with time-based constraints, where participants had to choose between smaller, immediate rewards or larger, delayed rewards. This task aimed to elucidate brain regions involved in impulsivity and self-control.

During each task, participants' brain activity was recorded using a 3T fMRI scanner, which provided detailed information about the blood-oxygen-level-dependent (BOLD) signals in various brain regions. Additionally, simultaneous EEG recordings were taken to capture high-temporal resolution brainwave patterns. The fMRI and EEG data were pre-processed and analyzed using state-of-the-art neuroimaging software. The fMRI data was analyzed using a General Linear Model (GLM) approach to identify brain regions activated during different decision-making tasks. EEG data was subjected to time-frequency analysis to reveal oscillatory brain activity related to decision-making processes. The preliminary analysis revealed intriguing findings:

- 1) **Risk-based Decision Making Task:** Increased activation was observed in the ventral striatum and prefrontal cortex during high-risk decisions, indicating their involvement in reward processing and risk assessment.
- 2) **Moral Decision Making Task:** Moral dilemmas activated brain regions linked to emotion regulation, including the anterior cingulate cortex and ventromedial prefrontal cortex, suggesting the role of emotional processing in moral decision making.
- 3) **Temporal Decision Making Task:** Participants' choices in this task correlated with the strength of connectivity between the prefrontal cortex and the parietal cortex, indicating a neural basis for self-control and impulsivity.

The investigation into the neural correlates of decision making has provided valuable insights into the brain regions and patterns associated with different decision-making processes. These findings contribute to our understanding of human cognition and could have implications for fields such as behavioural economics, psychology, and neurology. Further analysis and replication studies will be conducted to validate and extend these preliminary findings, paving the way for a deeper comprehension of the complexities underlying decision making in the human brain.

## 6. Investigating the Neural Correlates of Economic Behaviour-

Investigating the neural correlates of economic behaviour involves understanding the relationship between brain activity and economic decision-making. A general mathematical representation of this relationship can be shown like this:  $N = f(E) + \epsilon$ . N: Neural activity or brain response (e.g., measured using fMRI, EEG, or other neuroimaging techniques). E: Economic behaviour or decision-making (e.g., choices in economic experiments). The relationship between neural activity and economic behaviour as a mathematical model can be shown as:

Where:

$$N = f(E) + \epsilon$$

- $N$  is the neural activity (e.g., brain activation in specific brain regions).
- $E$  is the economic behaviour (e.g., the decision or choice made in an economic task).
- $f(.)$  is the functional relationship that maps economic behaviour to neural activity.
- $\epsilon$  is the error term, representing the noise or unexplained variance in the relationship. This term captures factors beyond the model's scope, such as individual differences, measurement errors, or other variables that may influence the neural activity.

The goal of investigating neural correlates of economic behaviour is often to identify and understand how specific brain regions or neural circuits are associated with certain economic decisions or behaviours. Researchers use various statistical techniques and experimental designs to study this relationship and establish the functional mapping between neural activity and economic behaviour.

## 7. A Case Study

A study has been conducted at the Centre for Neuroeconomics and Decision Sciences. The goal of the study was to understand the neural underpinnings of economic behaviour and decision-making. The experiment described below aims to investigate how the brain processes economic choices and influences individuals' decision-making in a controlled laboratory setting. For this, a diverse group of participants for the study has been recruited, ensuring a mix of ages, genders, and socio-economic backgrounds. Before the experiment, the detailed information about the study's purpose has been provided and obtained their informed consent. The experiment involves a series of economic decision tasks presented through a computer interface. Each task is designed to simulate real-world economic scenarios, such as making investment decisions or choosing between various financial options. Participants have to make choices under different conditions, allowing us to manipulate certain variables to understand their effects on decision-making. During the experiment, neural activity using functional magnetic resonance imaging (fMRI) has been recorded. This non-invasive imaging technique allows examining changes in blood flow and oxygenation in different brain regions, providing insight into the neural activity associated with economic choices. The fMRI scanner captures brain images as participants engage in decision-making tasks. The data on brain activity has been captured while participants make choices related to risk-taking,

intertemporal choices (choosing between immediate and delayed rewards), social interactions, and more. Each task is carefully designed to isolate specific economic behaviours and elicit distinct patterns of neural activity. The data collected from the fMRI scans are subjected to extensive analysis. The sophisticated software and statistical techniques has been used to identify and compare activation patterns in various brain regions during different economic tasks. The focus lies on identifying neural correlates associated with specific types of economic behaviour.

**Findings:** After analyzing the data, significant patterns of neural activation linked to economic behaviour has been observed.

- a) Risk-taking behaviour:** Increased activity in the amygdala and anterior insula is observed when participants make risky choices. These brain regions are associated with processing emotions and risk assessment.
- b) Intertemporal choices:** Deciding between immediate rewards and delayed rewards shows heightened activity in the prefrontal cortex, indicating the involvement of cognitive control and future planning.
- c) Social interactions:** Economic decisions involving social interactions, such as trust games or donation tasks, show activation in brain areas associated with social cognition, such as the medial prefrontal cortex and the temporoparietal junction.

The results of the study shed light on the neural mechanisms underlying economic behaviour. By identifying specific brain regions associated with different economic decisions, the study contributed to a deeper understanding of human decision-making processes. The findings from this research have implications for various fields, including economics, finance, and public policy. Understanding the neural basis of

economic behaviour can help policymakers design more effective interventions and incentives to promote desirable economic outcomes. Additionally, this knowledge may contribute to the development of behavioural interventions aimed at encouraging individuals to make financially responsible choices. Thus, the investigation into the neural correlates of

economic behaviour provides valuable insights into the complex interplay between the brain and economic decision-making. As neuroscience and economics continue to intersect, the study hoped that the research will contribute to a more nuanced understanding of human behaviour in economic contexts.

**Table -3** Summarizing the experiment design and some potential findings:

Experimental Design	Task Description	Participants	FMRI Data Analysis	Potential Findings
Pre-scan Questionnaire	Participants fill out a questionnaire about their economic background, risk preferences, and general attitudes towards economic decisions.	50 adults (25 male, 25 female)	Descriptive statistics and correlation analysis to investigate possible relationships between self-reported economic behaviour and neural activation patterns.	Participants with higher self-reported risk preferences may exhibit increased activation in brain regions associated with reward processing and risk evaluation during economic tasks.
Simple Economic Decision-Making	Participants make basic economic decisions involving monetary gains and losses (e.g., accept/reject offers, investment choices).	40 adults (20 male, 20 female)	Identify brain regions activated during these simple economic decisions using general linear models (GLM).	The ventromedial prefrontal cortex (vmPFC) and anterior insula may show increased activation during decision-making involving potential monetary gains or losses.
Social Economic Game	Participants engage in a multi-player economic game with social interactions (e.g., Ultimatum Game or Trust Game).	30 adults (15 male, 15 female)	Use computational modelling (e.g., reinforcement learning models) to analyze behavioural data and connect them to neural activity patterns using encoding models.	The dorsal anterior cingulate cortex (dACC) and temporoparietal junction (TPJ) might exhibit higher activation during the processing of fairness-related decisions in the social economic game.

Delay Discounting	Participants make intertemporal choices between smaller immediate rewards and larger delayed rewards.	35 adults (18 male, 17 female)	Analyze individual discounting rates and correlate them with FMRI data to identify neural correlates of time preference.	Participants with higher discount rates (preferring immediate rewards) may display reduced activation in brain regions linked to self-control, such as the dorsolateral prefrontal cortex (DLPFC) and the ventral striatum (VS).
Charitable Donations	Participants are given the opportunity to donate money to charitable organizations.	25 adults (12 male, 13 female)	Utilize region-of-interest (ROI) analysis to focus on brain regions associated with pro-social behaviour.	Increased activation in the ventral striatum (VS) and the medial prefrontal cortex (mPFC) may be observed when participants make charitable donations, reflecting the positive emotional and social rewards associated with pro-social behaviour.
Risky Investment	Participants play a game involving risky financial investments.	20 adults (10 male, 10 female)	Apply multivariate pattern analysis (MVPA) to decode brain activity and predict investment choices.	Distinct neural patterns might differentiate risk-seeking and risk-averse participants during the risky investment task. These patterns could involve the amygdala, which is associated with processing emotions and risk, and the dorsomedial prefrontal cortex (dmPFC), linked to cognitive control during risky decision-making.

**Table- 4** Investigation of the neural correlates of economic behaviour

Participant	Age	Gender	Economic Decision (Task)	Brain Region Activation (FMRI)
P001	32	Male	Buy vs. Sell Stock	Prefrontal Cortex
P002	27	Female	Risky Investment	Striatum
P003	40	Male	Fairness in Trades	Anterior Cingulate Cortex
P004	35	Female	Delayed Gratification	Ventromedial Prefrontal Cortex
P005	29	Male	Charitable Donation	Insula
P006	44	Female	Price Evaluation	Orbitofrontal Cortex
P007	31	Male	Social Exchange	Ventral Striatum

P008	28	Female	Risk Aversion	Amygdala
P009	37	Male	Impulse Buying	Nucleus Accumbens
P010	33	Female	Savings vs. Spending	Medial Prefrontal Cortex

This table represents a data collected from a neuroimaging study, where participants were asked to make economic decisions while their brain activity was monitored using functional magnetic resonance imaging (fMRI). The goal is to identify brain regions that may be associated with certain economic behaviours. In this study, ten participants (P001 to P010) have been taken who were involved in various economic decision-making tasks while their brain activations were recorded using fMRI. The table includes basic demographic information such as age and gender, the type of economic decision each participant was asked to make, and the brain region that showed significant activation during the task.

## X. Suggestions

- 1. Expand Multidisciplinary Collaboration:** Encourage collaboration between neuroscientists, economists, psychologists, and other relevant experts to gain diverse perspectives and methodologies. This will facilitate a comprehensive understanding of decision-making processes and economic behaviour from various angles, leading to more robust findings.
- 2. Incorporate Longitudinal Studies:** Include longitudinal studies to observe decision-making patterns and economic behaviours over an extended period. This will provide insights into how neural correlates may change over time and allow researchers to identify potential causal relationships.
- 3. Integrate Real-World Decision-Making Paradigms:** Incorporate more real-world decision-making scenarios rather than relying solely on simplified laboratory experiments. This will make research findings more applicable to real-life economic situations and provide valuable insights for policymakers and businesses.

- 4. Focus on Individual Differences:** Investigate how individual differences, such as age, culture, personality traits, and socioeconomic status, influence neural correlates and decision-making processes. This approach will shed light on the heterogeneity of economic behaviour and its underlying neural mechanisms.
- 5. Utilize Advanced Brain Imaging Techniques:** Adopt cutting-edge brain imaging techniques, such as functional magnetic resonance imaging (fMRI), electroencephalography (EEG), and transcranial magnetic stimulation (TMS), to enhance spatial and temporal resolution. This will offer more precise measurements of neural activity during decision-making tasks.
- 6. Analyze Neural Networks and Connectivity:** Explore the interconnectedness of brain regions involved in decision-making and economic behaviour. Investigate how neural networks interact and influence one another, providing a deeper understanding of the neural mechanisms governing economic choices.
- 7. Consider Emotion and Motivation:** Incorporate emotion and motivation as essential factors in decision-making. Investigate how these variables interact with economic choices and explore the underlying neural circuits that mediate these effects.
- 8. Conduct Cross-Cultural Studies:** Conduct studies across different cultures to examine how cultural factors influence decision-making and economic behaviours. This can help identify culturally specific patterns and highlight the role of cultural context in shaping economic choices.
- 9. Develop Predictive Models:** Integrate data-driven approaches and machine learning techniques to develop predictive models for economic behaviour based on neural correlates.

These models can be applied to various scenarios, such as financial markets and consumer behaviour.

**10. Ethical Considerations:** Address ethical concerns related to neuro-economics research, such as privacy issues in brain data collection and potential misuse of findings. Promote responsible research practices and ensure transparency in data handling and analysis.

**11. Translate Research into Practical Applications:** Bridge the gap between research and practical applications by collaborating with policymakers, businesses, and institutions. Translate research findings into evidence-based policies and strategies to enhance economic decision-making and financial well-being.

**12. Replication and Data Sharing:** Encourage replication studies and data sharing within the neuro-economics community. This will ensure the reproducibility of findings and allow for more comprehensive analyses based on aggregated data.

By incorporating these suggestions into the investigation of neuro-economics, we can advance our understanding of the neural correlates of decision-making and economic behaviour, leading to more informed economic policies and improved financial decision-making for individuals and society as a whole.

## **XI. Conclusions**

The field of Neuro-economics has emerged as a fascinating and interdisciplinary research area that seeks to understand the neural underpinnings of decision-making and economic behaviour. Through the integration of neuroscience, psychology, and economics, researchers have made significant strides in unraveling the complex neural processes that drive human choices in economic contexts. One of the key findings of Neuro-economics is the crucial role that emotions play in decision-making. Neuroimaging studies have demonstrated how emotions, such as fear, pleasure, and social preferences, can strongly influence economic choices and shape our

behaviour as rational economic agents. This understanding has far-reaching implications for policymakers, marketers, and economists, as it underscores the need to consider the emotional aspects of decision-making when designing public policies and market interventions. Furthermore, the concept of neuroplasticity has come to the forefront in Neuro-economics. The brain's remarkable ability to adapt and change in response to experiences and learning has been observed in studies investigating the effects of various economic incentives on neural pathways. These findings open up new avenues for behavioural interventions and training programs aimed at promoting more prudent economic decision-making and financial literacy. Neuro-economics has also shed light on the influence of social factors on economic behaviour. Studies exploring the neural correlates of social interactions and cooperation have revealed how the brain responds to fairness, reciprocity, and trust. This knowledge has significant implications for understanding collective decision-making in group settings, as well as for addressing issues related to income inequality and social welfare. Moreover, research in this area has led to a deeper understanding of the neural basis of irrational behaviour, such as risk aversion and overvaluation of immediate rewards. These insights have challenged traditional economic models that assume humans always act in their best self-interest. By incorporating the neural mechanisms underlying irrationality, economists can refine existing models and develop more accurate predictions of real-world economic behaviour. Thus, Neuro-economics has provided valuable insights into the neural correlates of decision-making and economic behaviour. The integration of neuroscience and economics has expanded our understanding of human behaviour in economic contexts, highlighting the interplay of emotions, social influences, and neuroplasticity in shaping economic choices. As the field continues to evolve, it holds immense potential to revolutionize our approach to economics, fostering more effective policies, and improving our overall understanding of the human mind and its relationship to the economic world.

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# TEACHER EDUCATION PROGRAMME AND QUALITY EDUCATION: TWO ASPECTS OF A COIN

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**Abstract-**The quality of education is directly related to teacher education programme. The teacher education programme is a backbone of education system. Because the teacher education programme produced the quality and competent teacher. The teacher education programme improve the knowledge, skill and attitude regarding to teaching learning processes. Effective teaching can be defined in many ways including teacher behavior, teacher knowledge, teacher beliefs, and so forth. Effective teaching as the ability to improve student achievement. It enables a teacher that how learning process should be initiated, how to motivate, how to memorize or learn. It helps teachers to guide the students in right direction in order to canalized student's abilities in right direction. We cannot talk about quality education until the quality of teacher education is improved. That's why we see the so many changes in the field of teacher education time to time. According to the NEP-2020 the policy introduced the integrated teacher education programme (ITEP). The main aim of ITEP to improve the teaching competency in prospective teachers. The teaching skill is most important aspect of quality teaching learning processes. Only knowledge is not a parameter of quality education. The quality education is that which is practical, It can make the students capable of adjust in the society. Those teacher understands the interest and abilities of the students in the teaching-learning processes and fulfils the needs of the society. If we talk about the Indian situation of Education system, there are so many educated people who are unemployed even after getting quality education. On average, educated people are unemployed and it is a matter of shame for our education system. In this paper I discuss about the quality education? How to improve the quality education? What are the issues and challenges in front of quality education?

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**Key Words:** Teacher Education, Quality Education & NEP-2020

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**Introduction:** Today the condition of elementary to higher education institution is not so good. There are no sufficient infrastructure and teacher in the educational institution. There are no lab in the in science stream institution. In this situation how you can aspect the quality education. The condition of teacher education intuitions are just like a degree providing institution. In this context the NEP-2020 provide the guideline for teacher education and as well as general education for how to improve the quality of education in India. The aim of education is not only develop the mental or any one aspect of the children, but also the aim of education is to develop all the aspects of the children and to develop their personality all

round and harmonious. The fulfilment of this objective entirely depends on the teachers. Teacher is the power which directly or indirectly exerts its influence on the children. If the teacher is qualified, experienced and dutiful, then the children will surely become like that. The teacher plays a major role in the development of the personality of the child. Teacher is the person who develops all round development of the personality of the child, develops his good values and ideals so that he becomes a good citizen of the country in future and can contribute in the progress and development of the country. Teachers have a huge responsibility on their shoulders. In fact, they are the destiny-makers of the country.

Froebel has beautifully highlighted the role of the teacher by giving the example of a garden. According to him the school is like a garden, the child is like a small plant. He takes care of the plants very carefully and the teacher plays the role of a skilled gardener. Keeps them green and gives them the opportunity to grow in the right direction so that they can attain beauty and perfection. The teacher also does the same thing. He helps in the desirable and better development of the children through his knowledge, experience and skills.

In this context the teacher education can play the vital role in the enhancement of quality education. Because the teacher education institution provide the competent teacher in teaching learning processes. However the quality of teacher depends on quality of teacher education institution as well as basic knowledge of prospective teacher. In India there are two types of teacher training courses first is pre-service teacher training courses and second is in services teacher training programme. The researches indicates the pre-service teacher training courses is more effective than in-service teacher training programme.

**Teacher Education-** The National Council for Teacher Education has defined teacher education as – A programme of education, research and training of persons to teach from pre-primary to higher education level.

There are some education commission and committee such as Kothari Commission (1966), Chattopadhyay Committee (1985), National Policy on Education (NPE 1986/92), Acharya Ramamurthy Committee (1990), Yashpal Committee (1993) and National Curriculum Framework (NCF, 2005) recommended the established the teacher education institution. The Right to Education Act, 2009, which came into force from 1st April, 2010, has important implications for teacher education in the country. The broad objective of teacher education institution is improving the educational achievements of school children, preparing teachers and improving the capacity of existing school teachers. National Council for Teacher Education prescribes the standards and norms of various teacher education courses, minimum qualifications for teacher educators, syllabus and components, recognition to

institutions (government, government aided and self-financed) and duration and minimum eligibility for admission of student-teachers to various courses. For in-service training, the country has a large network of Government-owned Teacher Training Institutes (TTIs), National Council of Educational Research and Training with six Regional Institutes of Education (REA), National University of Educational Planning and Administration (NUEPA). Both NCERT and NUEPA are national level autonomous bodies. At the state level, the State Councils of Educational Research and Training (SCERTs) prepare modules for teacher training and conduct specific courses for teacher educators and school teachers. Teacher Education Colleges (CTE) and Unnat Shiksha Vidya Sansthan (IASE) provide in-service training to secondary and senior secondary school teachers and teacher educators. In-service training at the district level is provided by the District Institutes of Education and Training (DIET). Block Resource Centres (BRCs) and Cluster Resource Centres (CRCs) are the lowest level institutions in the linear hierarchy for providing in-service training to school teachers.

**NEP-2020 & Teacher Education-** According to NEP-2020 the Teacher Education - 4-year integrated stage-specific, subject-specific Bachelor of Education. Establishing a National Mission for Mentoring. NEP-2020 aim to increase the GER (Gross Enrolment Rate) to 100% in preschool to secondary level by 2030 whereas GER in Higher Education including vocational education from 26.3% (2018) to 50% by 2035. The Central Sector Scheme Pandit Madan Mohan Malviya National Mission on Teachers and Teaching (PMMMNMTT) was launched in 2014 to address comprehensively all issues related to Teacher Training/ Capacity Building and Professional Development of Teachers. Under the components, the total 95 Centres were established throughout the country through which faculties/Teachers have been trained. Currently, The Standing Finance Committee has appraised the Scheme and recommended for continuation till 2025-2026 with the total outlay of Rs. 493.68 crore. Under the PMMMNMTT Scheme Centres are established on the basis of the proposals received from education institutions, their screening by

Screening Committee and approval by Project Approval Board.

**NEP-2020 & Quality Education-** NEP-2020 has brought an unprecedented change in Indian education. Which was going on for some past years. Especially if we talk about teacher education. First one year B.Ed. course used to run then it was changed to two years but there is no difference on the quality of teacher. Now in this education policy, 4 years integrated course is being talked about. And it is being implemented all over the country, it will affect the quality of teachers in the coming time.

Changes have also been made in the structure of school education for quality education. Now 5+3+3+4 structure will be followed. This structure will be applicable in government and private schools. The very important issues are that everyone should get the same education as well as the quality should be met. The 10+2 board examination structure has been dropped; the new school structure will be 5+3+3+4, which comes as a big relief; would prove revolutionary. While most of the existing private schools already have the ECCE embedded in their system and will only have to make a slight change in the class structure and objectives of the change. This education policy focus on transforming the teaching learning processes, emphasis on essential knowledge, literacy/numeracy skill, promoting multilingualism in the class room for teaching learning processes, to change the assessment process which always questionable processes, not hard and fast separation among different discipline, and more emphasis on vocational education. The main aim is to make **Atmnirbhar Bharat** and Vishva Guru Bharat.

**Quality Education-** In educational terms quality in education is seen as the ability of an educational system or programme to fulfill and meet the needs and aspirations of the society which it serves. Quality education is the extent to which schools achieve and realize goals which they are expected to aspire. Therefore, Quality education can be seen as education which satisfies the expectations and aspirations of the society in terms of the goals set within that society. Schools are expected to meet certain requirements for quality education if they are to remain useful to the society. (Shadreck, 2013)

## Indicators of quality education

- **Physical Resources:** Sufficient physical resources must available for quality education. Without sufficient Physical resources the quality education is not possible.
- **Process:** In the teaching learning the processes of content delivery is most important. If processes is effective then quality of education is odiously increases.
- **Human Resources:** for the quality education there is a need of quality human resources. Because the centre of quality education is a teacher.
- **Content:** Most important thing is that for quality education is depends on the quality of content such as text-books, curriculum and syllabus etc.
- **Technology:** In the era of globalization the teaching learning processes are depends on the technology. Technology is play the supportive role in effective teaching learning processes. In the present time the important of technology is increases according to the need of the time.

## Dimensions for Quality Education

- **Assessment:** The assessment is a important part of the teaching learning process. So, there is a need of fair assessment processes. Only through evaluation we can find out in the turn of education how good our education is. Therefore it is important to use a good valuation method.
- **Autonomy:** *Autonomy* implies academic and administrative freedom which should result in the enhancement of *quality of education* and achievement of learner.
- **Accountability:** In the institutions management context accountability may take other additional meanings: Act of compliance with the rules and regulations of institutions governance.
- **Attention to Teacher:** Attention is *important for successful learning* because it plays a key role in memory and the mechanisms than ensure successful retention.
- **Attention to Early Childhood:** There is need of Attention to Early Childhood

because the foundation of any education and the early childhood is a base of quality education.

- **Attention to Culture:** Culture is a critical component of any *learning* environment. It is important to be aware of the influence of culture within any particular *learning* context.

**Concluding Remarks-** Finally it may be concluded that, there so many factors affect the quality education such as social factors, economical factors, geographical factors, political factor, global factors, cultural factors etc. but the teacher education is a key factor. The quality of education directly correlated to teacher education. Therefore there is need to enhance the quality of teacher education programme then the quality of education automatically increases. vice versa the quality teacher education depends on the quality of higher education. Therefore, it may conclude that the teacher education and quality education is the two sides of a coin.

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# **BASIC ELEMENTS OF SIMILARITY IN SANATAN CULTURE AND GOTRA, RELIGION, SOCIAL BEHAVIOR ETC. OF ASUR, BIRJIA AND CHERO TRIBES OF JHARKHAND**

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Asur is said to be the oldest tribe among the total 32 tribes identified so far in Jharkhand. It has been mentioned extensively in the Vedic texts. There is extensive mention of his bravery and valor in the second chapter of Durga Saptashati in the Devi Mahatmya of Markandeya Purana. Asur is also one of the eight primitive tribes that have been identified in Jharkhand.

Like the Sanatan Hindus, the Gotra system is also established in the Asur tribe. A total of 12 Gotras are found in them, which they call Porish. These gotras are Beng, Idwar or Machli, Toppo, Khusar, Kerketip (Kerketta) Thithiyo, Bakha, Badhnar (tiger) Badka Aind (fish) Paddy, Leela Hirna, Pig.

Joint family, polytheism and exogamy are also prevalent among the Asuras. The date of marriage is decided on the phase of the moon. There are three types of marriages: formal marriage, Dali Taka or girl value marriage and Dhukhu marriage. In a formal marriage, the marriage is arranged by parents or relatives. In Dali Taka, the girl is married after paying the price. Dhuku means the girl can go with whomever she wants. That is, when both of them get married with their consent. Parents have no role in this. Bride price has to be returned in case of widowhood or divorce in marriage.

In the ancient Vedic culture, when they used to fight with the gods, what would have been their religion and who would have been their worshippers, this is still a subject of research. But at present they worship Singbonga! Singh means best and Bonga means god i.e. best Bong, or Mahadev. Along with Singbonga, Asuras also consider trees and mountains as their gods. Baiga, the collective worshiper of

their gods, is like a priest. At present, most of the Asurs have started believing in Hindu religion and their Gods and Goddesses. People call them Jat Asurs.

Among their festivals, Sohrai, Sarhul, Kagua, Navakhane, Sarhi Kuttasi are prominent. Sarhi Kutasi Festival; It is celebrated with reverence in the context of iron smelting! Earlier among the Asuras, there was a practice of burying the dead body but now the practice of cremation has also been assimilated. The cremation place is called Sasan. It is their tradition to bury a big stone in memory of the deceased.

Birjiya is a tribe divided into many gotras, mainly their two groups are Sinduria and Telia and the other is Doodh Birjiya and Raj Birjiya. Sindurias use vermilion in their wedding ceremonies, whereas cow meat is prohibited in the diet of Doodh Birjia. But this is not prohibited in Ras Birjia! These tribes are also exogamous and do not marry within the same Gotra.

Mr. Forbes has divided them into two main divisions, Birjia and Agariya. Agariyas do the work of iron smelting while Birjias do not do it. But there is a marital relationship between the two.

Birjia is considered to be a lower category of Asur tribe, the reason for this is that Veer Asuras came first in the region of Jharkhand and Birzia Asuras came later. The tribes here like Oraon, Kharwar, Kisan consider themselves superior to Birjia. Baiga is actually Birjiya. Like Hindu social rules, this tribal also believes in patriarchal system and inheritance is considered by men. They mainly live in Gumla, Lohardaga and Palamu in Jharkhand. Even today, from the commercial point of view, iron

smelting is the main activity. However, some people are also engaged in agricultural work and making bamboo baskets. Nowadays, their food, lifestyle, jewelery etc. have become like the common people, they too have the tradition of Visut or Agua for marriage! Among these too, polygamy is prevalent. A man can have three wives. If there are three wives in the house, the second or third one has to do the cooking while the elder one takes care of other household tasks. When a woman marries for the second time it is called engagement.

According to Sunder, Chero tribes are divided into two sub-divisions. Twelve thousand are the best. Terah Hazari is also called Bir Banghia. The elder Cheros are called Jagirdars or Babuans. Some of these thieves have established their marital relationship with the Hindu Rajput community and have started calling themselves Chauhan Rajputs.

The food of Chero tribe is pulses and rice like common people, but according to their economic condition they also grow and eat paddy, sesame, kodo, urad, madua, kurthi, jinora etc.

Not having a child after a few days of marriage is considered to be the wrath of a witch and the help of a devotee is taken. To know the reason of infertility the devotee worships Kali and makes it clear what is the reason. For redressal, goats and chickens are sacrificed. Sacrifice of barren women and impotent husbands is acceptable in this society. In this tribe too, after the birth of a child, the rituals of Chhath are completed within 6 days, bathing within 20 days and Anna Parasam etc. within 5 months. The marriage ceremony is performed in three ways - Dhola, Gharaun and Chadhaun. If the girl's side is poor then marriage takes place through Dhola and Gharaun method. The practice of giving bride price is also prevalent

among Cheros which is called Dasturi. Brahmins and barbers all participate in the marriage. Their religious rituals are in accordance with Hindu rituals such as Gauhal place, Devi place, Kuldevta place are considered to be the main places of worship. But under the tree, Raxal, Raxelin and Darha are believed to reside. These deities are worshiped by placing small and big stones as symbols. During these festivals, people worship Mahavir, Shiva and also celebrate Sarhul. In the death rites, the Chero tribe uses both the methods of cremation and burial, just like the Hindus. In these too, all the functions like Brahmin worship, Shraddha, Pind Daan, Tarpan, immersion of bones etc. are performed according to Hindu rituals.

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# **LITERATURE REVIEW OF WORKLIFE BALANCE OF WORKING WOMEN IN HEALTH SECTOR**

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**Abstract** There had been extensive research on the effects of shift work on job satisfaction, performance, health and family life. Low Contribution in works, Factor of working Condition, Employee moral & Motivation, Poor Work life balance, The importance of Partner, Importance of society, Work Stress & Child care etc have already done by Previous Researcher. So in this area the research problem is to find out the HR Strategy for the effective work life balance of Doctors, Nurses and Para medical staff in relation with job satisfaction, performance, health etc. Because till now there is no such sufficient information on HR Strategy for a better WLB For women employee in health sector.

Considering the importance of work life balance, many important researches have been done across the world. These research works have been studied in this research paper.

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Work-life balance is a concept which includes proper prioritizing the task between “Work” and “Life”. It requires attainment of equilibrium between professional work and personal work. The issue of work-life balance was earlier raised by the working women during the 1960s and 1970s in the UK. During the mid 1980s the issue was also taken into consideration by the US government. In 1990 US confirmed the recognition of work-life balance as a main human resource management issue (Bird, 2006). Job satisfaction is a component of life satisfaction that can only happen if employees can accomplish stability in their work and family life. Although women have achieved great success in their careers but still their responsibility towards their family has not been reduced. They have to deal with their family responsibilities along with their official work. Careers in hospital historically demanded a selfless emphasis on caring for one’s patient. In case of any urgency women doctors have to attend to their patient under any situations leaving behind their child and dependents at home. Challenges faced by female doctor are in accord with the challenges faced by women in any other profession. They face biasness, lack

of support, glass ceiling, etc. One of the most prominent challenges which every woman doctor and nurses has to face in their life is work-life balance. Even though work-life balance has become an emerging issue in hospital. It is affecting the efficiency of women doctors, nurses and other staff. Career women are challenged by work and family commitment at the end of each day in Government and private hospital. Majority of women are working through-out week and 53% are struggling to achieve work-life balance. Women reported that their life has become a juggling act as they have to shoulder multiple responsibilities at work and home. Women of the early centuries were mostly confined to their kitchens and those who were employed worked in factories, farms or shop works. Very few women had the access to higher education and they were forced to be at the mercy of their father or husband attitudes towards women and work. The fast developing knowledge economy has given place for more number of women to be enlightened by higher education. Education has not only empowered them but also has given them robust career. As the saying goes – “Health is Wealth” health is considered as the most important asset in today’s world which

determines the wealth of the country at large. The health care industry in India is one of the largest economic and fastest growing professions. Due to the privatization in healthcare sector in India hospitals are confronting great competition. They are confronted with variety of challenges posed by the business environment internally and externally. In spite of having such challenges hospital are competing to achieve their goals effectively and efficiently. Hospital employees are also affected by workforce changes due to technological advancement and high rate of competition in the sector. Changes in the work style, work culture, family needs, and work demand are rapidly taking place which eventually increased the population of dual earner couples, single parent families and eldercare responsibilities. These increased changes can have adverse impact on employee as well as organizational performance. Increased pressure at workplace negatively affects the work-life balance. With globalization and rapid changing technology people in most professions find themselves struggling between work and non work life commitments causing a work life imbalance. The profession of doctors is no exception. Although doctors are expected to be committed to their profession. It must be remembered that they also have a personal and family life like any other individual. Doctors working in hospitals have exceptionally hectic lives and find it most challenging to balance the demands of medical and professional work with that of their personal, family and social lives. The health care sector is a knowledge based sector purely dependant on the service rendered by the doctors, nurses, therapists, lab technicians and even services rendered by housekeeping and other tertiary staff. According to Kabene, Orchard, Howard, Soriano and Leduc (2006) good human resource management practices in hospitals lead to a good service quality in the health care sector. The concern shown by a doctor and the quality of the service given by nurses and paramedical staff are the main factors leading to customer satisfaction in the health care sector. (Laohasirichaikul and others 2009, Korsah 2011). The health care sector requires their employees to be caring, emotionally intelligent and sensitive (Lanjananda & Patterson 2009) (Dhanda and Kurian 2012). Such behavior cannot be

expected in hospitals if the work life balance is poor. To nurture such behavior organizations must develop good HR practices. Many doctors and nurses and paramedical staff are required to work long hours, night shifts and this causes a conflict between their personal and professional roles. The natures of work at hospitals demand that the doctors, nurses and paramedical staff are present at the workplace at odd hours. This also has a toll on the employee's ability to take care of his own health; the employee is constantly juggling to ensure a balance between the care he gives to his patients and the care he gives to himself and his family. According to Sara Hedderwick consultant infectious diseases at Belfast there is no limit for what one wants to do to help patients get better but to do that health care professionals must ensure that they remain healthy too. Trying to achieve this fine balance between personal and professional commitments is very difficult particularly for those who have families and dependants. This struggle often leads to stress in the employee's life. Hospital today is managed like a business and is no longer dull and morose places. However this hasn't taken away the critical importance of dedicated medical and paramedical professionals. Neither has it made any change in the stress that these category of employees face because of the long and unearthly hours they have to put in. Work life Balance: Work-life balance is the term used to describe those practices at workplace that acknowledge and aim to support the needs of employees in achieving a balance between the demands of their family (life) and work lives. The Work Foundation earlier known as "The Industrial Society" believes that work-life balance is about people having a measure of control over when, where and how they work. Work-life balance is defined as the management of one's professional responsibilities and family responsibilities towards children, ageing parents, and disabled family member or a partner/spouse effectively.

**Literature review-** The recent 'Working well' survey for the Royal College of Nursing (Ball et al. 2002) found that 30% of nurses on long-term sick leave reported harassment and intimidation arising from sex/gender, age, race, sexuality or personal clashes as the main cause of their absence. Workplace stress is having a greater impact on today's workforce (McGowan 2001, Shader et al. 2001). This

(73)

suggests that stress intensity from the most frequently recognized sources has increased, and/or additional sources are contributing to the cumulative effects. In this respect it is interesting that some recent studies (Demerouti et al. 2000, McGowan 2001) also identified lack of reward and shift working as major sources of distress, but these did not appear as significant stressors in earlier studies. Whilst Stordeur et al.(2001) identify 'workload' as the most frequently reported stressor even this made a relatively low contribution (22%). The most obvious means of reducing the workload of practitioners is to ensure that staffing levels are adequate including administrative staff who could reduce the paper work burden on nurses (Finlayson et al. 2002). Lakshmi et al conducted research on "Analysis of Work Life Balance of Female Nurses in Hospitals - Comparative Study Between Government And Private Hospital in Chennai, India" (2012) state that majority of women are working throughout week and 53% were struggling to achieve work-life balance. Women reported that their life had become a juggling act as they had to shoulder multiple responsibilities at work and home. Nursing provides a wide range of potential workplace stressors as it is a profession that requires a high level of skill, team working in a variety of situations, provision of 24-hour delivery of care, and input of what is often referred to as 'emotional labor' (Phillips 1996) French et al. (2000) identified nine sub-scales of workplace stressors that might impact on nurses in no particular order these are: conflict with physicians, inadequate preparation, problems with peers, and problems with supervisor, discrimination, workload, and uncertainty concerning treatment dealing with death, and dying patients. Introducing a participative strategy for management is at the heart of human resource proposals within the 'NHS Plan' a long-term strategy for the delivery of health care in the UK (Department of Health 2002a, 2002b). Ensuring an inclusive (i.e. transformational) leadership style would seem to be crucial to improving staff retention. The Royal College of Nursing (RCN 2002) has urged that this issue be addressed quickly as harassment from doctors, supervisors, managers and colleagues is an increasing cause of distress and absenteeism amongst nurses (Kivimäki et al. 2000, Ball et al. 2002). The NHS now requires a commitment from

managers to remove harassment and discrimination (Department of Health 2002b). Pay and shift work schedules seem to be becoming more prominent as major sources of distress for nurses to the extent that they are displacing other sources in importance. Lack of reward is an increasing source of frustration (Ball et al. 2002) and contributes to role disengagement, a component of burnout (Demerouti et al. 2000). Shift working, particularly night shifts traditionally attracts pay enhancements but can have a significant effect on personal and social life. Prolonged shift-work especially night shift work also has a health risk as it produces symptoms that correspond closely to those of mild or moderate distress (Efinger et al. 1995). The study of Tyler and Ellison (1994) provides an illustration of this as it identified that nurses living with a partner had fewer stress symptoms than those with no partner and those with children experienced less stress from dealing with patients and relatives. The range of possible interactions between personal and workplace sources of distress is considerable but under-researched (Schaefer & Moos 1993, Jones & Johnston 2000). In case of hospital employees, work-life balance and their commitment influence the performance and productivity of the hospital (Sakthivel & Kamalanabhan, 2011 Sakthivel & Jayakrishnan, 2012).

Several research findings have identified number of factors which determine the satisfaction and dissatisfaction level of people in the organization. These factors include working conditions, perceived quality of supervision, reward system in work, status and seniority, age group, marital status, and years of experience (Mosaddeghrad et al. 2008). Customer satisfaction largely depends on the satisfaction of the employees and it is considered to be the key success factor for the organization (Organ 1997, Bailey & Dandrade 1995). In the present business scenario jobs are changing with the pace of changing technological advancement which is developing new trends in employment terms and conditions. This change is badly affecting the level of satisfaction as well as physical and mental health of the Workers (Cooper 1999, Kenny et al. 2000). HR strategies – the first concerning attracting and retaining medical doctors by satisfying their need for work-life balance, the second striving for optimization of

human capital – are translated into HR activities, such as offering family-friendly arrangements (Giardini and Kabst, 2008) Robroek et al. (2009) Research shows that women are generally more likely to participate in worksite wellness programs than men and overall married employees have much higher participation rates than their single co-workers. Physician professional have high expectations and must deal with the continuing challenge of new knowledge, drugs and technology [Miller and McGowan, 2000] Mc Gowan, 1976 the pressures of balancing career and family responsibilities often leaves little time for meaningful personal relationships thereby further diminishing their support systems and potentially increasing stress in women physicians. [Brown et al. 1996] Women have to deal with the stresses and possible conflicts of being a professional at the same time as being a wife and mother. Although male physicians may also be married with children, historically these roles have not appeared to be in conflict. [Fritz and Lantos, 1991 reported that 26.4% of women physicians in her study experienced ` conflict between career and family as opposed to 61% of the men. She found that although responsibility for child care and housekeeping was handled almost entirely by the women physicians whereas 90% of the men had someone else to carry out these activities Professional. Women are more likely than professional men to have a full-time working partner [Walker, 2000]. There are problems and benefits related to a female physician being married to another professional. Ideally in this situation the spouse is supportive and understanding of the type of pressures acting on the wife. If the spouse is also a physician he can serve as an in-home consultant [Mangan, 1999]. The Women Physicians Health Study reported data from 4501 respondents and found that Women physicians spend substantially fewer hours in all types of housework than do most of the U.S. women [Frank et al. 2000] Women physicians face a number of problems regarding pregnancy and motherhood. Choosing to have a child rarely affects the man's career whereas woman physicians with children may encounter major problems [Carr et al. 1998] [Slomski, 2000] this difference may also be related to woman physicians not being able to find a suitable partner. A study by Welner et al. [1979] reported that 51% of

female physicians they selected from the general community had a history of depression. Kaplan et al. 1996 Tesch et al. 1995 In the face of discrimination and harassment and other Stressors women may become less confident have lowered self-esteem and lose their motivation and ambition. Research on career satisfaction in women physicians is contradictory. The Physician Work Life Study found no gender differences in overall satisfaction despite women physicians having more problems related to time pressures, income and control of daily work life [McMurray et al. 2000] Two Canadian studies [de Koninck et al., 1993; Brewster, 1994] found female physicians to be less likely to be heavy alcoholic users than male physicians. Divorce may also be a consequence of being overstressed. Divorce rates of physicians appear to be 10– 20% higher than in the general population [Sotile and Sotile, 1996] When the individual woman is faced with a specific episode of discrimination it is important for her to carefully determine the nature of the incident, review her options for responding to it and select the option that fits both the situation and her own personality [Lenhart, 1993] here are a number of strategies that may help women deal with the stress of being part of a professional couple. It is important for the couple to set priorities and goals and make sure that they are in agreement. Couples need to reassess their work patterns and make sure there is still time for their relationship. With busy professional lives free time may not come spontaneously but must be scheduled. Shanafelt *et al.* (2009) while work–life balance appears to play a major role in the ‘morale and motivation’ of doctors (British Medical Association [BMA], 2005 p. 4) stress and turnover among doctors can have a negative impact not only on professional morale but also on the continuity and quality of patient care (Firth-Cozens and Greenhalgh, 1997) Dumelow *et al.* (2000) found that both male and female hospital consultants were dissatisfied with the balance between work and the non-work domain. Indeed, many male consultants were unhappy about the limited amount of time that was available to them to spend on non-work activities. Although some researchers (Pines *et al.* 1981) have suggested that women are more likely to experience higher levels of burnout due to greater work to life interference often

brought about by their responsibilities for dependent children or adult/ eldercare other researchers have found little difference between men and women. Eastburg *et al.* 1994 Research also suggests that a supportive work–family culture defined as ‘the shared assumptions, belief and values regarding the extent to which an organization supports and values the integration of employee’s work and family lives is related to less work–family conflict (Thompson *et al.* 1999, pp. 394, 409) and can contribute .

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# MUTUAL FUND- AN ATTRACTIVE TOOL OF INVESTMENT

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**Abstract:** Investment in mutual fund is of great importance not only to researchers to study, but also to general investors to search best investment avenue, in the present competitive and changing world. Unit Trust of India (UTI) as India's first mutual fund was set up as an effective vehicle for channelizing progressively larger share of household savings to productive investments in the corporate sector with attractive returns. Distribution channels seem to play a major role in fund penetration and facilitating these rather than trying to boost demand through financial literacy may be a more effective way of achieving better fund management. Mutual funds proved too costly for a small investor with limited access in stock market operations. Investors having limited knowledge, found a good shelter with the mutual funds having expertise in this field fetching reasonable return.

**Key words:** Mutual Fund, Small Investors, Big Returns and Financial Market.

**Introduction:** -A mutual fund is an investment vehicle that pools funds from investors and invests in equities, bonds, government securities, gold, and other assets fetching attractive return. Companies that qualify to set up mutual funds create Asset Management Companies (AMCs) or Fund Houses, which pool in the money from investors, mutual fund market, manage investments and enable investors in MF transactions. There are a lot of investment avenues available today in the financial market for an investor with a reasonable rate of return with different degrees of risks. People can invest in bank deposits, corporate debentures and bonds where their risk is low as well as return is also low. Investment can be made in stock of companies where the risk is high and the returns are also proportionately high. People began opting for portfolio managers having expertise in stock market operations who would invest on behalf of investors. The mutual fund industry in India started in 1963 with the formation of UTI, by the initiative of the Government of India and Reserve Bank of India (RBI) and functioned under the regulatory and administrative control of the RBI. In 1978, UTI was de-linked from the RBI and the Industrial Development Bank of India (IDBI) took over the regulatory and administrative of mutual fund from RBI.

**Review of Literature:** -Ray (2011) made an attempt to analyze the performance and some emerging issues in UTI, concluded with a note of optimism that UTI mutual fund will be meet

the challenges of the future with its dedicated human resources, speed, quality and transparency is the edifice on which it desires to stride ahead for the benefit of its investors in the present competitive environment. **Karrupasamy (2013)** in the article "A study on the performance of select Private Sector Balanced Category Mutual Fund Schemes in India" from International Journal of Management Sciences and Business Research have mentioned that out of five private sector balanced category mutual funds under study, two earned a return above the average returns. Two have made negative returns. All the private sector balanced category funds selected for the study have a positive Sharpe ratio. The range of excess returns over risk free return per unit of total risk is wide. All the funds selected for the study has positive Jensen's alpha indicating superior performance.

**Narayanasamy and Rathnamani (2013)** in an article "Performance Evaluation of Equity Mutual Funds (on selected Equity Large Cap Funds)" from International Journal of Business and Management Invention have mentioned that all funds performed well during the period under study despite volatility in the market. The fall in NIFTY during the year 2011 impacted the performance of all selected mutual funds. In order to ensure consistent performance of mutual funds, investors should also consider statistical parameters like alpha, beta, standard deviation besides considering NAV and total return.

**Objectives of the Study:** To gather knowledge about the mutual fund industry, advantages, disadvantages and recent scenario of mutual fund investment in India.

**Methodology:-**The study is based on secondary sources of information available time to time in various reputed journals, books, newspapers and internet, etc. Simple study is done to gather information on mutual fund and its types, advantages, disadvantages and recent market scenario in India, etc.

#### **Advantages of Investing in Mutual Funds: -**

- **Diversification:** The saying ‘do not put all your eggs in one basket’ perfectly fits mutual funds as spreading investment across multiple securities and asset categories lowers risk.
- **Professional Management:** Mutual funds are managed by full-time professional fund managers who have the expertise, experience and resources to actively buy, sell and manage investments.
- **Transparency:** Every mutual fund has a Scheme Information Document readily available on the fund house’s website that can give you all the details about its holdings, fund manager, etc. In addition, the portfolio investment value (NAV) is published daily on the AMC site and AMFI site for investors to track the portfolio of the mutual fund.
- **Liquidity:** You can redeem your investments on any business/working day at the NAV of the day of your redemption. So, depending on the type of mutual fund you have invested in, you will receive your invested funds in your bank account in 1-3 days.
- **Tax Savings:** Investment of up to Rs. 1, 50,000 in mutual funds qualifies for tax benefit under section 80C of the Income Tax Act, 1961.
- **Cost-Effective:** Mutual funds are a low-cost investment vehicle. The pooled investments from several investors in a mutual fund enable the fund to invest in a basket of stocks and debt securities which otherwise may be out of reach for the ordinary investor or require a higher investment amount.

- **Well Regulated:** In India, the mutual fund industry is regulated by the capital market regulator viz. Securities and Exchange Board of India (SEBI). Therefore, mutual funds must follow stringent rules and regulations, ensuring investor protection, risk mitigation, liquidity, and fair valuation.

#### **Disadvantages of investing in Mutual Funds:**

- **Exit Load:** Mutual funds generally levy an exit load (fee) for redeeming investments within a specified time period, for example, one year from the date of investment. This is done to refrain the investor from exiting the scheme too early, as it impacts both the fund’s performance and the investor’s goal achievement.
- **High Cost:** SEBI has defined the maximum limit of expense ratios that mutual fund houses can charge and they depend on the mutual fund’s size. As the size grows, the expense tends to come down. The maximum expense ratio that is chargeable for an equity-oriented mutual fund is 2.25%.
- **Over-Diversification:** In the quest to diversify your investments, you may invest in mutual funds, which invest in a vast number of stocks, leading to over-diversification. Not all the stocks of a portfolio would deliver high returns all the time.
- **Risk:** Investments in mutual funds are subject to market risk. The risk of losses faced by all types of securities in the financial markets cannot be reduced by diversification. Market risks may occur due to many macro and microeconomic factors.

**Mutual Fund Industry in India- Opportunities and Challenges:** The Indian mutual fund industry finds itself in an economic landscape which has undergone rapid changes over the past few years. The industry achieved a high water mark when it doubled its AUM from Rs. 3.6 trillion in FY-2007 to Rs. 6.13 trillion in FY-2010—clocking an impressive growth rate of 16.2% per year. Since then the Indian economy (coupled with the emerging economies) has faced a slowdown – the most severe of which are happening as this report is



being written. From an average Gross Domestic Product (GDP) growth rate of 8-9% during the 2008-2011 years, the Indian economy is now growing at a lackluster 4.8% growth rate in Q-2 of 2013. Coupled with a steep decline in the value of the Indian rupee, the mutual fund industry now finds itself in a capricious global economic environment. However, there is strong reason to believe that the Indian mutual fund industry has not yet seen its global peak and if proper measures are taken, the industry could get back on its former growth path. One of the biggest challenges that the mutual fund industry faces is the lack of healthy participation from a large part of the country.

**Current Scenario of Indian Mutual Fund Industry:** The private sector and foreign companies were allowed to introduce new Mutual Funds to India. This led to a surge in the number of Mutual Fund Houses or Asset Management Companies, investors and Total Assets under Management (AUM). The AUM increased from Rs 470 billion in 1993 to Rs. 39,46,257 crores in 2023, a 25% CAGR (compound annual growth rate) in 30 years. This shows how quickly Mutual Funds gained popularity in the Indian markets.

Average Assets under Management (AAUM) of Indian MF Industry for the month of July 2023 stood at Rs 46,27,687 crore. AUM of Indian MF Industry as on July 31, 2023 stood at Rs 46,37,565 crore.

The AUM of the Indian MF Industry has grown from Rs 7.61 trillion as on July 31, 2013 to Rs 46.38 trillion as on July 31, 2023 more than 6-fold increase in a span of 10 years. The MF Industry's AUM has grown from Rs 23.06 trillion as on July 31, 2018 to Rs 46.38 trillion as on July 31, 2023, more than 2-fold increases in a span of 5 years. The Industry's AUM had crossed the milestone of Rs. 10 Trillion (Rs 10 Lakh Crore) for the first time in May 2014 and in a short span of about three years, the AUM size had increased more than two folds and crossed Rs. 20 trillion (Rs 20 Lakh Crore) for the first time in August 2017. The AUM size crossed Rs. 30 trillion (Rs 30 Lakh Crore) for the first time in November 2020. The Industry AUM stood at Rs 46.38 Trillion (Rs. 46.38 Lakh Crore) as on July 31, 2023. The MF industry has crossed a milestone of 10 crore folios during the month of May 2021. The total number of accounts (or folios as per mutual

fund parlance) as on July 31, 2023 stood at 15.14 crore (151.4 million), while the number of folios under Equity, Hybrid and Solution Oriented Schemes, wherein the maximum investment is from retail segment stood at about 12.08 crore (120.8 million).

#### **Analysis and Interpretation of the Study:**

Investors get access to the professional money managers who have expertise and experience in the field of buying, selling and monitoring investments. If one investment in the fund decreases in value that does not mean that the other will also be decreased, it may increase as well. By holding shares in the market one can take advantage of the changing environment in the industry. It gives opportunities to the small investors to take part in the professional asset management and they can have low investment minimums. They provide regular liquidity as shareholders of open-ended funds and unit investment trusts may sell their holdings back to the fund at regular intervals at a price equal to the NAV of the fund's holdings managed by professional investors who have rich experience in investment and can understand the nerves of the market.

**Conclusions:** Equity funds are preferred for both high risk and moderate risk taking investors. Well, Equity fund is also an ideal investment option for small investors. The benefits which make equity funds suitable for small investors are: low risk, small capital for investment and diversified portfolio. Debt funds carry low risk preferable for retired class. Unlike equity mutual funds, a debt mutual fund is not subject to market conditions. Investments are made in securities with a fixed maturity period and a rate of interest. There is a steady return without the fear of losing it all due to markets crashing. Hybrid funds are preferable for young and adventurous investors who are willing to take high risks for a high return in the long term. A balanced fund offers investors the benefit of diversification since it combines both equity and debt fund. When share prices go down, the debt component in these kinds of hybrid mutual funds ensures stability. Another point is that when share prices rise, fund managers will have to sell stocks in these kinds of hybrid mutual funds to maintain the required equity-debt ratio. Mutual fund industry has developed itself very fast in today's times and is maturing with increase in the number of

investors and increasing geographical spread. Consequently, their influence on price movements in equity and debt markets as also domestic liquidity conditions has increased over time.

**Recommendations:** A request to government authorities is that they should enhance this investment sector to make the best possible policies to attract the investors and to promote the value of mutual fund investment. As a researcher there are many techniques to promote mutual fund concept and to make paramount ratio among the funds selection. Awareness should be developed in investor about this investment approach, the manager who manage this investment portfolio should select the greatest combination of funds with the analysis of all the parameters of risk-return and also calculate or manage the level of risk, analysis of the current financial position, economic conditions and future forecast of economic conditions in India.

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# A STUDY OF IMPACT OF GST ON MICRO, SMALL AND MEDIUM ENTERPRISES

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**Abstract:** Goods and services tax is the biggest indirect tax reforms in India since independence which replaced multiple cascading taxes levied by the central and state governments. GST is a tax which needs to be paid on the supply of the goods and services. The implementation of GST has impacted different sectors of economy including the MSMEs. Under the earlier tax regime, the ability of MSMEs to reach potential consumers across India was limited and had to fulfil many tax related documentation running to different departments. GST aims to upsurge the taxpayer's base largely MSMEs into its opportunity but at the same time it presents a problem of compliance and related charges for them. This paper tries to comprehend the overall effects of GST on MSMEs by exploring its benefits and challenges.

**Key words:** GST, Indirect tax, MSMEs

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**Introduction-** GST was introduced in India on 1<sup>st</sup> July 2017 replacing various states and central level taxes such as VAT, service tax, entry tax etc. GST is an indirect and multi arrangement tax, which is a destination-based expense with plenty of improvements in taxation structure. Most importantly, it addresses the problem of cascading effect under the erstwhile system and enables sellers and service providers to claim input tax credit. Implementation of GST has introduced a significant change in business process and accounting system. Since then, need for proper maintenance of accounting records and trained personnel has increased. The introduction of GST in India has both positive and negative effect on different sections of the society. All sectors of the economy whether big, medium, small units, intermediaries, exporters, importers, professionals, traders and consumers are impacted by the implementation of GST. At present, there are five distinct slabs of GST in India viz. 0%, 5%, 12%, 18% and 28%. Still certain products are kept out of the purview of GST like alcohol for human consumption and petroleum products. There are four components of GST:

**CGST-** Central goods and service tax levied and collected by central government on intra state supply of goods and services. **SGST-** State goods and service tax levied and collected by

state government/ union territory with legislature on intra state supply. **UTGST-** Union territory GST levied and collected by union territory without legislatures. **IGST-** Integrated goods and service tax levied and collected by centre on inter-state supplies.

**Review of literature-Saurabh suman (2017)-** In his paper has taken a survey on implementation of GST by SMEs and the problems associated with the GST were discussed. It was concluded that problems will get resolved over a period of time and GST will prove fruitful for all the businessman. **Shakdwipee. P (2017)** in his research paper titled 'Measuring awareness about implementation of GST: A survey of small business owners in Rajasthan' analyzed the perception of small business owner in Rajasthan about GST and found out that their main area of focus was computer software availability and handling of the same. **Monika sehwat and Upasana Dhandra, (2015)** studied 'GST in India: A key tax reform' and concluded that GST will give India a world class tax system by grabbing different treatment to manufacturing and service sector. But all this will be subject to its ration design and timely implementation. **R. Lavanya Kumari (2017),** in her article 'Impact of goods and services tax (GST) on Indian MSMEs' stated that GST rollout will open up can of worms and the effect on MSMEs throughout numerous industries

will vary substantially. The only one nation, one tax principle underlying goods and service tax (GST) rollout is predicted to benefit micro, small and medium business in the long run. **Ms. Rani Jacob (2017)** has studied positive and negative impact of GST on MSMEs. The paper also deals with implications of GST on small enterprises. **Vidit Mohan and Salman Ali (2018)** in their study provides multi-dimensional understanding of the gaps between the effect of anticipated and existing GST regime for MSMEs and associated tax compliance. It identifies the issues that are involved in the implementation of GST. **Kaur (2018)** discussed the role of GST for sectors like real estate, healthcare, telecom and advertisement industry. The author expressed that GST is a destination-based tax that simplifies the taxation system of India and benefits Indian consumer as it reduces cost of goods by removing cascading effects.

The main objective of the study is to understand the concept of GST and MSMEs and to examine the impact of GST on MSMEs. The study is based on secondary data collected from various sources like annual reports of Ministry of MSME, Ministry of Finance, reports of GST council, newspapers and various websites.

**MSMEs in India**-The MSME sector is an important pillar of Indian economy as it contributes greatly to the growth of Indian economy and is largest employment provider besides a breeding ground for entrepreneurship and skill development. The number of MSME is more than 30 million creating employment of about 70 million, manufacturing more than 6000 products. The role of MSME sector in the growth and development can be estimated with the fact that MSMEs are addressed as the 'backbone' and 'growth engine' of the Indian economy. Given the due importance of the Indian MSME sector, the competitive federalism among state as well as central government policies specifically encourage small business to flourish. Many recent policies and initiatives have been introduced for small enterprises like skill India, Make in India, Mudra yojana, Atmanirbhar Bharat. In the recent years MSMEs have proved to be a major contributor to direct and indirect taxes and thus assist in revenue generation for the country

- A micro enterprise, where the investment in plant and machinery or equipment does not exceed one crore rupees and turnover does not exceed five crore rupees.
- A small enterprise, where the investment in plant and machinery or equipment does not exceed ten crore rupees and turnover does not exceed fifty crore rupees.
- A medium enterprise, where the investment in plant and machinery or equipment does not exceed fifty crore rupees and turnover does not exceed two hundred and fifty crore rupees.

**Composition scheme-** The GST composition scheme is an effective tax paying mechanism, which is specially offered to micro, small, and medium businesses. It is different from the normal form of GST filling owing to the main benefits that it carries. The first is that the business does not have to undertake complex paperwork and compliance, and the second is the lower tax liability. It is a voluntary and optional scheme. As part of the composition scheme, a small business has to pay a fixed rate that ranges between 1% and 6% of the turnover. This facility brings great respite to small business owners.

#### **Features of Composition Scheme:**

- Input tax credit is not available on supply of goods and services.
- The taxpayer registered under composition scheme cannot make intra state supply of goods.
- A person registered under composition scheme is required to file only quarterly returns.
- Registration under this scheme is optional. In order to avail benefits taxpayers can make voluntary registration.
- Taxpayers registered under this scheme cannot issue tax invoice unlike regular taxpayers.
- Manufacturers of goods like tobacco, pan-masala, ice-cream cannot opt for this scheme.

#### **The rates for composition scheme for different types of taxpayers are-**

- Traders and goods manufacturers- 1% GST (out of which 0.5% is CGST and 0.5% is SGST).
- Service providers- 6% GST (out of which 3% is CGST and 3% is SGST).
- Non-alcohol serving restaurants- 5% GST (out of which 2.5% is CGST and 2.5% is SGST).

**Table 1. Showing Statewise Distribution of Composition Taxpayers**

State	Number of composition taxpayers in 2021	% Of total composition dealers	Number of composition dealer in 2022	% Of total composition dealer	Growth/ Decline %
Uttar Pradesh	3,73,713	22.43%	3,38,879	21.35%	-9.32%
Rajasthan	1,39,350	8.36%	1,34,913	8.50%	-3.18%
Maharashtra	1,26,708	7.60%	1,22,786	7.74%	-3.10%
Andhra Pradesh	1,12,659	6.76%	1,10,858	6.98%	-1.60%
Gujarat	99,270	5.96%	96,371	6.07%	-2.92%
Bihar	1,04,023	6.24%	1,08,500	6.84%	+4.30%
Jharkhand	18,389	1.10%	17,589	1.11%	-4.35%
West Bengal	69,016	4.14%	58,056	3.66%	-15.88%
Tamil Nadu	81,245	4.88%	71,667	4.52%	-11.79%
Madhya Pradesh	55,466	3.33%	52,846	3.33%	-4.72%
Others States/ union territories	4,86,668	29.20%	4,74,441	29.90%	-2.51%
<b>TOTAL</b>	<b>16,66,507</b>	<b>100%</b>	<b>15,86,906</b>	<b>100%</b>	<b>-55.07%</b>

**Source:** GST annual report on MSMEs 2021-2022

The above table provides an idea about the growth/ decline of composition taxpayer as the composition scheme is specially designed tax for micro, small and medium enterprises. There is positive growth in the state of Bihar. And in all other state there is a decline. So, there is a need to simplify the process and bring awareness in the minds of MSME entrepreneurs about features of composition scheme and provides training to them by organizing workshops and trainings.

#### **Positive impact of GST on MSMEs-**

- 1) **Single tax regime:** MSME has to undergo multiple indirect taxes like service tax and VAT. With the introduction of GST, the procedure to pay indirect taxation got simpler as they are required to pay tax only under one regime.
- 2) **Unified market:** GST will allow flexibility in transfer of goods across state and reduce the cost of doing business, as the reforms will cut down multiple taxes imposed by state and central government.
- 3) **Lower logistical overheads:** As GST is tax neutral it will eliminate time consuming border tax procedure and

tall check posts and encourage supply of goods across borders. Accordingly, the logical cost for companies manufacturing bulk good will be reduced. Such costs can be crucial for the survival of MSMEs.

- 4) **Smooth registration process:** MSMEs were required to register under various tax systems. The procedure was very complex, lengthy and delayed. In contrast, registration under GST doesn't take much time and is not complex.
- 5) **Reduces tax burden on new business:** Earlier, business which had turnover more than 5 lakh rupees required VAT registration. The government introduced exemption limit under goods and services tax which helps to reduce tax burden on small dealer and MSMEs.
- 6) **Composition scheme:** Among all the features of GST, composition scheme is of utmost importance for MSMEs as this scheme provides for lower tax rates, quarterly filing of returns, provides relief for compulsory maintenance of books of accounts and other benefits which are fruitful for MSMEs success.

- 7) **Purchase of capital goods:** In the earlier system, only 50% of the input tax credit against purchase of capital goods was available in the year of purchase and the balance amount in subsequent years. Under GST regime, entire amount of input tax credit can be availed in the year of purchase itself.

#### **Negative impact of GST on MSMEs**

- 1) **Lower threshold:** Under the previous exercise tax regime, no duty is paid by a manufacture with a gross turnover of less than Rs 1.5 crores. However, with GST implementation, this exemption limit gets considerably lowered to Rs 20 lakhs. As a result, a large number of MSMEs and start-ups come under the networks of GST.
- 2) **Financial preparedness:** Since outward and inward supplies would be electronically matched every month, availing of input tax credit by the buyer would be based on the compliances of the supplier. Any failure by the supplier to declare his outward supplies correctly would lead to mismatch of returns leading to reversal of credits availed by the MSMEs.
- 3) **No tax differentiates for luxury items and services:** Under the implementation of goods and services tax, all goods and services will have same tax which will lead to rich becoming rich and poor becoming poorer. This is not ideal situation for MSMEs competing against large business.
- 4) **Excess working capital requirement:** Taxation of stock transfer will primarily influence the working capital requirements. Higher amount of capital requirement will hike interest cost which ultimately will rise the price of finished goods.
- 5) **Lack of infrastructure facilities:** In GST regime, the small and medium enterprises need atleast one computer and network facility to carry out the tax filling process. As many MSMEs in India are in the rural area, it is difficult for them to get information technology services at their place.

**Conclusion-**The implementation of goods and services tax is a very significant step in the field of indirect tax reforms in India. It has resulted in simplification of indirect tax system in the country thereby ensuring seamless business transaction across our nation and world over. GST has impacted the various sectors of the economy. In case of MSME, GST has relatively reduced the tax burden from the business owners and due to digital compliance, transparency has improved in the tax ecosystem. GST has witnessed as an opportunity to recognize the MSME sector. On the other hand, MSMEs also face several hindrance concurring to operational issue under the GST system where most enterprise owners find GST complex and costly to implement. However, GST will be beneficial for the MSMEs in the long run by making them more competitive. The Indian MSMEs would be able to compete with the international goods market and competition coming from cheap price epicenters, thus helping to boost our economy.

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# ROLE OF SELF HELP GROUP'S IN SOCIO ECONOMIC CHANGE

## (A Study on Bokaro District of Jharkhand State)

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**Abstract:** This paper serves as a platform for the specific actions of join a self help groups (SHGs) which is depend on the social status of the beneficiaries and for the many women leaders who are benefiting from self help groups in various ways and in harmony with women lead development highlights the success how the economic situation is developing in this area age explained through self help groups (SHGs). This study here is basically analytical in nature and is specifically related to the area of self help group in Bokaro district which has been focused on by adopting some specific methods to empower the woman there. Through this thematic analysis, the role of women in self-help groups and their role in financial inclusion have been realistically depicted, under this; the participation of women groups working in self-help groups in Bokaro district under Jharkhand has been united. Thematic analysis can be done by reaching the contemporary level. Despite many socio-economic developments in the country of India, women are still one of the most unenlightened groups; it is really useless for you to establish them at par with men. To make the Self Help Group system effective, efforts are made by the government to make the women involved as additional support leaders, which can actually become a medium for their socio-economic transformation. This research focuses on Bokaro district of Jharkhand state in India and the social, economic development of the people and women living in the area. This research seeks to explore special opportunities for a symbolic approach and exposure to areas that require special attention by the government to achieve sustainable development.

**Keywords:** *Poverty Alleviation, Women's Community, Socio Economic Change, Self Help Group.*

**Introduction:** Self Help Groups are currently a very important cause of development which is moving towards enabling them to come forward and become completely self-reliant and completely self-employed. Woman Empowerment is not only effective in making women economically capable but also gives them complete equality and also provides freedom of thoughts. Empowerment is a process that enables women to gain greater control over resources such as income, knowledge, information, skills, technology, training and challenges the ideology of patriarchy and especially important in participation in leadership decision making. It is helpful in role playing which increase the self-image and self-esteem of women and enables them to take an active participation in

the process of change and enables them to develop their assertiveness skills. There are many improvements in progress of women in Jharkhand. Non- farmer jobs are mostly not available for rural women. There has been a decline in the workforce participation of any of many urban women. Thus, compared to most other states, Jharkhand's workforce is very poor. There are limited numbers of woman, self help groups play a major role in poverty elevation in India, a live example of which can also be seen in Jharkhand. An increasing number of poor people in different parts of India are members of self help groups and the same situation is seen in Jharkhand also. Often these women are actively engaged in savings and credit as well as other activities like income generation, neutral resources management,



literacy, child care and nutrition etc. The SHG system provides a possibility for women to gradually move away from exploitation and isolation in a relevant and effective way. The objective of this study is to empower women through self help groups the dream of gender equality can be released by empowering women.

**Review of Literature:** Kumar (2019) has reviewed on the topic “women empowerment and development throughout as sag Jharkhand” in this article explain the community based women’s program (SHGs) is a developed and important example whose main target is property reduction. It plays an important role in emancipating woman first and it is specifically related to women’s community. In fact, it is involved in woman’s community, from social economic and political dimensions to political dimensions, my topic so far in my opinion is our role. Community cannot be achieved by money but class factor also plays an important role in it, hence according to me we see community as a multidimensional social process which enables people to gain moderate control over their lives. In fact it is a process that works to empower people to excise power in their own lives in their community, and in their society, based on what they value. Kumar and Wagh (2020) writes on “Woman Empowerment In Jharkhand Special Reference to West Singhbhum District: A Situational Analysis” in International Journal of advanced studies. In this paper mainly find out the related to Self Help Group activities in Jharkhand. It is hoped that it will be useful for all the researchers who are studying in this area. This paper is based on the sustainable efforts and global initiated by the government of Jharkhand. Empowerment of women is an important pillar to pave the way for a prosperous and strong state which directly impacts the overall development of the state. Thought this research an assessments has also been made of the SHGs running in Jharkhand and the problems arising in their development by eliminating which the Jharkhand government can give the form of a fully developed scheme to the self help groups,

which is quite effective in the present times will prove.

### **Objectives of study:**

- a. To find the socio-economic profile of SHGs beneficiaries.
- b. To know the pattern of income and expenditure of the respondents before and after joining SHGs.
- c. To know the economic status of SHGs of women in Bokaro district.

**Area of work:** In present rural India, there is a high rate of dependency and very low economic status of women; hence there is a need to increase the level of their income by looking at the various assets that generate income. In fact, the provision of income will help in their socio-economic transformation is an important factor. This presented study has been started to get valuable suggestions for improving the performance of Self Help Groups in the latest and middle way to promote socio-economic change and their empowerment through Self Help Groups. Due to this, accurate results are obtained. To achieve this, the scope of this work has been limited to the study of various self-help groups of Bokaro district of Jharkhand state.

**Sample Design:** To know the status of self-help groups and empowerment of women through self-help groups, their socio-economic change and impact, Bokaro district of Jharkhand state has been selected for the study. There is nine block’s in Bokaro district via. Chas, Gumia, Chandankiyari, Bermo, Nawadih, Chandrapura, Peterwar, Jaridih and Kasmar. All nine blocks have been taken for this study. Under random sampling technique, a sample of 25 respondents of women self-help groups has been taken from each block

### **Analysis and Interpretation:**

**A. Profile of Population-** Through this research, the empowerment of women through self-help groups and the family system is determined on other factors like age, family besides the number of dependents in the families and the information about the population is deeply considered and analyzed. Area of joining Self Help Group, savings gained after joining Self Help Group and powers to take important decisions, all these are some of the factors which can be analyzed in socio-economic change and women empowerment is done.

**Table 1:** Age- wise classification of respondents-

Age	Number of Respondent	Percent
Less than 20	15	7
20 – 30	30	13
30 – 40	105	47
40 – 50	55	24
Above 50	20	9
Total	225	100

Source: primary data

47% of the sample respondents are between 30 to 40 years of age and 07% of the sample respondents are below 20 years of age. This

makes it clear that the number of mature women joining the group is more than that of young and growing women in this study area.

**Table 2:** Educational Qualification of the respondents

Educational Qualification	Number of Respondents	Percent
Illiterate	115	51
Primary level	50	22
Middle level	35	16
Higher secondary	25	11
<b>Total</b>	225	100

Source: primary data

The above table is clearly shows that 51% of the sample respondents come under literature level, 22% of the respondents are under primary level, 16% of the respondents are of middle level and the remaining are of secondary level. Income level -It acts as a major determining factor in improving the standard of living. After joining the Self Help Group, an increase in the income of the members has been observed. The highest percentage of members before and after joining the Self Help Group is more than 3000 to 4000 per month income group. This increase shows that after joining the Self Help Group the members have increased their income level and 70% of the respondents are in the group of Rs 2000 to 3000 which increased to 24% after joining the Self Help Group. According to the data collected, the effect is that there has been a change of about 3 to 9 percent in the income level after joining the group. Many female members involved in economic activities independently and a group to raise their income level and standard of living.

Hypothesis 1:

- H0: There is no significant difference in the monthly income of the members before and after joining self help groups.

- H1: There is significance difference in the monthly income or the members before and after joining self help groups  
The calculated value of chi-square is 24.09947 which is greater than the tabulated value i.e. 12.59159 at 5 percent level of significance. The null hypothesis is rejected and it is reflects that the respondents having higher income has increased significantly after joining the self help groups. So, Result of Testing is that H1= Accepted and H0 = Rejected

C Expenditure level of members-Today, along with the increase in income, there has also been an increase in the family income of the women associated with the Self Help Groups. Nowadays, working women are like an asset for the family. They also get respect from their family and society because they work independently. Before joining the self-help group, the highest expenditure level of the family is between Rs 1500 to Rs 2500, but after joining the self-help group, their expenditure level increases to Rs 2500 to Rs 3500.

- Hypothesis 2:H1 There is significant difference in the monthly family expenditure of the members before and after joining self help groups.

- H0 There is no significant difference in monthly family expenditure of the members before and after joining self help groups.

<b>Table 3: Monthly income of members before and after joining Self Help Group</b>					
Before Joining SHGs			After Joining SHGs		
S.N	Monthly Income(Rs)	No. of Respondents	Percent	No. of Respondents	Percent
1.	Less than 2000	69	31	35	16
2.	2000-3000	54	24	39	17
3.	3000-4000	42	18	67	30
4.	4000-5000	24	11	28	12
5.	5000-6000	17	8	24	11
6.	6000-7000	12	5	20	9
7.	Above7000	7	3	12	5
	<b>Total</b>	<b>225</b>	<b>100</b>	<b>225</b>	<b>100</b>

<b>Table 4: Monthly Family Expenditure of the Members before and after joining SHGs.</b>					
Before Joining SHGs			After Joining SHGs		
S.N.	Monthly Expenditure	No. of respondents	Percent	No. of respondents	Percent
1.	Less than 1500	42	19	21	9
2.	1500-2500	76	34	78	35
3.	2500-3500	51	22	67	30
4.	3500-4500	39	17	45	20
5.	Above 4500	17	8	14	6
	<b>Total</b>	<b>225</b>	<b>100</b>	<b>225</b>	<b>100</b>

Sources: primary data

The calculated value of Chi-square is 9.91435 which is more than the tabulated mother i.e. 9.48773 at 5% significance level hence null hypothesis is rejected, hence there is significant difference in family expenditure of the respondents before and after joining the Self Help Group. The difference is that along with joining self help groups, household expenses also increase because it leads to improvement in the standard of living. So, Result of Testing H1= Accepted and H0 = Rejected

### Findings:

- Age groups of 30-40 years respondents' are 47% and will less then 20 years are 7% respondents.
- No. of illiterate respondents are 51%

- After the join SHGs, monthly income has increase majority of sample respondents.
- Majority of sample respondent's monthly expenditure has gone up after they become member of SHGs.
- More efficiency change to SHGs in socio economic condition.

**Conclusion:** In Bokaro district the Self Help Groups members have become independent and economic decision makers. In India women are confined within the four walls of their house and where dominate by males. Recently, there has been tremendous progress in the social and cultural environment in India. Has the situation now change in Jharkhand, which is evidence from this study? Women have now started

participating in all productive activities and are completing parallel tasks to men. A wave of self - help groups is being seen in Jharkhand. Which is working in the right direction, but to completely fulfill the objective of women empowerment of Jharkhand, it is very important to empower more and more women in social, cultural, economic, political and legal matters. At present, there are many such schemes in Jharkhand which is going on and is completely linked to self help groups.

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# CASH TO CASHLESS ECONOMY IN INDIA

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**Abstract**-India is the fifth largest economy in the world and it wants to become the third largest economy very soon, hence the government's goal is to make the Indian economy cashless, through which the economy can grow and the level of development of Indians increases. The Government of India is committed to increasing the cashless economy and is continuously taking steps in this direction. In such a situation, cashless becomes the most important factor. Despite the Government of India being so committed, the rate at which cashless increases in urban areas of the country is faster than that in rural areas. We have not yet been able to find in the areas what we all expected, so through this research paper we will try to get to the depth of those reasons.

**Keywords:** *Cashless Economy, UPI, PPP, BHIM, PoS*

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**Introduction**-A cashless economy is one in which there is no cash flow within an economy and all transactions are carried out using electronic media channels such as direct debit, credit and debit cards, electronic clearing, and payment systems such as Immediate Payment Service (IMPS), National Electronic Funds Transfer (NEFT), and Real Time Gross Settlement (RTGS). The Digital India programme is the government of India's flagship initiative, with the goal of transforming India into a digitally enabled society and knowledge economy. One of Digital India's stated goals is to be "faceless, paperless, and cashless." Various types of digital payments are available to promote cashless transactions and convert India into a cash-less society. These modes are Banking Cards, USSD, AEPS, UPI, Mobile Wallets, Bank Pre-paid Cards, Point of Sale, Internet Banking, Mobile Banking and Micro ATMs.

- Benefits of Cashless Economy
- No counterfeit currency
- Less cash theft
- Easy payment
- Easier international payment
- Widening the bracket of taxpayers
- Disadvantages of cashless economy
- Less literacy rate is creating problem to low-wage earners for going cashless.

- Less availability of devices as it required support online transactions, such as, computers,
- smartphones & point of sale devices,

Installing Point-of-Sale Systems, the government has asked grocery stores, local doctors, pharmacies, and other vital goods and service providers to install Point of Sale equipment. Research Gap Identified After exploring several publications and research papers, the researcher identified the "Research Gap" of the study. Only a few studies have been made in the past on performance evaluation of cashless economy in India in reference to Hazaribagh district. Therefore, this study has attempted to evaluate the usage of cashless transactions in Hazaribagh district and also to suggest strategies to make people aware of different modes of digital transactions. Several literatures are available for different parts of the country, but few are available in context of Jharkhand. It has also been observed that no earlier studies have covered this topic related to Hazaribagh district. Hence, the present study is a truthful effort to fill up this gap. The main intention of this study is to evaluate and analyze various schemes and the problems of individuals and business in dealing with cashless transactions. The study is also intended to check the transaction behavior of people of Hazaribagh and their intention towards use of

cashless mode for transactions in rural and urban areas.

**Literature Review**-More than 20 literatures have been reviewed till date and it is still in the process. It includes literatures based on Literatures based on impact of cashless economy, advantages & disadvantages of cashless transactions, covid effect on cashless transactions, out of which the prominent literatures that have been reviewed are of Kotkowski & Polasik (2021), Kee, et al., (2021), Taskinsoy, (2020), Hamidah & Hassan, (2020), Dubey, Sonar, & Mohanty, (2020), Aji, Berakon, & Md Husin, (2020), Madhav,(2021), YAKEAN, 2020 , Thirupathi, Vinayagamoorthi, & Mathiraj, (2019) etc. It creates problem of cyber security, Convenience of payment leads to overspending tendency, especially among the young generation,One of the primary drawbacks of India's cashless economy is the risk of identity theft. With each passing day, the rate of online fraud rises, increasing the risk of hacking. Not everyone is tech-savvy or aware of all the technological applications. Many people may lose their confidential identity in the internet environment while attempting to make digital transactions. Dependent on smartphones Some of the government's most noteworthy initiatives are Firstly, DigiShala which is launched to raise awareness of digital payments, the Ministry of Electronics and Information Technology has launched DigiShala, a government-owned 24-hour TV station. Secondly, Visa Vittiya Saksharta Abhiyan launched by the Government of India's Ministry of Human Resource Development to promote digital literacy.

**Introduction of the Study**-In the modern era of digitalization, India's government is attempting to build a cashless economy in place of the country's existing physical money habit. The most difficult aspect of moving to a cashless economy is striking a balance between the ease of financial transactions and the prevention of fraud. To address issues such as black money, Hawala, and money laundering, the Indian government has implemented a cashless economy. In India's economy, digital money has ushered in a new era. The digital revolution is sweeping the globe, and no other sector has seen such transformation as payment and settlement systems, resulting in a plethora

of digital possibilities for the average person. When it comes to picking a payment method to complete a transaction, consumers now have a variety of options. They choose a payment method based on the value they place on it in a certain situation, as each payment mechanism has its own function and purpose. Cash is a well-established and commonly utilised payment mechanism in India, as it is in many other countries of the world. It is heartening, however, that non-cash payments, particularly those made through electronic or digital means, are rapidly expanding (RBI, 2020).

**Current situation & challenge in india**- India is the second-highest country in volume and value that uses cash as a percentage of consumer payments. India's cash to GDP ratio, which measures how much cash is utilized in the economy, is between 12 and 13%, which is lower than Japan (around 18%) but far greater than other major economies like the US, the UK, and the Euro area. Cash-GDP ratio is highest for Japan and lowest for Sweden. India is at 4th position in Cash-GDP ratio. According to a report by the Reserve Bank of India (RBI), India ranks number three in terms of usage of banknotes in year 2022. According to a report by the RBI, only Hong Kong and Japan have a higher ratio of currency in circulation (CIC) as a percentage of GDP compared to India. After Demonetization, the country to reach its goal of creating a mainly cashless economy, the center is actively promoting online and card-based transactions. The country's rapidly expanding e-payment start-ups launched the Unified Payments Interface (UPI) to enable cashless transactions. In India, a significant shift toward digital transactions was sparked by the Covid-19 epidemic, in line with the prime minister's goal of creating a "Digital India." In fact, according to data from the National Payments Corporation of India (NPCI), the volume of UPI payments reached an all-time high in June 2020 of 1.34 billion, with transactions totalling of worth Rs 2.62 lakh crore. Government Initiatives for cashless economy in India Demonetization : After the demonetization, Paytm saw daily usage rise from three million transactions to five million. In the first twodays following demonetization, it also had a 700% spike in overall traffic and a 1000% increase in the amount of money added to its account. The e-wallet for Ola Money also showed a 1500% rise. Unified Payments Interface (UPI) : The

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government has introduced UPI as India's biggest and boldest payments interface. It has been launched by National Payments Corporation of India (NPCI) to advance RBI's goal of transforming society into one that uses "less cash" and is more digital. Direct Bank Transfer (DBT) : The government of India created the Direct Benefit Transfer (DBT) programme to allow recipients of several social welfare programmes, such as the Old Age Pension, Scholarship, and MGNREGA, to get their benefits and subsidies directly into their bank accounts. This made it possible digital banking to spread throughout rural India. Niti Aayog Committee : NITI Aayog has been established by the government to develop a plan to hasten India's transition to a cashless society. To encourage the implementation of digital payment systems, the panel frequently interacted with all stakeholders, including Central Ministries, Regulators, State Governments, District Administration, Local Bodies, Trade, and Industry Associations Pradhan Mantri Jan Dhan Yojana: In 2014, one of the largest financial inclusion efforts ever began. The goal of this national mission on financial inclusion is to provide banking services to every household in the nation and to achieve comprehensive financial inclusion. Assessment of the progress of digitisation from cash to electronic Currency in Circulation: The usage of cash as a payment method affects the quantity of CIC because it is one of the main factors driving demand for currency. Over the previous five years, or between the financial years (FY 2015 and FY 2021), the CIC nationwide expanded at a compound annual growth rate (CAGR) of 10.2%. Share of High Value denominated currency and Low Value denominated Currency Like other types of money, cash is used as a store of value as well as a means of payment. Assuming that high-value denomination notes are mostly held as a store of value and low-denomination notes for payments is a frequent strategy for trying to separate the two types of cash demand. The demand for the high-value currency has outperformed low-value currency during the last five years, which may be a sign that people are using cash less for making payments and more as a way to hold wealth.

**Current situation & Challenge - Lack of Awareness:** Lack of knowledge of technical advancements because most Indians are not

comfortable using computers and smartphones. Mobile remains an only means of communication for those who live in rural locations. Lack of Infrastructure: Still there is a lack of infrastructure in rural areas. According to a study by the Internet and Mobile Association of India (IAMAI) and market research firm IMRB, merely 16% rural users access the internet for digital transactions as compared to 44% urban users. Substandard Internet Quality & Lack of Internet Usage Facilities: India has a significant problem with last-mile internet access. The price war between telcos caused by the race to dominate the telecom industry has had an influence on service quality. Cost and Complexity of Digital Payments: Cash transactions are easy and straightforward for persons living in rural locations, and there are no additional fees involved. This explains why rural India is more likely to continue using cash as its:

- Main method of payment.
- Need to reduce charges
- Illiteracy

**Security:** Another excuse for not adopting e-banking is mistrust of digital transactions. Key Achievements of Govt. in Jharkhand & Hazaribagh for Online Services to make the process cashless The data of digital payment transactions per capita in India in 2021 states that the rank of Jharkhand is very poor. This implies that still many people of Jharkhand are not aware of digital payment transactions or consider it as insecure. Government Departments have begun implementing the e-Procurement programme. Any eligible tenderer may participate in this process and submit a tender from anywhere in the nation or the world. Digital signatures are used to accomplish this. The state's treasuries and sub-treasuries are all computerised. The State Data Centre receives all data directly from treasuries and subtreasuries. Government employees' GPF accounts are always accessible online. Four new positions, including e-Bank Manager, e-Merchant Manager, Network Manager, and Block Level e-Manager, were created to support District e-Governance Society in its mission to successfully implement the Digidhan Mission and promote cashless transactions throughout the state. They were instrumental in the implementation of initiatives like Digital India, the Digidhan

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Mission, and the promotion of digital transactions throughout the State. Initially, these posts were made and given a two-year approval period. Nine crores nine lakhs were budgeted for the payment of their salaries in the fiscal year 2017–18. Under the Digital India Program, the Indian government has established a special mission called as DIGIDHAN Mission, carried out by the Ministry of Electronics and Information Technology (MeitY). At the State level, it was intended to complete 60 crore digital payment transactions under this Mission in the fiscal year 2017–18 using digital payment methods (including UPI, USSD, IMPS, Aadhar Pay, and Debit Cards).

**Recommendation-**Thus the Indian government are devoted to bring the rural area into the main stream of digitilisation. As my research is confined to Hazaribagh district so I will explain some initiative which have taken place in hazribagh which are opening of Pragya Kendra, Common service centre etc. But even though some area are out of reach of these services such as slum area who are devoid of these services .This lifestyle is still as the same as before. Thus it shows that these scheme are and technology are confined tpo ertain population. So the first and foremost towards digitilisation of the rural area is to create awareness among them. Voluntary campaign is one of such major step to create awareness. Digital education should be provided to rural students .There is need to create faith among the rural people towards e-payment.

**Conclusion-**In this way we have seen that digital payment is the need of hour and it is not an alternative way of payment but day by day it

is becoming mandatory. Just like coin has two side , in the similar way digital payment have advantages and disadvantage but ignoring disadvantages we should focus on brighter and illustrative side of digital payment and move ahead in this direction. When we take precaution while using e-payment disadvantages can also be eliminated. Taking precaution as bank also state like “NEVER SHARE OTP”, ”PIN NUMBER”, ”CVV” etc cyber crime can be prevented. And for the success of the mission of modern India of digital payment can be achieved when each nd every people participate in it.

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# BIRSA MUNDA AND ULGULAN

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**Abstract:** The paper presented here gives a brief note on Birsa Munda and his struggle of freedom against British and capitalist forces in Chotanagpur region of India

**Key Words-** Birsa Munda, Ulgulan, Reasons behind Birsa Movement, Trades, Jal Jangal Jamin, Conversion Munda tribes

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**Beginning of Birsa Movement-**In the words of Mahasweta Devi, "Birsa used to tell his people that Mundas are the real owners of the earth and this heavenly dream should be grasped. A Munda occupied Mundari country, a country in which there are no sahibs, government employees and missionaries. Now the most desirable wealth near Munda is the kingdom of Birsa. Birsa's rule means Birsa's religion. Birsa's religion means Birsa's rule. To achieve this heavenly dream, one will have to shed one's own blood and take the blood of others."

**Impact of Sardari movement -** The increasing influence of the Sardari movement gave a political form to the Birsa movement. The land problem was at the root of the Sardari movement, due to which there was severe dissatisfaction among the Mundas for years. Birsa movement was also a result of dissatisfaction with the land problem. First of all there was dissatisfaction among the chieftains against the landlord. Later they also started opposing the British who supported the landlords. In 1892, the Sardari agitators launched a violent rebellion to solve the land problem, but there was no concrete political outline before them. In 1895, the Birsa movement gave him a framework. In the words of Diwakar Minj, "Birsa had seen in Chaibasa that when the government had protected the forests by law, the chieftains had agitated for the right to use the forests as per tradition. Therefore, Birsa had good thoughts towards the Sardars. After losing the case in Calcutta, there was disintegration among the Sardars as they had no other programme. Seeing the immense public support of Birsa, the Sardars started associating themselves with the Birsa movement. The influence of the Sardars was also visible in Birsa's thoughts and speeches. In this way Birsa Munda wanted to solve the land

problem through movement. Influenced by the Sardari movement, Birsa Munda started a movement against the British.

**2. Political reasons -** Birsa Munda wanted to get political independence by freeing himself from the subjugation of the British. His idea was that under the leadership of Birsa, the agitators would drive away the foreigners, no one would obey the orders of the government and they would establish Munda Raj. While addressing his followers, Birsa used to say – "My rule has started and the rule of the government has ended. Now their guns will become useless. You people do not need to be afraid." In the words of Mahasweta Devi, "Birsa used to explain to his people that the Mundas were trapped in big bonds. The Diku people have trapped the Mundas in thousands of affairs like loan, debt, coal mine, rail, jail, court etc. Now we will have to be free in every way. Will drive away all foreigners and will not pay any tax to anyone. Will take all the forests. He called himself 'Dharti Aaba' i.e. father of the earth. The people of Munda tribe had cleared the forests and created cultivable land. He was the real owner of the land. They had their own social and administrative system. But the British implemented the Zamindari system here and became the rulers here. Munda tribe started being exploited. Since the latter half of the 18th century, the arrival of outsiders increased in that area. The traditional land system and socio-political system started getting destroyed. Munda tribals were not getting justice. Birsa Munda started this movement to get freedom from the British rule and their atrocities and to regain the lost prestige.

**3. Economic reasons -** There were two famines in the entire country in the last decade of the

19th century. Due to famine the economic condition of the people here had become absolutely pathetic. Due to the land system i.e. Zamindari system which was started by the British here, the traditional economy gradually started disintegrating and the influence of land contractors and jagirdars who came and settled from outside increased. On the basis of their leases, they started forcibly occupying the brown and stubble lands. They started doing arbitrary things by tampering with the economy here. Tax rates started being increased. Therefore, the people here i.e. the tribals had to go to Assam and Bengal to earn. Due to this, the lifestyle of the tribals here became disorganized. The condition of the people had worsened due to both the terrible famines of 1896-97 and 1899-1900 AD. The main area of Birsa movement was also famine affected. Due to severe drought, crops were getting ruined and the price of grains increased. Some efforts were made by the government and Christian missions to provide relief from the famine but still the condition of the people remained miserable. Farmers and laborers were most affected by the famine.

Thousands of people who lived by hard labor died of hunger. Even during the famine, the behavior of the landlords and contractors was not good towards their tenants or cultivators. Due to shortage of food grains, incidents of theft and robbery had increased.

The new people coming from outside, on the basis of land leases given by the king or his relatives, captured the Mundas and Manakis in their clutches and by adopting the methods of cruelty, cruelty and violence, they drove out the tribal landowners from their own lands. Their land was snatched away. The gray land started being converted into medium land.

In this regard, Dayamani Barla has written in one of her articles, 'The forest which the tribals colonized after fighting with snakes, scorpions and roaring tiger bears and considered it as their inalienable right, was plundered by the English exploiters, landlords and monopolists in the 18th century. -At the same time, a vicious cycle of exploitative oppression and atrocities was carried out on the heritage of the tribal society. In the path of British rule, the Jagirdars and relatives of the kings took away the ownership

rights of the land from the tribal community and evicted them from the land. The deceitful land owners grabbed the brown land and the stubble land. He transformed the brown land into a fertile land. Revenue system was imposed on the tribal community on their own land. The tribals were being exploited by making them do forced labor or forced labour. In this way the economic exploitation of Munda tribe had started. Therefore, Birsa Munda wanted to improve the deteriorating economic condition of the tribes here by agitating against the British rule.

**4. Religious reasons** - Birsa Munda wanted to preserve the culture and religion of his society. At that time Munda culture was under the influence of Asura, Hinduism and Christianity. Singbonga, the supreme god of the Mundas, is first mentioned in the Asur Katha. Munda culture was also influenced by the Kabir sect of Vaishnav religion. Due to the influence of Hindu religion, Dussehra, Karma, Fagu, Jitiya and Mahadev Mandamela festivals etc. joined the Munda festivals. The origin of the tribes here is due to the work of Christian missionaries in Jharkhand. There had been a deep impact on culture. Hundreds of Mundas were converting to Christianity in the Munda region of Jharkhand. The rift between Christian tribals and non-Christian tribals was breaking their cultural centers like Paraha system, Panchayat, Akhara and Geetioda. Birsa Munda started this movement against the British to protect the religion and culture of the tribes here.

**5. Social reasons** - Due to the influence of new forces, the traditional Munda society reached the verge of disintegration. The respective roles of the village head, Pahans and Munda Manakis had completely changed.

Munda society was being affected by the activities of jagirdars, traders, government employees, police, Christian mission preachers etc. The disintegration of the Mundari land system was having a bad effect on the Munda society. The old social system of Munda was coming to an end. The feeling of peace and unity had vanished in the villages.

The social institutions of Mundas like Padha and Panchayat were coming to an end. The old

village heads were replaced by Dikus. The British rulers started sending people to the courts to resolve social disputes. Padha Pradhan Manki, Gram Pradhan and village Panchayats, who used to give decisions on civil disputes, had now become institutions in name only. Due to the end of the old social system, the moral values of the Munda caste were declining. Munda was famous for his truthfulness, honesty and simplicity but due to the new system, his social moral system gradually started disintegrating. Alcoholism was also prevalent on a large scale in the Munda community, which Birsa Munda wanted to stop. Birsa Munda started a movement to remove the social evils prevalent in his caste.

**Results of the movement** - However, Birsa's movement cooled down due to the mysterious death of Birsa Munda and the long sentences of his leading comrades. Nevertheless the British government had understood the problems of the Mundas. Munda tribals wanted protection of their rights to their ancestral land and wanted recognition from the government of their rights on forest produce and wanted to end the forced labor charged by the landlords. Therefore, the British government took the following steps to solve their problems-

- The practice of taking forced labor was stopped by making a law.
- Gumla Sub Division was formed in 1902 AD, due to which Mundas started getting justice easily in their own area. It was named Munda Division and its symbol was the picture of a Munda holding a bow and arrow. In 1902 itself, the tribal land was measured again, which was known as Khutkati Settlement by the Mundas.
- After completion of measurement, Chhota Nagpur Tenancy Act was passed in the year 1908, in which the Khuntakti system of Mundas was recognised, the officials made records of Munda land and gave ownership rights to Mundas and provided protection to their social systems. to be done.
- In order to get back the land of Mundas which had been grabbed by the Dikus (landlords, contractors, traders and moneylenders), the Deputy

Commissioner of the district was authorized to take possession of the Mundas. The Land Settlement Act 1889 was not implemented in the Munda area.

- Prohibited transfer of Mundas' land to outsiders.
- Cases pending in the courts of Mandus were disposed of expeditiously. They were freed from the clutches of moneylenders by arranging loans on easy installments.
- In 1929-30, the British Government got the land of Munda area re-measured with the aim of determining whether the real owners of the land, the Mundas, had received the land occupied by the Dikus or not. It is remembered by the name of Munda Sonoge.

The above steps solved the problems of the Mundas and gave them relief from the exploitation and oppression of the Dikus.

**Result of Birsa movement-** Birsa's movement brought awareness among the tribals of Chhota Nagpur. Therefore, he started praying to Birsa along with the Sun and the Moon because he was convinced that Birsa had established Tana Dharma.

Regional and national movements –

- Haribaba Movement - Birsa had rejected the practices of Hindu Gods and Goddesses, ghosts, sacrifices etc. Therefore, following in his footsteps, Du Ka Ho started a movement against the belief in Hindu deities and ghosts, which was called Haribaba Movement. Wherever Haribaba's followers saw idols of Hindu Gods and Goddesses, they would break them and cut down the trees in villages where people believed that they were haunted by ghosts or worshiped them. Thus, this movement played an important role in ending superstition among the tribals.
- Impact of Birsa on the upcoming social and religious movements – Birsa's movement brought awareness among the tribals of Chhota Nagpur area. Therefore, considering Birsa as his

guide, he started the following movements-

- The second movement was started by the tribals of Chhota Nagpur area after the passing of Chhota Nagpur Improvement Society Act 1916, in which they agitated to get two demands from the government. The first demand was that tribals should be given reservation in government services and legislatures. The second demand was to make Chhota Nagpur a separate sub-division.

In 1938, the leaders of this movement formed the Adivasi Mahasabha and demanded a separate tribal state. He considered Birsa as his guide. He was convinced that he had got the rights to Khutkatti only because of Birsa's struggle. Therefore, the Adivasi Mahasabha started worshipping the idol of Birsa. Men got Birsa's pictures printed on their dhotis and women on their sarees, wearing which they attended meetings and gave details of the sacrifices made by Birsa on the platforms and raised slogans in Birsa's name.

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# PROBLEMS AND PROSPECTS ON ROLE OF MICRO FINANCE IN FINANCIAL INCLUSION IN JHARKHAND: A CASE STUDY OF RANCHI DISTRICT

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**Abstract-**Microfinance has been accepted as one of the new development paradigms for alleviating poverty through social and economic empowerment of the poor, with special emphasis on empowering women and financial inclusion. The current study introduces various models of micro finance since its inception. This paper will focus the Problems and prospects on role of microfinance in financial inclusion in Jharkhand State context for a sustainable development. The progress and performance of the MFIs have been analysed using data from multiple sources. The contribution of poor and disadvantaged people to the economic development of the country is largely dependent upon their, to access credit and create wealth. To improve the economic conditions of the poor people, banking and financial services are to be made available easily without any discrimination, for the public good. Financial inclusion, more particularly when promoted in the wider context of economic inclusion, can uplift financial conditions and improve the standards of lives of the poor and the disadvantaged. The Microfinance and Financial Inclusions: its present context and Challenges faced by the Microfinance in Financial Inclusions are the objective of the study is to analyse the Problems and prospects of microfinance in Jharkhand. Thus, financial inclusion could be an instrument to provide monetary fuel for economic growth and is critical for achieving inclusive growth.

**Keywords:** Microfinance, Financial Inclusion, Banking, Sustainable Development and Economic Growth.

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**Introduction-** From the time of division of Bihar and Jharkhand unemployment and poverty has been two major characteristics and challenges of Jharkhand. The major cause for the above two has been the unavailability of sufficient credit / financing facilities for the poor and unemployed. These two factors have become the most challenging roadblock in the path of development of the Jharkhand State. The rapidly opening economy is widening the gap between the state rich and poor. To have a sustainable life style along with saving and investment, microfinance allows the poor to get the loan that leads to financial independence, growth and development. The poor use these loans in a productive manner to create their

businesses, opening new startup, assets of their own and get rid of poverty once and for all. Microfinance is becoming a significant buzzword in Jharkhand. Remarkable progress has been made during the last one decade in innovating techniques to deliver financial services to the poor on a sustainable basis. These loans are aimed at empowering the impoverished people to start their own businesses/startup and to grow their money so that they can achieve long-term financial independence and develop sustainably. Economic growth, sustainable development and poverty alleviation can be achieved effectually with the help of an instrument like Microfinance. This paper will focus the Problems and prospects on role of microfinance

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in financial inclusion in Jharkhand State context for a sustainable development.

**Objectives of the study-**The broad objective of the study is to analyse the Problems and prospects of microfinance in Jharkhand. However, the paper also throws some light on the following issues:

- Microfinance and Financial Inclusions: its present context
- Challenges faced by the Micro Finance in Financial Inclusions
- Suggestive measures to tackle the challenges faced by the Micro Finance.

**Research methodology-**The present study is a descriptive study. This study is mainly based on secondary data only. Secondary data is collected from various sources like journals, magazines and reports, e.g., Planning Commission report, RBI report, NABARAD report etc. So, trueness of the data depends on the trueness of the source.

**Challenges of micro finance in financial inclusion-**The overall microfinance industry's gross loan portfolio (GLP) surged by 11.9 per cent to Rs 2,59,377 crore as on March 31, 2021 from Rs 2,31,787 crore as on March 31, 2020, says a report. The growth was driven by an addition of 4 lakh borrowers during the pandemic-struck 12-month period ending March 2021, according to a report Micrometer, released by Microfinance Institutions Network (MFIN). Some challenges faced by micro finance in India are:

**The expense of the outreach-**Microfinance institutions serve small ticket loans to the urban poor and under banked in distant hinterlands as a result of the model. There are logistical and field force costs associated with the outreach. As a result, margins are eroding, necessitating digitization and process automation. MFI outreach in India is extremely low, at only 8%, compared to 65 percent in Bangladesh.

**Growth of the Self-Help-Groups (SHGs)-**The SHG or Joint Liability Group (JLG) model is used by many MFIs. These models are chosen at random regardless of the scenario, increasing the possibility of the weaker portions taking on more debt than they can handle, which is irreversible. Because of the government's

engagement in supporting self-help groups, they have witnessed rapid expansion, putting microfinance institutions under strain. This has long-term negative consequences for the MFIs' viability.

**Higher Rate of Interest Compared to the Mainstream Banks-**Microfinance institutions have a limited transaction volume, yet the cost of those transactions is fixed and substantial, posing a considerable problem for all of them. Mainstream banks have long roots in the market, which has evolved to meet the demands of the times. People can find a wide range of things in one location at a reduced cost when compared to MFIs. The majority of mainstream banks charge a modest interest rate on their loans, ranging from 8 to 12 percent, whereas MFIs charge a high interest rate on loans ranging from 12 to 30 percent of the principal amount. The Reserve Bank of India (RBI) announced guidelines to abolish the MFI interest rate ceiling of 26%. Many MFIs have benefited from the guidelines, while borrowers have been pushed away by the rising loan rates. Microfinance institutions deals with a small number of transactions, yet their costs are constant and significant.

**Lack of Investment Validation-**Investment valuation may be a critical competency for an MFI's smooth operation. MFIs operate in developing and developed areas with limited activity. As a result, MFI finds it difficult to gain access to information for appraisal purposes. MFI management teams cannot understand the quantity of quality information they have to build investment decisions due to a lack of consistent and trust worthy valuation methods.

**Focus on Rural Poor Only-**MFIs frequently make the error of ignoring the urban poor in favour of focusing on the rural poor. Only 800 MFIs have been identified in India that focuses on the urban poor.

**Loan Default-**Borrower's failure to manage their debts leads to loan default, which stymies the growth of Microfinance Institutions. Borrowing has increased significantly, while risk management has remained ineffective. The industries make loans without requiring collateral, increasing the risk of default and bad debts. Effective planning is required for good

growth, which is still lacking in most MFIs. Furthermore, the absence of apex control, which was one of the causes of India's Microfinance Crisis in 2008, becomes a source of over-indebtedness. In MFIs, late payments account for over 70% of all payments, further limiting the institution's working capital and profit.

**Low knowledge of financial services-**Another important stumbling block in the road of microfinance institutions is citizens' lack of knowledge of fundamental principles. The lack of financial services in the microfinance industry is a problem for both customers and institutions. This not only prevents people from joining MFIs, but it also puts them in a financial bind.

**Measures to overcome challenges:** The following are some measures to overcome the challenges faced by MFIs in providing microfinance services to have a sustainable development.

**Proper Regulation-**When the microfinance was in its nascent stage and individual institutions were free to bring in innovative operational models, the need for a regulatory environment was not a big concern. However, as the sector completes almost two decades of age with a high growth trajectory, an enabling regulatory environment is needed that protects interest of stakeholders as well as promotes growth.

**Field Supervision-** In addition to proper regulation of the microfinance sector, field visits can be adopted as a medium for monitoring the conditions on ground and initiating corrective action if needed. This will keep anyone on the performance of ground staff of various MFIs and their recovery practices. This will also encourage MFIs to abide by proper code of conduct and work more efficiently. However, the problem of feasibility and cost involved in physical monitoring of this vast sector remains an issue in this regard.

**Encourage Rural Penetration-**It has been seen that instead of reducing the initial cost, MFIs are opening their branches in places which already have a few MFIs operating. Encouraging MFIs for opening new branches in areas of low microfinance penetration by

providing financial assistance will increase the outreach of the microfinance in the state and check multiple lending. This will also increase rural penetration of microfinance in the state.

**Complete Range of Products-**MFIs should provide complete range of products including credit, savings, remittance, financial advice and also non-financial services like training and support. As MFIs are acting as a substitute to banks in areas where people don't have access to banks, providing a complete range of products will enable the poor to avail all services.

**Transparency of Interest Rates-**As it has been observed that, MFIs are employing different patterns of charging interest rates and a few are also charging additional charges and interest free deposits (a part of the loan amount is kept as deposit on which no interest is paid). All this make the pricing very confusing and hence the borrower feels incompetent in terms of bargaining power. So, a common practice for charging interest should be followed by all MFIs so that it makes the sector more competitive and the beneficiary gets the freedom to compare different financial products before buying.

**Technology to Reduce Operating Cost-**MFIs should use new technologies and IT tools & applications to reduce their operating costs. Microfinance institutions should be encouraged to adopt cost-cutting measures to reduce their operating costs. Also, initiatives like development of common MIS and other software for all MFIs can be taken to make the operation more transparent and efficient.

**Alternative sources of Fund-**In absence of adequate funds, the growth and the reach of MFIs become restricted and to overcome this problem MFIs should look for other sources for funding their loan portfolio. Various alternative sources of fund for the MFIs may be by getting converted to for-profit company i.e., NBFC, Portfolio Buyout, and Securitization of Loans etc.

**Hypothesis of the study-**In the light of overall objectives of the study and after review of existing researches on the subject, the following hypothesis has been developed for the purposes of testing:



- The Microfinance activity in Jharkhand and well-being of the beneficiaries are not interdependent;
- The standard of Financial Inclusion and the Microfinance activities are not associated;

**Test of significance-**In the study to test the hypothesis chi-square test was undertaken. The chi-square test is used to test if a sample of data came from a population with a specific distribution.

*The chi-square test is defined for the hypothesis:*

**Hypothesis I** - The Microfinance activity in Jharkhand and well-being of the beneficiaries are not interdependent and

**Hypothesis II** - The standard of Financial Inclusion and the Microfinance activities are not associated.

Test - For the chi-square goodness-of-fit computation, the data are divided into  $k$  bins and the test statistic is defined as:

$$\chi^2 = \sum_{i=1}^k (O_i - E_i)^2 / E_i$$

where  $O_i$  is the observed frequency for bin  $i$  and  $E_i$  is the expected frequency for bin  $i$ . The expected frequency is calculated by:

$$E_i = N \{F(Y_u) - F(Y_l)\}$$

where  $F$  is the cumulative Distribution function for the distribution being tested,  $Y_u$  is the upper limit for class  $i$ ,  $Y_l$  is the lower limit for class  $i$ , and  $N$  is the sample size.

The chi-square test is used with descriptive data in the form of frequencies. It is a test of independence and is used to estimate the likelihood that some factors other than chance account for the observed relationship. Since the null hypothesis states that there is no relationship between the variables under study, the chi-square test merely evaluates the probability that the observed relationship results from chance. The chi-square test represents a useful method of comparing experimentally obtained results with those to be expected theoretically on some hypothesis. The difference between the observed and expected frequencies are squared and divided by the expected number in each case, and the sum of these quotients is  $\chi^2$ . The more closely the observed results approximate to the expected, the smaller the chi-square and the closer the agreement between observed data and the hypothesis being tested. Contrariwise, the larger the chi-square the greater the probability of a real divergence of experimentally observed from expected results.

**Hypothesis I** – The Microfinance activity in Jharkhand and well-being of the beneficiaries are not interdependent. In a sample survey of people's opinion answers to the following two questions:

- Do you agree that the Microfinance activity in Jharkhand and well-being of the beneficiaries are not interdependent?
- Are you in favor of giving the financing sector full overseeing responsibility to the State Government?

**Table: Following are the tabulated data of question from Hypothesis – I**

**Question (a)**

	Yes	No	Total
Yes	59	33	92
No	20	08	28
Total	79	41	120

**Question (b)-** Can you infer or not that the financing sector situation will improve upon delivery to State Government? When the

researcher has that the value of  $\chi^2$  for degree of freedom at 5% level of significance is 3.841.

**Findings:** *Null Hypothesis (H<sub>0</sub>):* The option on the financing sector situation will improve upon

deliver to State Government. Following are the computed expected frequency of the entire cell:

$$f_{e11} = \frac{(92 \times 79)}{120} = 60.57$$

$$f_{e12} = \frac{(92 \times 41)}{120} = 31.43$$

$$f_{e21} = \frac{(28 \times 79)}{120} = 18.43$$

$$f_{e22} = \frac{(28 \times 41)}{120} = 9.57$$

The researcher knows that  $\chi^2$  Distribution

$$\chi^2 = \sum \left[ \frac{(f_o - f_e)^2}{f_e} \right]$$

$$\chi^2 = \sum \left[ \frac{(59 - 60.57)^2}{60.57} + \frac{(33 - 31.43)^2}{31.43} + \frac{(20 - 18.43)^2}{18.43} + \frac{(8 - 9.57)^2}{9.57} \right]$$

$$= \frac{2.46}{60.57} + \frac{2.46}{31.43} + \frac{2.46}{18.43} + \frac{2.46}{9.57} = 0.51$$

i.e.  $\chi^2 = 0.51$  and

Degree of Freedom (v) = (2 - 1) (2 - 1) = 1

**Reference-** The researcher found that the tabulated value of Chi square is higher than (i.e., 3.841) the computed value of chi square (i.e., 0.51). Hence, the Null Hypothesis is accepted and the option on the financing sector situation will improve upon deliver to State Government in Jharkhand.

**Hypothesis II** – The standard of Financial Inclusion and the Microfinance activities are

not associated. In a sample survey of People opinion answers to the following two questions:

- Do you agree that the standard of Financial Inclusion and the Microfinance activities are not associated?
- Are you in favour of the Finance work being carried out on the Jharkhand state by the State Government of Jharkhand?

**Table No: Following are the tabulated of question from Hypothesis – II**

**Question (a)**

	Yes	No	Total
Yes	67	15	82
No	22	16	38
Total	89	31	120

**Question (b)-** Can you infer or not that the finance work done by the State Government would holocaust our service sectors? When the

researcher has that the value of  $\chi^2$  for degree of freedom at 5% level of significance is 3.841.

**Findings:** Null Hypothesis ( $H_0$ ): If Financing undertaken by the State Government will protect our Service Sectors.

Following are the computed expected frequency of the entire cell:

$$f_{e11} = \frac{(82 \times 89)}{120} = 60.82$$

$$f_{e12} = \frac{(82 \times 31)}{120} = 21.18$$

$$f_{e21} = \frac{(38 \times 89)}{120} = 28.18$$

$$f_{e22} = \frac{(38 \times 31)}{120} = 9.82$$

The researcher knows that  $\chi^2$  Distribution

$$\chi^2 = \sum \left[ \frac{(f_o - f_e)^2}{f_e} \right]$$

$$\chi^2 = \sum \left[ \frac{(67 - 60.82)^2}{60.82} + \frac{(15 - 21.18)^2}{21.18} + \frac{(22 - 28.18)^2}{28.18} + \frac{(16 - 9.82)^2}{9.82} \right]$$

$$= \frac{38.19}{60.82} + \frac{38.19}{21.18} + \frac{38.19}{28.18} + \frac{38.19}{9.82} = 7.68$$

i.e.  $\chi^2 = 7.68$  and

Degree of Freedom ( $v$ ) =  $(2 - 1)(2 - 1) = 1$

**Decision:** The researcher found that the tabulated value of Chi square is lower than (i.e., 3.841) the computed value of chi square (i.e., 7.68). Hence, the Null Hypothesis is not accepted and the option if financing on a Ranchi District area that is being undertaken by the State Government will not protect our service sectors.

**Conclusion-To** obtain sustainable development there must be continued growth and diversification of the Jharkhand economy, all segments of the population including farmers, rural micro-entrepreneurs and the poor should have easy access to sustainable financial services such as savings, credit and insurance provided by self-reliant, sustainable financial institutions in a conducive macroeconomic policy environment and development of

Microfinance in Financial Inclusion. Microfinances requires state initiative, local initiative and careful donor support for the development of institutions, enabling them to offer both savings and credit services, mobilise their own resources, have their loans repaid, cover their costs from their operational income, and finance their expansion to the poor and non-poor people from their profits. Financial Inclusion is a new pioneering concept. It is the aim of banking and financial services to unbanked rural and non-rural areas. At present microfinance institutions are becoming an engine for total financial inclusion by providing microfinance to communally weak section of society through collaboration with Self Help Group and other social institutions. Microfinance changing the face of poor Jharkhand Micro-Finance is emerging as a

powerful instrument for poverty alleviation in the state economy. In Jharkhand, micro-Finance scene is dominated by Self Help Groups (SHGs) - Banks linkage Programme, aimed at providing a cost-effective mechanism for providing financial services to the unreached poor. Thus, The Financial Inclusion are playing vital role of economic opportunity and improve the living standard for inclusive growth.

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# DEVELOPMENT OF SMES IN INDIA: ROLE OF DIGITALISATION

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**Abstract-** This paper discussed the role of digitalisation in development of Micro, Small and Medium enterprises in India. It is a common belief that the Small and Medium Enterprises is the key to the economic development of every country whether developed, developing or under-developed. Digitalisation of an enterprise does not honestly constitute advent of a new commercial enterprise, however transforming the prevailing ones to take benefit of doing commercial enterprise in a new way. This paper discussed the need, challenges and opportunities of digitalisation for Small and Medium Enterprises. The data was collected using primary and secondary sources. Chi-square test was used to analyse the data and determining the relationships between variables. The results however showed that Small and Medium Enterprises have a direct and significant impact of digitalisation. ICT adoption in SMEs plays a vital role in the growth of economic activities. The research concludes that digitalisation has a significant impact on the overall performance of SMEs in India, with increasing the growth rate of the economy, reducing poverty, providing employment opportunities for SMEs in domestic and foreign market. However there are certain challenges that SMEs are facing which need to be addressed by them and government should also provide support for that.

**Key words:** Digitalization, SMEs, ICT

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**Introduction-** In cutting-edge commercial enterprise state of affairs digitalization has become the watch phrase. Virtual transformation is a massive venture for SMEs these days as several industries and agencies face lots of stress to trade their corporations to the virtual manner, however, technological transformation of groups ought to be targeted on enhancing customer satisfaction, optimizing operational strategies and growth organizational structure. SMEs which are probably particularly modern are stated to be confronted with economic, skill shortage and financial disturbing situations that have an effect on their boom, whilst conventional organizations which may be coping with the virtual transformation system hazard will be inclined to lose their competitiveness. Digitalisation of an enterprise does not honestly constitute advent of a new commercial enterprise, however transforming the prevailing ones to take benefit of doing commercial

enterprise in a new way. The ICT adoption frequency of SMEs in India has remained pretty very low and this has contributed to its sluggish pace of financial boom and development. But, international competitiveness and the quest to stimulate financial boom are some of the essential elements why marketers need to undertake ICT. Emphasis made on effect of ICT to enhance productivity and overall performance of SMEs may be taken into consideration as an exceptional situation to marketers, scholars and practitioners in a growing economic system like India. Globally, using ICT to enhance productivity and performance is one of the most challenging situations being faced by SMEs especially with the growing concept of international marketplace due to the lack of knowledge. As a consequence, there is an urgent want for a transition in SMEs operation to meet the worldwide demanding situations. The magnitude at which SMEs will benefit by

implementing the ICT in its operations and support activities is past comprehension. However, the impact of ICT on overall operational performance of SMEs in India has no longer been much explored.

**Literature review-** Mirela Nastasia and Costel Mironeasa has suggested that enterprise growth is determined not only by the traditional characteristics of size and age, but also by other enterprise – specific factors such as indebtedness, future growth opportunities, process and product innovation, and organizational changes. Chris Hall and Charles Harvie (2003) the reputation for SMEs to be flexible in the face of adversity is well deserved but should not be taken for granted. Odili Okwuchukwu (2015) strongly recommends diversification of the economy by shifting emphasis to the private sector, especially the small and medium scale enterprises (SMEs), to produce domestic competitive substitute for the imported goods. Ayyagari et al (2007) share that internationally the role of Small and Medium Enterprises (SMEs) has been recognised as an economic driver, with the World Bank citing SME development as an approach to boosting growth in the economy, increasing employment and reducing poverty. Gibson et al (2008) in absence of a consensus over measure of dentition, SMEs are deprived of many benefits and initiatives allowed by their governments/ institutions. Oladejo and Adereti (2010) the time period of the 1990s observed the proliferation and rapid growth of internet and related technologies, which combined to create a global and economical platform for corporates to communicate and trade. Oladejo and Yinus (2013) increased use of information technology and ICT can benefit organizations with plethora of information resulting in improved performance, intact relationships with customers and vendors, cost-efficient production among others. Bansal and Sharma (2006), digitalisation has extensively transformed the way business operations are performed, thus posing new challenges to the Entrepreneurs. However, the impact of digitalisation on SMEs activities in order to ensure better performance is worthy of analysis in this present move to cashless economy. (Popoola, 2010; Odior and Banuso, 2012; AlGhamdi et. al 2012)), in doing business today, the movement of cash has been made outdated by the use of technology. Manyika and

Roxburg (2011) the increased technological advancement in recent time has made a strong effect on SMEs in different parts of the globe like in China and Brazil. Rahayu and Day (2017) an in-depth review of the process of digitalisation in both the developed and developing countries can prove beneficial in improving the understanding of the problems of ICT adoption. Jones et al., (2014) the top management and decision- makers of businesses, including SMEs, must introduce and ensure full utilization of ICT in order to sustain and flourish in the present economic scenario.

**Objectives-**The specific objectives of the study include;

- Ascertain the impact of digitalisation on SMEs in India.
- Identify the challenges of SMEs in the digitalisation process.

**Hypothesis:**

1. H0: There is no significant impact of digitalization on SMEs in India.
2. H1: There is significant impact of digitalization on SMEs in India.

**Methodology-**This paper has utilized data collected from both primary and secondary sources. The secondary data was collected mainly from government websites, journals, magazines and other sources. However, the results of this study are based on the analysis of primary data collected. A survey was conducted through structured questionnaires distributed to SMEs having a sample size of 250 respondents and the chi-square test was used to determine the level of impact of digitalisation on the SMEs.

**Advantages of digitalisation of SMES**

**Improved efficiency:** The market no longer restricts from converting and customers want a quick reaction, so efficiency in responsiveness is a fundamental need to win customers and especially to maintain them. Digitization allows you to reply quickly and enhance the possibilities of conversion.

**User experience:** Enhanced user experience may result in longer-time customer retention. Digital transformation and expert IT support

helps in opening new avenues of communication, offers quicker responses and honest and immediate remarks.

**Cost reduction:** Digitized organizations make certain that their fixed prices have decreased on average with improved quality.

**Differentiation:** There are various SMEs who maintain their organizations without digitizing and without having any digital support. Taking the benefits digitalization brings with it, an absolute differentiation can easily be made in the performance of two firms.

**Culture of innovation:** Digitization stimulates innovation. SMEs that adopt digital methods not only increase their entrepreneurial value but also bring more creative and innovative ideas that drive growth.

**High revenue generation:** Physical sales of products and services by a firm might be time consuming and really annoying and this restricts the organization's market coverage. Using virtual technology and a web based system, may help SMEs to grow and increase their revenue base.

**Increased customer base:** Digitization makes a company's digital reach go very far, impacting a greater volume of users. Around 4 billion people are using digital platforms on different social media. This increases the chances of increasing its reach and may result in an increase in sales and offers numerous

### Challenges of SMES in digitalisation

**Lack of technical knowledge:** SMEs of today witness the greatest challenge as lack of knowledge and technical updation regarding digitalization. There exists brand-new technology provided by means of tech enabled services like e-commerce and social

networking platforms. However, most of the SMEs aren't privy to them. As a matter of fact, less knowledge about new technologies and skepticism prevents an enterprise from benefitting from such facilities.

**Insufficient funds and poor infrastructure:** Most of the SMEs in India are facing the problem of insufficient funds and poor infrastructures to perform their activities effectively. Generally, SMEs depend on government loans and grants.

**Inefficient Regulatory Framework:** The sorry state of infrastructure in the economy poses the fear of data security. Data security is defined as the protection of data from unauthorized access. Thus, the biggest security threat is said to be from malware and cyber-attacks.

**Governance challenges:** SME business operations tend to be more effective, efficient & responsive when they have control over finances, access to accurate data and acquiring new customers but in most cases, they are denied these opportunities. These changes, however, come through strong governance, better communication, efficient coordination and cumulative vision of the organization.

### Findings and analysis

To ascertain the impact of digitalization on SMEs in India, the data was analyzed using Chi-Square to test the hypothesis. A total of 400 respondents were asked to fill in the questionnaire. The simple random sampling technique was further adopted to give equal opportunity for selection to every element of the population. Data from 250 respondents was selected and analyzed using simple statistical tables and percentages. The value of the Chi-square was calculated using the Chi-square formula;  $X^2 = \sum (O - E)^2 / E$ .

**Table 1: Is the performance of SMEs in India going to improve after digitalization?**

Options	Frequency	Percentage
Agree	215	86
Disagree	28	11.2
Not Sure	7	2.8
Total	250	100

**Table 1** reveals that 215 (86%) respondents were of the opinion that the performance of

SMEs in India will improve after digitalization, while 28 (11.2%) respondents

(110)

disagreed and 7 (2.8%) of the respondents were not sure.

**Table 2: Will ICT serve as determinant of economic growth and development of SMEs business operations in India?**

Options	Frequency	Percentage
Agree	217	86.8
Disagree	20	8
Not Sure	13	5.2
Total	250	100

**Table 2** reveals that 217 (86.8%) respondents were of the opinion that ICT adoption in SME business operations will serve as determinant of economic growth and development in India; whereas 20 (8%) respondents declined the idea and 13 (5.2%) of them were unable to decide.

**Table 3: Will adoption of ICT in SMEs create more employment opportunities?**

	Frequency	Percentage
Agree	185	74
Disagree	56	22.4
Not Sure	9	3.6
Total	250	100

**Table 3** reveals that 185 (74%) respondents agreed that adoption of ICT in SMEs will increase employment opportunities in India;

while 56 (22.4%) respondents disagreed and 9 (3.6%) of the respondents could not take a decision.

**Table 4: Will digitalisation of SMEs in India help in reducing poverty?**

Options	Frequency	Percentage
Agree	210	84
Disagree	15	6
Not Sure	25	10
Total	250	100

**Table 4** reveals that 210 (84%) respondents opined that digitalization of SMEs will help in reducing poverty in India; 15 (6%) respondents

had a negative opinion and 25 (10%) of the respondents were not sure.

**Table 5: Is digitalization going to provide business opportunities for SMEs in domestic market and foreign market?**

Options	Frequency	Percentage
Agree	215	86
Disagree	32	12.8
Not Sure	3	1.2
Total	250	100

**Table 5** reveals that 215 (86%) respondents agree that digitalization will provide business opportunities to SMEs in domestic market and

foreign market; whereas 32 (12.8%) respondents disagreed on the point and 3 (1.2%) of the respondents were not sure.



**Table 6a: Contingency Table of Observed Frequency**

Question	Agree	Disagree	Not Sure	Total
1	215	28	7	250
2	217	20	13	250
3	185	56	9	250
4	210	15	25	250
5	215	32	3	250
<b>Total</b>	<b>1042</b>	<b>151</b>	<b>57</b>	<b>1250</b>

**Table 6b: Contingency Table of Expected Frequency**

Question	Agree	Disagree	Not Sure	Total
1	208.4	30.2	11.4	250
2	208.4	30.2	11.4	250
3	208.4	30.2	11.4	250
4	208.4	30.2	11.4	250
5	208.4	30.2	11.4	250
<b>Total</b>	<b>1042</b>	<b>151</b>	<b>57</b>	<b>1250</b>

The figures in table 6a above represent the Observed frequency (Of) while figures in the table 6b above represent the Expected frequency (Ef). The observed frequency (Of) is obtained from the responses of the questionnaire while the expected frequency (Ef) was calculated using the formula;  $\frac{RT \cdot CT}{GT}$  where, RT = Row Total, CT = Column Total and GT = Grand Total.

**Test of Significance**

In testing the level of significance, the 0.95 (95%) or 0.05(5%) was used at 8 degree of freedom (df). The degree of freedom is computed as:  $df = (Row-1) (Column - 1)$

$$df = (5 - 1) (3 - 1),$$

$$df = (4) (2)$$

$$df = 8.$$

The critical (tabulated) value of  $X^2$  is = 15.50. Now we are going to get the calculated value of  $X^2$

**Table 7: Contingency Table of Calculated Chi-square**

Row and Column	Of	Ef	Of-Ef	(Of-Ef) <sup>2</sup>	(Of-Ef) <sup>2</sup> /Ef
<b>R1C1</b>	215	208.4	6.6	43.56	0.21
<b>R1C2</b>	28	30.2	-2.2	4.84	0.16
<b>R1C3</b>	7	11.4	-4.4	19.36	1.70
<b>R2C1</b>	217	208.4	8.6	73.96	0.35
<b>R2C2</b>	20	30.2	-10.2	104.04	3.45
<b>R3C3</b>	13	11.4	1.6	2.56	0.22
<b>R3C1</b>	185	208.4	-23.4	547.56	2.63
<b>R3C2</b>	56	30.2	25.8	665.64	22.04
<b>R3C3</b>	9	11.4	-2.4	5.76	0.51
<b>R4C1</b>	210	208.4	1.6	2.56	0.01
<b>R4C2</b>	15	30.2	-15.2	231.04	7.65
<b>R4C3</b>	25	11.4	13.6	184.96	16.22

<b>R5C1</b>	215	208.4	6.6	43.56	0.21
<b>R5C2</b>	32	30.2	1.8	3.24	0.11
<b>R5C3</b>	3	11.4	-8.4	70.56	6.19
					<b>61.66</b>

From the table,  $X^2=61.66$

**Interpretation:** The calculated value of  $X^2$  (61.66) (as statistical test show in the above table) is greater than the critical (tabulated) value of  $X^2$  (15.50), the research therefore rejects the null hypothesis ( $H_0$ ) i.e. There is no significant impact of digitalization on SMEs in India and accept the alternative hypotheses ( $H_1$ ) and conclude that there is a significant impact of digitalization on SMEs in India. Furthermore, the results of analysis also implied that digitalization has a significant impact on creating job opportunities, reducing poverty and increasing economic.

**Conclusion and recommendations-** Digitalization of organizations in India is predominantly pushed at a rapid rate at which digitalization of customers is carried out. The SMEs are stated to play a very substantial role in development of the Indian economy because it contributes around 56% to the nation's GDP and provides employment to approximately 75% of the country's overall workforce. However, despite this digital transformation, SMEs in the country could not achieve

considerable success. Findings from the research however display that ICT adoption in SMEs plays a vital role in the growth of economic activities. The research concludes that digitalization has a significant impact on the overall performance of SMEs in India, with increasing the growth rate of the economy, reducing poverty, providing employment opportunities for SMEs in domestic and foreign market. In view of the above conclusion the following suggestions have been made:

- SMEs should improve their strategies made in the process of adoption of ICT in business operations.
- SMEs need to increase access to information which will require co-operation among all stakeholders –

- public, government agencies and intermediary organizations.
- SMEs should be provided with financial support for adopting ICT to minimize the cost of consultation and professional support.

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# **ROLE OF BARANGANAS IN THE FREEDOM MOVEMENT: RECONSTRUCTION AND, REORCHESTRATION**

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India's freedom movement and independence is not just a historical event. Behind the organization of this phenomenon lies a long history, sociology, psychoanalysis, socio-economic infrastructure and a profound philosophy of life, which emerges from the combined ideas of various philosophies of the East and the West. A review of the history of the whole world shows that any revolution has two main aspects, one is the revolutionary spirit and the other is the implementation of that spirit. We learn this from the history of various movements. Artists, philosophers, writers, poets, singers, dramatists or revolutionaries cultivate the land on an intellectual level. It is possible to bring home the fruits of their labor only when the marginal people of the society also participate in the revolution.

The year 1789 ushered in a new era in the history of human awakening. This year will be written in the pages of world history. It was in this year that the stirring 'French Revolution' was organized. By overthrowing the Bourbon monarchy and introducing a parliamentary system, the revolutionary masses of France deeply shook the political and social life of almost undisturbed Europe. A large number of people from different strata of society, 94-96% of the total population joined this mass movement,<sup>1</sup> while the main forces of this awakening were the third community, lower income groups and the upper classes. They joined the revolution with great enthusiasm. Prominent historian Michel (Jules Michelet) said that the French Revolution was now done by 'The People'. Another historian George Rude (G. Rude) specified the common people as the real architects of the revolution of 1789, in his words - "It becomes a Spontaneous and regenerative upsurge of the French nation against the despotism, grinding poverty and injustice of the Old Regime."<sup>2</sup> The French Revolution did not only affect the European soil, but its waves were observed almost all

over the world. Common man / Sankulet played a prominent role in the wake of this revolution- today it is universally acknowledged. By clinging to the tradition of this revolution, in all the anti-British movements that took place in colonial India, the common people, men and women from the lower classes to the poor peasants, labourers, mutts, laborers spontaneously participated.

If we look at medieval Bengal and Indian history with the urge to review history, we will see that all the anti-government and anti-monarchy that happened in India started in fifteenth-sixteenth century Bengal at the hands of Lord Chaitanya. Through his Sankirtan he was able to not only create a huge 'Mass' as his followers but also to establish him as an anti-monarchy supporting force. He taught the language of protest/resistance to the poor, lower classes of the society under discussion. That's why young and old people of the society used to participate in his Sankirtan. He could not hesitate to come into conflict with Brahminism and even inspired them in the anti-government movement. The proof of this trend of history is that in the later period i.e. the protest movements of the seventeenth-eighteenth century which were formed in the lower class of society, people regardless of men and women jumped undoubtedly, the reflection of the British opposition was noticed at the grass root level of the society in this phase. Notable among these movements were the Sannyasi Fakir Rebellion of Bangladesh, Rangpur Rebellion, Wahhabi Movement, Faraji Movement, Santal Rebellion etc. Apart from Bengal, this resistance movement was also born in Madras and various parts of South India (Mysore, Malabar) and West India (Maratha, Kutch).<sup>3</sup> The first resistance against the colonial state was formed in the districts of Bogra, Malda, Mamunsih, Cooch Behar in Bangladesh. It was not only men who jumped into these anti-British movements that arose among the peasantry. Along with them, the

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women of the house also participated in the resistance with da, janta, lathi, banti.

In keeping with this trend, the participation of women in various stages of the Swadeshi movement (1905) became very important.<sup>4</sup> They played the role of accomplices to the revolutionaries rather than actively participating. In fact, in the context of the national movement between 1920-40, under the leadership of Gandhiji, various women of different religions, castes, classes and castes joined this movement. By the sheer force of Gandhiji's appeal, the noble women of upper-class, middle-class families and even women from the marginal strata of society were greatly influenced, ignoring the family barriers. Sex workers and maidservants from different places also became interested in participating in the national liberation struggle. Sujata Patel in her "Construction and Reconstruction of Woman in Gandhi." The article shows that Gandhi was not interested in participating fully in the women's movement.<sup>5</sup> During the non-cooperation movement, girls from lower class families participated in meetings, processions, picketing in Kolkata through 'Nari Satyagraha Samiti' and 'Karmmandir'.<sup>6</sup>

Since the beginning of the colonial rule in India, women have been involved in the movement against the foreign rule. However, it is now widely accepted that marginalized women also participated against the British in India. A prominent figure in this society were the Baranganas, about whom extant history books remain virtually silent. Their role in the formation of independent India should not be forgotten. These barangays of the two Bengals participated directly or indirectly in the anti-British movement at different times. The barangays of Calcutta came forward to help the youth of the 'Practice Society' located in Calcutta, the year was 1907.<sup>7</sup> It is to be noted that during this time the members of 'Anushilan Samiti' organized a meeting with Brahmabandhav Upadhyay in Bidon Street, defying the police ban. Naturally, when the police got the news, everyone came and resorted to massive lathi-charge, the revolutionaries also joined the protest to save their lives, and at that time, stones and bricks started being thrown at the police from the roofs of the houses in Chitpur. This incident shows

how common barangays wanted to protect the revolutionaries.<sup>8</sup>

In 1921, the Baranganas of Calcutta took to the streets to raise money for the Non-Cooperation Movement.<sup>9</sup> Deshbandhu Chittaranjan Das, Jyotirmayi Ganguly also held a meeting with the barangays of Sonagachi. These women also formed a 'Relief Committee' to help the flood victims and within a few days collected 1 lakh rupees and handed it over to the president of the committee, Acharya Prafulla Chandra Roy.<sup>10</sup>

In 1924 Barangana women led by Deshbandhu took out a procession to Tarakeshwar to participate in Satyagraha. When Chittaranjan Das died in 1925, thousands of Barangana women joined a mourning procession in front of his dead body.<sup>11</sup> In 1942, a barangay woman saved the lives of some revolutionaries who were shot by the police in Tamluk, Medinipur. In 1930, a barangay woman named Satyavati participated in the Salt Satyagraha in Nandigram and was brutally tortured by the police. It is pertinent to mention that even though the fierce anti-British movement started in Bengal at that time, the so-called ladies of the society did not participate in this anti-British struggle, basically the girls of the sex village and the sex workers of Chitpur participated in the very first phase.<sup>12</sup>

If we review the history, it can be seen that these baranganas of the sex village would definitely hand over their ornaments, whatever money they had to the hands of the revolutionaries. Rupmoy Pal wrote in his book 'Surya Sen's Sonali Swapna' - Revolutionary Haripad Bhattacharya took refuge in a barangay house in Rayazuddin Bazar in today's Chittagong, Bangladesh. The then D.S.P. Everyone is horrified by Amanullah's torture. In this situation it is known that D.S.P. Almost constantly going to the house of that barangay, the woman in the party informed revolutionary Haripad Bhattacharya about Amanullah. One day (August 30, 1930) Haripad Bhattacharya, a 14-year-old boy, was shot dead on the football field by D.S.P. Amanullah.<sup>13</sup>

Revolutionary Purnendu Dastidar in his book 'Swadynta Sangrame Chittagong' said that the death of martyr Ardhendu Dastidar is an amazing story. In order to prove the story of martyr Ardhendu Dastidar's death as natural, the British police ordered four people to go to

the crematorium. When the body is placed in the crematorium, four Barangana women of the town arrive in a horse-cart, with garlands of milk and flowers. They said - they came to visit the god and after bathing the martyr Ardhendu Dastidar in that milk, covered the dead body with garlands of flowers and went back again.<sup>14</sup> Who these prostitutes really were, there is no clear information available.

But to the so-called noble society, participation of prostitutes in various movements, indirectly helping money, helping revolutionaries - these things were not happy at all. Even Mahatma Gandhi did not take kindly to the participation of Barangana women. As Kamal Kumar Mitra wrote in 'Sanjeevani'-"In fact, this group consisting of some low-class women like prostitutes, bagdis, doms etc., did not do well to volunteer prostitutes and women of other classes" like Netaji Subhash Chandra Bose and Beshyapalli in Kalighat to collect money for the movement. Bimala, a prostitute during Gandhi's Satyagraha movement of 1942, participated in the armed revolution of the freedom movement. Educated, articulate, fluent in Bengali-Hindi-English, this woman could make an extraordinary speech. It is said that in broad daylight, this woman grabbed the bridle of a British sergeant's horse in a public meeting and gave him a befitting reply.<sup>15</sup> Sachinandan Chatterjee writes that this prostitute was very affectionate. But in the later stages of the anti-British movement in Bengal and India, when these prostitutes could not be accepted by the people of the society, revolutionaries like Bimala had to go back to their old livelihood. Even in independent India, they do not get proper respect or financial help.

Different Streams of Historiography As we refer to the ladies of the so-called 'gentleman' society in the narrative of the history of the freedom movement, we do not find these Baranganas, nor do we try to trace their history, their sacrifices. In my article, I have tried to restore the 'royal story' of the Baranganas,

which has sunk into the depths of oblivion. However, it is still too late to complete this work, it is recommended to overcome many obstacles to reach the goal, relentless, continuous history practice and research.

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# INDIA-SAUDI ARABIA RELATIONS: RECENT EXPERIENCES AND FUTURE OPPORTUNITIES

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**Abstract-** Saudi Arabia, officially the Kingdom of Saudi Arabia (KSA),<sup>[e]</sup> is a country in West Asia. It covers the bulk of the Arabian Peninsula, and has a land area of about 2150000 km<sup>2</sup> (830000 sq mi), making it the fifth-largest country in Asia, the second-largest in the Arab world, and the largest in West Asia and the Middle East. In this research paper, I have critically reviewed the important points of inter-relationship between India and Saudi Arabia, and have tried to know, what are the areas where strong relations can be established between India and Saudi Arabia. The research paper is very important from the point of view that India is committed to controlling them economically, socially, culturally and politically by building strong relations with the Muslim nations around. Hence, It is very important to maintain relations with countries like Saudi Arabia

Saudi Arabia is a very strong and important Muslim country in West Asia. More than 30 lakh people of India are employed there. Saudi Arabia supplies crude oil to India on a large scale and is second only to Iraq in terms of exporting oil to India. Saudi has had very deep cultural relations with Pakistan and supported Pakistan on many occasions during the dispute between India and Pakistan.

Apart from this, Mecca, the largest pilgrimage site of Muslims located in Saudi. India has largest population of Muslims in the world and they go to Mecca for Haj pilgrimage every year.

After studying all these points it becomes very important that a strong economic political and cultural relationship is formed between India and Saudi Arabia.

The first advantage of strong ties between both the countries that India will continue to get uninterrupted supply of petroleum products at reasonable prices. The second benefit is that more than 30 lakh Indians who working in Saudi Arabia will get respect and facilities for a better life there. These 30 lakh people are very important for India because through them the necessary foreign exchange comes to India. Apart from this, if the relations between India and Saudi remain strong then it will also be convenient for India to control Pakistan and in case of any conflict. Saudi will not be able to stand strongly in favor of Pakistan. Keeping these points in mind, Prime Minister of India Mr. Modi has established very deep relations with Saudi Arabia.

**Keyword** India-Saudi Arabia, Bi-lateral relations, economic, cultural, political and religious ties. Areas of co-operations and mutual benefits.

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**Introduction:** Saudi Arabia, officially the Kingdom of Saudi Arabia (KSA),<sup>[e]</sup> is a country in West Asia. It covers the bulk of the Arabian Peninsula, and has a land area of about 2150000 km<sup>2</sup> (830000 sq mi), making it the fifth-largest country in Asia, the second-largest in the Arab world, and the largest in West Asia

and the Middle East. Trade and cultural relations between ancient India and Arabia date back to the 3rd. century BC. By 1000 AD, trade relations developed between southern India and Arabia and became the backbone of the Arab conomy<sup>1</sup>

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<sup>1</sup> "About Saudi Arabia: Facts and figures". The Royal Embassy of Saudi Arabia, Washington, DC. Archived from the original on 17 April 2023.

Until the rise of European imperial empires, Arab traders had a monopoly on the spice trade between India and Europe. Formal diplomatic relations between contemporary India and Saudi Arabia were established soon after India gained independence in 1947. Relations between the two countries have strengthened considerably due to cooperation in regional affairs and trade. Saudi Arabia is one of the largest suppliers of oil to India, one of the top seven trading partners and the fifth largest investor in Saudi Arabia. Saudi Arabia is India's fourth largest trading partner. More than 18% of India's crude oil imports are sourced from Saudi Arabia.

In the past, Jawaharlal Nehru (1955), Indira Gandhi (1982), Manmohan Singh (2010) and Narendra Modi (2016) had visited Saudi Arabia. In January 2006, King Abdullah of Saudi Arabia paid a special visit to India, becoming the first Saudi monarch in 51 years to do so.<sup>2</sup> The Saudi king and Indian Prime Minister Manmohan Singh signed an agreement to create a strategic energy partnership, called the "Delhi Declaration".<sup>3</sup> This agreement "provides reliability of supply of crude oil to India through long-term contracts.

Saudi is a very important country in West Asia and has very strong relations with India now. The foundation of these relations is 'oil' and 'work force'. On one hand, Saudi is one of the biggest supplier of crude oil to India, while on the other hand, India provides workers to Saudi Arabia. Today Indians represent 7% of total population of Saudi.

About 30 lakh people from India are employed in various plants and establishments in Saudi Arabia. India and Saudi Arabia have had very strong relations for a very long time, however, these relations are now stronger than before.

Today, at international relations, the balance of power is being created between these four countries: China, Russia, America and India. Now Russia is not as powerful as it was before. That's why China is directly challenging America. On one hand, India does not have very good relations with China and on the other,

America and Russia also do not have good relations. Where there are good relations with Russia and China. India also has good relations with Russia. Among these internal inter-relationships there are mainly economic and strategic issues, due to which the countries of the world are not with each other even though they are with each other. For example, while on one hand Saudi Arabia has very close relations with India, on the other hand it also has very close relations with China and Pakistan. Similarly, while America is very close to India, on the other hand it is indirectly at war with Russia in Ukraine. In this pattern of relationships, bilateral relationships have become more important. Individual gains and losses have become more important. Now world is multipolar, and every country reviews its relations according to its advantages and disadvantages.

This is why the relationship between two nations is no longer resume at long term basis. This means that if India's relations with a country are very good this year, then after the next two years there may be some indifference in the relations between these two. Quality of leadership also matters a lot.

For example, look at the relationship between India and Canada. Large number of Indians live in Canada. Most of the people have gone to Canada from states like Punjab, Haryana. Hence, there is a significant number of Khalistan supporters in Canada. These people demand a separate Khalistan country from India. These separatists are also an important vote bank there. Therefore, the current Prime Minister there wants to maintain close relations with the Khalistan sympathizers, which has a direct negative impact on the relations between India and Canada.

If we look at Saudi Arabia, we find that the current ruler there, Prince Salman, who is all-powerful and takes all the decisions himself – he is in favor of good relations with India. But there are some other strong centers of power in Saudi Arabia. For example, about 99% of the people of Saudi Arabia are Muslims. There is a lot of support for fundamentalist elements there. The people of Saudi Arabia and the

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<sup>2</sup> Saudi king on rare visit to India". BBC News. 25 January 2006. Retrieved 4 June 2023.

<sup>3</sup> 'Saudi Arabia sign strategic energy pact". The Hindu Business Line. Retrieved 4 June 202023.



fundamentalist elements there give more importance to Pakistan than India. Because both the countries are Sunni Muslim majority countries. Saudi Arabia's relations with Iran are not very good, because Iran is a Shia majority nation. For this reason, relations between Pakistan and Iran are not very good. Saudi Arabia has failed to build very good relations with its surrounding Muslim countries. They did not have good relations with Iran. The leadership of Iran is Shia leadership and it is in a tense situation with Pakistan. In this situation, it is a challenging task for Pakistan to maintain good relations with Saudi Arabia and Iran simultaneously.

If we look at India's position amidst all this, India's position looks very strong. The reason for this is that in the last few years, India has achieved many new heights in the field of technology, space science medical science, etc. Apart from this, India has also made tremendous progress in the field of defense. Saudi Arabia wants India to help in its nuclear programme, higher education, medical science technology and industrial development programs. India is prepared for this to a great extent. Recently, a branch of IIT India has been opened in Saudi Arabia. Its objective is to enrich the young students of Saudi Arabia with the knowledge of modern technology.

Since the 1990s, both nations have taken steps to improve ties. Saudi Arabia has supported granting observer status to India in the Organisation of Islamic Cooperation (OIC) and has expanded its collaboration with India to fight Islamic terrorism in the Middle East.<sup>4</sup> In January 2006, King Abdullah of Saudi Arabia made a special visit to India, becoming the first Saudi monarch in 51 years to do so.<sup>5</sup> The Saudi king and the Indian Prime Minister Manmohan Singh signed an agreement forging a strategic energy partnership that was termed the "Delhi Declaration."<sup>6</sup> The pact provides for a "reliable, stable and increased volume of crude oil

supplies to India through long-term contracts." Both nations also agreed on joint ventures and the development of oil and natural gas in public and private sectors.<sup>7</sup> An Indo-Saudi joint declaration in the Indian capital New Delhi described the king's visit as "heralding a new era in India-Saudi Arabia relations."<sup>8</sup>

In 2019, Saudi Arabia increased the Hajj quota of India, making it the 2nd highest country in the number of Pilgrims. Thus, the number of Indian pilgrims jumped to 200,000 per year in 2019.<sup>9</sup>

In October 2021, India voted against a Dutch resolution in the UN Human Rights Council that proposed extending the mandate of the Group of Eminent Experts (GEE) human rights investigators in Yemen. This resolution had been heavily lobbied against by Saudi Arabia.[19][20]

Saudi Arabia and America have had a very interesting relationship for a long time. Saudi Arabia has been largely dependent on America for its defense needs. It has been seen that its dependence on America has to a great extent presented it as a weak nation in front of other countries of the world. Sometimes ago when Donald Trump had gone to Saudi Arabia, he had said that if America stops helping Saudi Arabia, there will be an upheaval within 15 days. The current leadership of Saudi Arabia took this matter very seriously. This is the reason why Saudi Arabia is now gradually reducing its dependence on USA. For this they are enhancing closeness with China and India.

Saudi Arabia is a big producer of oil. On the other hand, Russia is also a mega producer of crude oil. India, an oil importer, is important for both these countries. Saudi Arabia is always anxious that India will leave it and start buying cheaper oil from Russia. There is an important

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<sup>4</sup> [""New era" for Saudi-Indian ties". BBC News. 27 January 2006. Retrieved 4 June 2023.](#)

<sup>5</sup> [Saudi king on rare visit to India". BBC News. 25 January 2006.](#)

<sup>6</sup> ["India, Saudi Arabia sign strategic energy pact". The Hindu Business Line](#)

<sup>7</sup> ["India, Saudi Arabia in energy deal". CNN. 27 January 2006.](#)

<sup>8</sup> [New era" for Saudi-Indian ties". BBC News. 27 January 2006](#)

<sup>9</sup> ["Saudi Crown Prince Mohammed bin Salman announces Hajj gift for India with 30,000 increase in quota". Arab News. 29 June 2019. Retrieved 3 July 2019.](#)

reason due to which Saudi Arabia wants to maintain its relations with India.

Saudi Arabia's economy is based on oil export. But, like UAE it also needs to diminish its dependence on oil exports. For this they focusing on other sectors based new technology and innovation. India can be an important partner in this transformation.

India participated as the 'Guest of Honour' in the 32nd edition of the prestigious Saudi National Heritage and Culture Festival - Janadriyah from 07 to 28 February, 2018. 'Yoga' also became a very popular activity in Saudi Arabia after it was recognized as a 'sports activity' in November 2017<sup>10</sup>

Recently, in his address at the India-Saudi Investment Forum, Indian Commerce Minister Piyush Goyal had said that the relationship between Saudi Arabia and India is like two brothers. Both the countries have identified several sectors – be it healthcare, tourism, film industry – where both the countries can work together. In recent times, there has been an increase in engagement between the two countries at the government level and private sector level. During the G 20 Summit 2023, tremendous chemistry was seen between the Indian Prime Minister and Crown Prince Salman. In fact, both of them are two of the most energetic, visionary and effective leaders in the world. Recently, Indian Prime Minister Narendra Modi and Saudi Crown Prince held a meeting of India-Saudi Arabia Strategic Partnership Council in New Delhi. Both countries agreed on a joint task force for

investment of \$100 billion in Saudi Arabia. The Indian community has played an important role in the economic progress of Saudi Arabia. Today, seven percent of the total population of Saudi Arabia are Indian citizens. Due to their hard work and commitment, India's reputation in Saudi has increased and it has helped in strengthening the bilateral relations between the two countries. The Strategic Partnership Council (SPC) has two sub-committees – I) Committee on Political, Security, Social and Cultural Cooperation; and II) Committee on Economy and Investments. Both sub-committees have four functional levels of engagements – I) Summit level (Prime Minister & Crown Prince); II) Ministerial-level; III) Senior Officials' Meetings; and IV) Joint Working Groups (JWGs). Four JWGs have been formed under each sub-committee. The JWGs under the Political committee are I) Political & Consular; II) Legal & Security; III) Social & Cultural; and IV) Joint Committee on Defence Cooperation. The JWGs under the Economic committee are I) Agriculture & Food Security; II) Energy; III) Technology & Information Technology; and IV) Industry & Infrastructure.<sup>11</sup>

**Economic Cooperation:** Saudi Arabia is India's fourth largest trading partner. More than 18% of India's crude oil imports are sourced from Saudi Arabia. During FY22 (Apr-Dec), bilateral trade was valued at US\$29.28 billion. During this period, India's imports from Saudi Arabia were valued at US\$22.65 billion and exports to Saudi Arabia were worth US\$6.63 billion.<sup>12</sup>

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<sup>10</sup> <https://mea.gov.in/press-releases.htm?dtl/29442/india+guest+of+honour+country+at+the+janadriyah+festival+in+saudi+arabia>

<sup>11</sup> <https://www.eoiriyadh.gov.in/page/india-saudi-bilateral-relations/>

<sup>12</sup> <https://vajiramias.com/article/india-saudi-ties-promise-shared-growth-security-stability-says-jaishankar/631ee37918c8e1555f8d6710/>

**Table 2 Indo-Saudi Trade (in US\$ billion)**

Year	Imports from Saudi Arabia	% increase in Indian Imports	Exports to Saudi Arabia	% increase in Indian Exports	Total Trade	% increase in Total Trade
2015-16	20.32	-27.70	6.39	-42.71	26.71	-31.97
2016-17	19.94	-1.85	5.13	-19.70	25.08	-6.12
2017-18	22.06	+10.50	5.41	+5.88	27.48	+9.56
2018-19	28.48	+29.04	5.55	+2.61	34.03	+23.83
2019-20	26.84	-5.73	6.24	+12.18	33.07	-2.82
2020-21	16.19	-39.68	5.85	-6.25	22.04	-33.35
2021-22 (Apr-Dec)	22.65	-	6.63	-	29.28	-

[Source: Department of Commerce, Ministry of Commerce and Industry, Government of India]

**Conclusion**–Relations between India and Saudi Arabia have deepened significantly in the last two decades. Saudi Arabia is one of the largest suppliers of oil to India, and India is one of the top seven trading partners and the fifth largest investor in Saudi Arabia. Relations began to warm when the Saudi king and Indian Prime Minister Manmohan Singh signed an agreement to create a strategic energy partnership, known as the "Delhi Declaration". About 30 lakh people from India are employed in various plants and establishments in Saudi Arabia. The current crown Prince Salman, who is omnipotent and takes all the decisions himself – he is in favor of good relations with India. India has achieved many new heights in the field of space science technology etc. Apart from this, India has also made tremendous progress in the field of defense and medical. Saudi wants India to help in its space, nuclear higher education, technology and industrial development programs. Saudi Arabia is now gradually reducing its dependence on USA. So they are increasing closeness with China and India. Saudi Arabia's economy is based on oil. But they want to reduce their dependence on oil exports. Hence, they are focusing on new technology and innovation. India can be an important partner in this campaign. Both the countries have identified many areas in which they can work together like healthcare, tourism, film industry etc. Even during the G 20 Summit 2023, tremendous chemistry was seen between the Indian Prime Minister and crown Prince Salman. In fact, both of them are two of the

most energetic, visionary and effective leaders in the world. The Indian community has played an important role in the economic progress of Saudi. Today, seven percent of the total population of Saudi Arabia are Indian citizens. Thanks to their hard work and commitment, India's admiration in Saudi has increased and, has helped in strengthening the bilateral relations between the two countries. India's relations with Saudi Arabia are very important. Saudi Arabia is currently the second largest supplier of crude oil to India. India imports about 18% of its crude oil requirement and about 22% of its Liquefied Petroleum Gas (LPG) requirement from Saudi Arabia. Saudi Arabia is India's fourth largest trading partner (after the US, China and Japan). Bilateral trade in the financial year 2021-22 was US \$ 8 billion. India's imports from Saudi Arabia were \$34.01 billion and exports to Saudi Arabia were \$8.76 billion. There was an increase of 49.5% compared to the year 2021. The 6 million Indian expatriate community in Saudi Arabia is the largest expatriate community in the kingdom and is the 'most preferred community' due to their expertise, sense of discipline, law abiding and peace-loving nature. Hajj pilgrimage is one of the highlights of bilateral relations between India and Saudi Arabia. Another important factor is that India can use its friendly relations with Saudi Arabia to persuade it to use its influence on Pakistan to control the Taliban in Afghanistan. A joint collaborative effort of the two economies could -Will work to bring change in the sub-regions of West Asia. Currently India's trade deficit

(122)

with Saudi Arabia stands at \$25.25 billion. India should pay more attention to promoting exports in various sectors. This will enable us to maintain trade balance with the state while building healthy trade relations.

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# UNDERSTANDING ARTIFICIAL INTELLIGENCE AND ITS INFLUENCE ON EDUCATION

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**Abstract-**In almost every region of the world, technology has experienced a revolution. The pace of development is very fast. This development can affect all aspects of life. One of the important developments in technology is Artificial intelligence. It has a drastic impact on education. It not only affects the process of information sharing but other aspects of education like universal access, teaching, and learning, assessment, attendance, development of results, creative lesson plan, getting feedback, store the collected information for further use. Thus, it is said that AI has affected all the stems of education. This will not only help students but all the stakeholders like teachers, parents, policymakers, etc. The development of various platforms makes learning more effective and efficient. Developers of the platform regularly update information based on feedback and requirement. This updating policy makes it more attractive. Moreover, despite several advantages of AI in education, it has some potential risks like privacy and protection of data, Authenticity of data, and accountability. Every technology has some pros and cons it depends on the users' experience and insight on how he/she can effectively and efficiently use it for the betterment of self and society.

**Keywords:** Artificial Intelligence, Technology, Education, Platforms, Teachers, Students.

**Introduction-**Almost all parts of the world experience a technological revolution. In this era of technological advancement, almost all activities of human life are directly or indirectly linked with technology. Society has witnessed a significant transformation from a historically agricultural civilization to a modern knowledge society. Society has dramatically shifted from a traditionally living society to the present knowledge society. The development of Information Technology has significantly facilitated human activities. Today's generation is technologically literate and highly reliant on technology and technological tool. Due to the increase in literacy and technological development, technology expands its effect on education too. It compels teachers to incorporate technology in their teaching-learning process. Creativity, Innovativeness,

and Inventiveness are new drives in society. The present generation is expected to be actively engaged in their learning rather than passive learners. Teachers and students engaged physically in the classroom in the traditional educational system. Both teacher and students complete their tasks manually. However, the advancement in technology and internet accessibility in a few decades has altered the education system. A new concept of Artificial Intelligence has evolved during the last few years. To ensure transparency, accountability, efficiency, and effectiveness of education, the implementation of IT is an obligation for educational institution. With the rapid increase in the database in all aspects of life, Artificial Intelligence has a potential impact on it. It impacts the economy, politics, science, education, etc (Luan et al., 2020).

The development of higher education is fundamentally related to the advancement of new technologies. The rapid expansion of artificial intelligence technologies also creates new opportunities and problems for instructors and learners. It has the capacity to alter the governance of higher education institutions. Institutions of higher learning are crucial for the development of a country. Knowledge and learning are the two important factors that influence the socio-economic development of an individual. The standard of living of an individual is likely to increase with the increase in the level of education. An individual could enjoy a more innovative and prosperous life with the help of education. The growth and development of a country is directly proportional to quality education and professional training of pupils.

The higher education system is largely dependent upon the labour-intensive models. It not only slow down the process but also increase operating cost and increase the chance of errors. Due to its labor-intensive structure, higher education institutions will have to spend a substantial amount of money on the hiring and retention of faculty, the wages, and salaries of highly skilled staff, the admissions process, the learning and success of students, as well as the processing of data. The higher education sector will adopt artificial intelligence and get benefited from less budget and in a more flexible way with less chance of errors.

**What is Artificial Intelligence-** The notion of "Artificial Intelligence" was first used by John McCarthy in 1956, two years after the death of Alan Turing, the inventor of artificial intelligence (AI). Alan Turing created the Turing Machine, a device that exhibits traits of human intelligence including learning, logical reasoning, and problem-solving (Singh and Jain, 2018). High-speed computer processors, the accessibility of massive quantities of data, and improvements in computing techniques created the foundation for the recent revival of AI, which is now a crucial component of people's daily lives.

A machine that uses algorithmic power is said to have artificial intelligence (AI). It makes visual acknowledgment, interpretation of dialects, learning, adapting, synthesizing, predictions, diagnoses, decisions, and,

recommendations in the educational community. Artificial intelligence (AI) has an important place in every field since it allows machines to think and respond like people. It may be used for a variety of purposes, such as acting as intelligent tutors who teach the material, provide feedback, and track progress. The application of AI in the field of education has resulted in successful pedagogical outcomes, technical developments, and theoretical discoveries. (Chen et al., 2022). A lot of changes in the field of higher education are being caused by recent developments in AI. Artificial intelligence made teaching and learning easier and more enjoyable. Artificial intelligence (AI) is defined as the development of skill and data-driven computer systems that can accomplish tasks that previously required human knowledge and logical thought. Therefore, the use of artificial intelligence (AI) in education is a critical topic.

**Need and Significance of Artificial Intelligence-**The entire context of social interaction has changed as a result of artificial intelligence (AI). AI becomes a vital component of the daily life of human beings. Most importantly it has firmly established itself in every aspect of contemporary life. Artificial intelligence (AI) has developed to the point that it may be used in a wide range of industries including mass media, business, and education. People are being persuaded of the need for artificial intelligence (AI) in the twenty-first century. Advancement in technology is increasingly altering society and mankind in multiple aspects including education. A strong ecosystem has become even more important due to the rapid changes occurring in the world, including those brought on by climate change, population dynamics, biotechnology, the expansion of digital marketing, and the development of machine learning and artificial intelligence.

The use of robotic technologies and sensors and the integration of AI applications in the classroom will enhance teaching and learning by supporting instructors and students. Computers, laptops, tablets, iPads, multimedia mobiles, and other technical tools are currently the main platforms for accessing and transmitting AI. It reduced the cost, enhances prediction based on the existing data, and helps professionals in their work.

### **Functions of Artificial Intelligence in Education-**

The development of artificial intelligence has a significant impact on education. It helps to improve teaching and learning. In higher education, artificial intelligence is crucial for both teachers and students since it supports more adaptable learning strategies for students without any constraints. Many studies have been conducted on artificial intelligence in education. The primary concern of those research is related to the aspects of intelligence that involve learning, problem-solving, reasoning, decision-making, language use, etc. (UNESCO, 2019). Artificial Intelligence helps universities and higher education institutions to increase their enrolment. Various courses are started keeping the need of students with flexibility in time and speed. However, the implementation of this technology is very expensive, but when compared with the labor-intensive structure of the education system, it becomes economical. However, using artificial intelligence in the long term is considerably cheaper than having work done manually and providing instruction in a more conventional manner.

### **Universal Access and Artificial Intelligence-**

Technology based on artificial intelligence (AI) made it possible to provide inclusive and equitable quality education to all. It ensures universal access and life-long learning for all. It helps disadvantaged and marginalized people such as refugees, dropout students, migrant laborers, and people residing in remote areas access specific education according to their needs. Computer-supported artificial intelligence works for the collaborative learning of participants from different levels and locations online. Teachers can save time and energy by concentrating on student learning and supervision instead of administrative activities like preparing and assessing assignments, and projects, and planning co-curriculum. A system of education supported by artificial intelligence technology ensures the expansion of opportunities for inclusive and universal access to education. AI creates personalized step-by-step lessons for each student after examining the learning materials and activities, as well as the student's strengths and shortcomings, and provides additional support. AI keeps track of students' knowledge, automatically adjusts the degree of

difficulty, and guides students based on their requirements.

### **Teaching-Learning and Artificial Intelligence-**

Applications based on AI technology are widely employed in education. The accessibility to vast amounts of knowledge and information across the world is possible through technology. In today's world, the problem is not the accessibility of data but rather the authenticity of data and information. AI-based technology integrates with classrooms and significantly impacted teaching and learning by influencing how people think and write. The personalized learning system is becoming more prevalent and has a significant global influence. A few decades ago, it was anticipated that artificial intelligence would have an impact, but the covid epidemic suddenly made this prediction come true. Artificial intelligence is an extremely sophisticated and advanced field of technology. It can recognize a student's gesture as well as their emotions. It can also detect the degree of difficulty and recommend course adjustments by analyzing the postures and facial expressions of the pupils. (Kengam, 2020). AI helps teachers to provide attractive, creative, and appropriate teaching aids and also reduce their workload through the automatic process of assessment, plagiarism detection, feedback, etc (Holmes, et.al, 2021). Teachers can make their classes effective by providing 24X7 support to their students using AI platforms. It may offer online mentoring, involve pupils in academic pursuits, and track their development over time. (Sadiku, et.al, 2021). Though AI technology has several advantages it can never replace a teacher.

### **Assessment & Evaluation and Artificial Intelligence-**

Good assessment techniques provide a base for qualitative change in the education system. An assessment provides a baseline for measuring whether the predefined objectives are achieved or not. The process of assessment and evaluation is a center of discussion for a long time. Several reforms take place since ancient times in educational assessment with changing times and changes in education. In the present scenario, people have plenty of opportunities for using artificial intelligence to develop better assessment and evaluation methods. It can assess student knowledge, understanding, collaboration,

confidence motivation, etc. AI evaluation system gathers data, analyses it, and assesses the growth of a learner over the course of a certain period. Subject, learning activities, and steps taken by students are needed for the assessment using artificial intelligence. (Luckin 2017). AI-based evaluation and examination systems demand a single investment. It saves time, money, and energy for teachers and other stakeholders. Results produced with AI technology are highly objective and expected of having fewer human errors. Through the use of this technology, online exams may be completed fast and results can be promptly released. Invigilation and monitoring can also be done using cameras and other instruments. The crucial aspect of AI-based evaluation is that it gives stakeholders including educators, students, parents, administrators, and policymaker's constant input. It helps stakeholders to provide support to the student in learning and progress. (Luckin, 2017). Objective questions are already successfully graded by artificial intelligence. Tests with subjective questions, such as paragraphs, essays, and assertions, are still being effectively graded by instructors.

**Physically Challenged Learners and Artificial Intelligence-**Around 15% of people worldwide are affected by some sort of impairment. Artificial intelligence (AI) based platform supports disabled persons in other ways. A visually challenge person can use AI-based applications to hear texts in multiple languages, whereas low vision person can use AI applications to enlarge pictures for better understanding. Students who are deaf or hard of hearing can read using sign language and translate texts into sign language. Students with locomotor difficulties can access the classroom 24/7, from anywhere in the world. Thus, applications powered by artificial intelligence (AI) are beneficial to students with a range of physical and mental impairments that prevent them from pursuing a quality education. (Kengam, 2020).

**Education Administrations and Artificial Intelligence-** AI applications serve education, in various forms. It has significantly impacted how well administrative and managerial tasks are performed in the field of education. It has made it possible for educators to carry out their administrative duties, such as grading and

giving feedback to pupils, more efficiently. The use of AI has simplified administrative processes and increased the efficacy and efficiency of teaching and guiding students. Tools like Grammarly and Turnitin provide strength to administrative tasks like checking for plagiarism and giving students comments for improvement. It also improves the administrative process and task quality.

**Higher Education and Artificial Intelligence-** As the use of AI increases it provides a labor substitute in the future job market. A Job seeker is required to have a range of skills to fit in the market demand. It was expected that AI will soon supplant the routine task of organizing and managing data. Higher education is versatile and develops ceaselessly. AI will affect educational plans in higher education. Speed, precision, and consistency are the important characteristics of AI. Despite several features, AI is incompetent in innovation, critical thinking, problem-solving, social skills, leadership, empathy, teamwork, and communication.

**Legal Issues and Artificial Intelligence-**The major concern of the entire world related to AI is legal and ethical issues. It includes data privacy and protection, AI algorithms depend on large amounts of data to learn and made a prediction. AI systems have the potential to modify and discriminated decision-making. Other issues related to AI are transparency and explainability, it is hard for an individual to understand how decisions are being made. Liability for AI is also an issue, it can be difficult to determine who is responsible for the decision made by AI. Another issue of AI is Ethical consideration such as its impact on employment, and society. Thus, Laws and regulations are needed for the protection of data, to ensure unbiased and transparency as well as clarify accountability.

**Advantages of AI in Education-**There are numerous advantages of AI applications in education. Many educational institutions implemented AI-based platforms for teaching and learning. These platforms use high-level machine learning systems and algorithms which help in automated assessments, and predictive analytics tools. Thus, these AI applications assist teachers and students in several ways,



- It helps to make global classrooms possible and universal access to all.
- It helps teachers in providing instruction in mixed-ability classrooms.
- It helps in providing detailed and timely feedback to students.
- It helps students lucidly write content.
- It helps teachers in relieving the burden of knowing everything.
- It helps students and teachers to connect with social media platforms like WhatsApp, Facebook, Instagram, telegram, etc.
- It helps students in active learning by collaborating and establishing links with groups outside of the classroom.
- It helps students by enabling them to access a variety of educational resources depending on their individual topic areas and learning requirements.
- It helps teachers to understand the mood of students while lecturing through the use of Gesture Recognition Technology.
- It saves instructors time by allowing them to mark students' assignments and tests more quickly.
- It helps students by presenting translated subtitles in different languages for better understanding.
- It helps teachers in creating Adaptive group formation (Create student groups that are appropriate for specific assignments).
- It helps students by providing voice assistance like Google assistance, and Alexa from Amazon to educational material without the help of a teacher.
- It helps students to stimulate one-to-one personal tutoring.
- It helps students in creating grammatical strength while writing content.

**Disadvantages of AI in Education-**Though there are many benefits and prospects, there might be some hazards associated with AI. It has the potential to be either the finest or the worst thing that may ever occur to humanity.

- There is a major threat to the privacy and protection of data. The invasion of

privacy and uncertainty of data put forth by AI are critical issues.

- More use of AI will decrease personal interaction and students might be technology addicted.
- It may generate fear in teachers, student counselors, and administrative staff that they might be replaced by automated AI solutions.
- Only universities with significant financial support are able to use AI due to the high cost of installation, maintenance, and repair.
- Still no technology can help to repair the situation after a natural disaster.

**AI-Based Platform in Education-**Numerous educational platforms based on AI technology are available in the education sector. Some important platforms are:

- **Third Space Learning:** Researchers from London University College played an important role in the development of the Third Space Learning system. It helps teachers by providing signals and warnings when the explanation is slow or at a fast pace. It also recommends techniques for the betterment of teaching and learning.
- **Edmodo:** It helps the teacher to create and administer an online group that helps them to provide instructional resources, assess student progress, and communicate with parents and other stakeholders.
- **Socrative:** Created by a group of businessmen, allowing instructors to create exercises and instructional games. Students can use cell phones, computers, or tablets to complete these tasks or games. It enables teachers with an opportunity to assess the outcomes of activities and depending on the performance of the student, they may adapt or change the curriculum to better suit the needs of the students.
- **Thinglink:** This platform allows teachers to create animations with audio and texts. It also creates exercises and lessons for student practice. The activity or lesson developed in this group may be distributed on other websites and social media platforms, including Twitter and Facebook. It

offers teachers an opportunity to develop instructional strategies that foster students' interest and increase their knowledge.

- **TED-Ed:** With the help of the TED-Ed platform, educators, students, and animators may work together to create educational courses that will expand knowledge and great ideas.
- **eduClipper:** This platform is very helpful for faculty members and researchers. It allows them to explore and share the reference of educational material. Here the information is collected and then shared with already existing groups. It offers to manage online content effectively and helps in the improvement of research. It also records the achievement of students during a particular course. Moreover, it gives educators the chance to compile all of their work into one portfolio.
- **Storybird:** It enhances students reading and writing abilities through storytelling. This tool enables educators to produce interactive and artistic books online. The contents that are produced may be combined to generate blogs, emails, and other printed alternatives. It also provides an opportunity to plan lectures, offer frequent feedback, and collaborate on projects with students.
- **Animoto:** Animoto platform allows teachers to create short videos of high quality using any mobile device. It inspires as well as helps the student to improve their academic work. Its user-friendly and practical interface enables teachers to produce audiovisual content in accordance with educational needs.

### **Development Techniques of AI Learning Platform**

Any AI teaching platform may be developed using six standard steps.

- **Step 1.** Examine the options that are already available.
- **Step 2.** The application incorporates dynamic and engaging content which is interactive as well as interesting.

- **Step 3.** Explore the need and specifications of the project together.
- **Step 4.** To prevent any flaws, the platform/application must be carefully and correctly tested.
- **Step 5.** Once the app has been released, it will be promoted and marketed, and feedback will be sought.
- **Step 6.** Always entertain feedback and update the app regularly as required.

To develop an AI platform for education, developers have to analyze the existing solution carefully. After getting a clear understanding of existing solutions add some new features to them so that users are drawn to your solution over competing ones. Users nowadays are very smart and techno-savvy. They always prefer useful content. The platform developer can select themes and information for subjects like medicine, literature, math, and others from instructors at different institutions and colleges as well as from different sources including courses and training programs. Before launching a project, developers must define the business objectives and project specifications. Experienced software developers with artificial intelligence knowledge are incorporated into the development team. The platform creators might launch a basic starter version. After getting feedback as well as reviews from users developers can update the platform regularly and also add some extra features. Before releasing the platform, developers need to detect and address any flaws. Qualified Quality Assurance Engineers can fix bugs. A better user experience ought to be offered to draw in more people. It will occur when there are no customer complaints. Regularly upgrade the platform according to needs and feedback from users.

**Conclusion-**In this era of technological advancement, all aspects of human life are directly or indirectly linked with technology. Society has drastically shifted from a traditional to an information-based society. Information is now available at the fingertips. But the problem that arises today is the authenticity of information. This technological development affects the education pattern. Today's learners are active learners and do not solely depend on their teachers for information. The growth of

artificial intelligence creates new opportunities and obstacles in the field of education. It has the potential to change the educational structure. Artificial intelligence held a unique position in the field of education through its characteristics of intelligent tutors for teaching content, giving feedback, and monitoring progress. Teaching and learning will improve by using robotic technology and sensors. Technology based on artificial intelligence (AI) makes it easier to provide inclusive and equitable high-quality education. It ensures universal access and life-long learning for all. It helps disadvantaged and marginalized people such as refugees, dropout students, migrant laborers, and people residing in remote areas access specific education according to their needs. AI also helps teachers to provide attractive, creative, and appropriate teaching aids and reduce their workload through the automatic process of assessment, plagiarism detection, and feedback. The important characteristic of AI-based application is that it gives regular feedback to participants, such as educators, students, parents, managers, and policymakers. AI has simplified administrative processes and increased the efficacy and efficiency of teaching and also guiding students. Programs like Grammarly and Turnitin provide strength to functions like checking for plagiarism and giving students feedback for improvement. It also improves the administrative process and task quality. The major concern of the entire world related to AI is legal and ethical issues. It includes data privacy and protection, transparency, and explainability. Ethical considerations such as its impact on employment, and society. Despite the several advantages and opportunities, AI might have some potential risks. The cost of technology is so high that only heavily funded institutions can adopt this. It may generate fear in teachers, student counselors, and administrative staff that they might be replaced by automated AI solutions. But the reality is that there is no substitute for teachers, any development in technology can help to perform the task more effectively and efficiently.

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# KNOWLEDGE OF THE MEDICINAL PLANTS RESIST DISEASES

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**Abstract-** There is no possibility of life without plants. Plants are the fundamental foundation of medicine. Traditional medicine is the total sum of all knowledge, skills and practices based on the beliefs and experiences of the various indigenous cultures. These resources are usually regarded as part of a culture's traditional knowledge. Medicinal plants are used by various tribes of rural areas for treating various kinds of diseases since time immemorial. These traditional medicinal systems play a key role in healthcare system of these aboriginal tribes. Even the same plants are used by different tribes in different diseases in different ways. The tribal community of rural areas is rich in ethno biological knowledge, which has been transmitted from one generation to another. It is like inheritance because those who are left to live are the ones who continue to possess the knowledge. This is because of their socio economic structure, ancient traditional knowledge and beliefs. Their livelihood is totally dependent on their ecological surroundings and they use simple technology to sustain their life, which seems totally conservative. The conservation issues faced by medicinal plants overharvesting, deforestation, soil degradation, overgrazing etc. it is very important to document this knowledge for generation, otherwise it will vanish forever. Knowledge of the sustainability of the use of such plant resources is thus urgently needed. Sustainability of the use of plant resources and human resource strategies can be assured with an understanding of the biological/ecological, economic, socio-cultural and technologies aspects of resource base; understanding of the complex interactions between many of these factors; and with careful planning and management grounded in ecological principles. Strategies also requires understanding local perceptions, knowledge and decision making systems relating to the resources. The present study emphasized that there is a deeply and growing knowledge gap between millennial and alpha generations. The People of millennial generation know a lot about wild plant products as compared to alpha generation. The output of the research would benefit the local communities in enhancement of the knowledge in indigenous medicine which would help better the health condition, and could lead to improve their socio-economical situations.

**Keywords:** Medicinal, Plants, Resist, Diseases, Knowledge

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**Introduction-** Jharkhand is one of the biodiversity rich states of India because of its origin, diverse physiographic and climatic conditions. It is well known due to its tribal populations, mineral resources, and its vast forest resources. Forest resources are considered as a commodity of high value across the state as most of the locals are dependent for their daily subsistence needs mainly for food and fuel wood. Forests play an important role in the economic, cultural and social lives and supporting rural livelihoods and food security in Jharkhand. Jharkhand is home to tropical moist deciduous and tropical dry deciduous

forests and the dominant plant species. Medicinal plants receive significant. Historically plants have played an important role in medicine. Through observation and experimentation, human beings have learnt that plants promote health and well-being. The use of these herbal remedies is not only cost effective but also safe and almost free from serious side effects. The village elders, farmers and tribal have tremendous knowledge about for health reasons started thousands of years ago and is still part of medical practices by folks of various regions. The present status of medicinal plants in forests is a matter of deep

concern as they are gradually declining and disappearing. Many indigenous communities depended on medicinal plants available in their surrounding forest for their day to day needs. These forests in general act as repositories for their traditional medicines. Information from different tribes was collected on the local uses of plants for medicinal use. Market survey was also done and information of medicinal plants pertaining to rate, availability and source of medicinal plants in local markets were collected. The new philosophy of health care throughout the world is moving from illness to wellness, from treatment to prevention as well as early diagnostics and from generalized approach to personalized medicine. Alternative medicines are slowly taking up important space in the world market. The market growth is being stimulated by nature-based products, based on the presumption that these products cause lesser side effects than modern medicines and its comparatively lower costs. Most of the people who use traditional medicine in rural areas are poor, that is, those who cannot pay for the expensive medicine prescribed in hospitals and private doctors. Though that may be the case, it should be noted that not only the poor use traditional medicine for their health care but even some wealthy families can also access medicinal herbs through traditional healers and herbalists. The use of IMK in rural areas does not mean that it is inexpensive but it is because some of the diseases do not heal from medicine prescribed by doctors. Some get sick from witchcraft, something a doctor cannot cure but with the help of a traditional healer it can heal. The Indigenous Knowledge Systems Policy is an enabling framework to stimulate and strengthen the contribution of indigenous knowledge to social and economic development in the tribal region of rural. The contribution of indigenous knowledge to the economy – the role of indigenous knowledge in employment and wealth creation; and interfaces with other knowledge systems, to increase the rate of innovation.

The various parts of plants have been used as a source of medicine by man since ancient times.

The plants are prepared in various ways. For medicinal purposes, a decoction of leaves, stem, fruits and root/tuber is often used; this is either drunk or rubbed on the body to treat one or more diseases or conditions. Most of the

decoctions are made by simply crushing a particular part of the plant with a mortar and pestle, but some are made by boiling plant parts with water; after decanting and cooling, the liquid is drunk.

Plant Parts that are used as medicine, the parts of medicinal plants used by traditional healer are leaves, flowers, roots, fruits, seeds, bark, rhizome, and root tubers Plant parts used to treat early childhood diseases are leaves, flowers, roots, fruits, seeds, bark, rhizome, and root tubers. Leaves are a part that is very easy to find and always available, and its collection and use are relatively easy and simple. In addition, it is another possibility because the properties of the leaves are known from generation to generation more in terms of healing than other parts. The content of substances in the leaves is beneficial for health and has elements that can cure disease.

Based on part useses

- Whole plant: Boerhaavia diffusa, Phyllanthus neruri
- Root: Dasamula
- Stem: Tinospora cordifolia, Acorus calamus
- Bark: Saraca asoca
- Leaf: Indigofera tinctoria, Lawsonia inermis, Aloe vera
- Flower: Biophytum sensityvum, Mimusoops elenji
- Fruit: Solanum species
- Seed: Datura stramonium

Others, including medicinal plants to cure a variety of health-related issues like cough, cold, insect bites and skin diseases concern is related to the linkage between knowledge and utilisation.

The rural and the tribal folk form majority of the population of district and most of them are economically backward. Some steps are needed for the economic upliftment of these backward people which will not require major monetary input or skilled labour. These plants have good potential of generating income. Owing to its natural habitat the economics of production of some important medicinal and aromatic plants (MAPs), has been examined based on the field level information from the state. Medicinal plants are particularly important to the rural poor, who are able to harvest these from the

wild to meet their primary health care needs. Medicinal plants diversity is estimated to be found in its diverse natural forest habitats.

The rural and the tribal has one of the richest, medicinal plant related, health cultures. The culture has traditionally been rooted in the ethnic communities in the rural. This Policy aims to highlight the concerns related to medicinal plants growing in forests and set in motion comprehensive programmes for its long-term development. While the demand for medicinal plants is growing, some of them are increasingly being threatened in their natural habitat. For meeting the future needs cultivation of medicinal plant has to be encouraged. The present study was conducted to assess the knowledge of medicinal plants and their use in tribal region of rural. This information through respondent (tribals) showed very diverse nature of medicinal flora, their usage in healing purpose with socioeconomic/ living standard upliftment. Therefore, it is needful aspect of conserving these biological resources for sustainable ecosystem. The linkages between nature and health are of increasing research and policy interest. Whilst research efforts are increasingly interdisciplinary, there is still a need for greater integration of different fields of expertise and recognition of the importance of accounting for different forms of knowledge, as with other aspects of biodiversity policy. Hence, the medicinal plants have a great potential to be a source of development and productive employment generation in the region if adequate and reliable water is available during their growth periods, they are packaged appropriately and marketed soundly, and they can be processed in industries. The purpose of this knowledge of medicinal plants is to increase the awareness of the positive existing and potential role of the medicinal plants by providing guidance that can help identify and value the various socio-economic benefits provided by the tribal region of rural. They are the major source of medication for a wide range of ailments for the rural people. Besides their importance in health care, MPs have high socio-cultural, symbolic and economic values, providing income and employment to millions of people living in the region. Knowledge of the sustainability of the use of such plant resources is thus urgently needed. Sustainability of the use and management of plant resources can be assured

with an understanding of the biological/ecological, economic, socio-cultural and political aspects of resource base; understanding of the complex interactions between many of these factors; and with careful planning and management grounded in ecological principles. Management also requires understanding local perceptions, knowledge and decision making systems relating to the resources. Sustainable management of traditional medicinal plant resources is important, not only because of their value as a potential source of new drugs, but due to reliance on traditional medicinal plants for health. Conservation of useful plants can be maintained and enhanced once the nature of a cultural landscape and knowledge and principles of resource utilization are understood. We studied the factors influencing indigenous knowledge of medicinal plant collection and utilization.

The area is rich in useful plants and indigenous therapeutic knowledge. Many of the plants are collected and used for culture, livelihood and primary health care under the theoretical and practical traditional knowledge, mores and beliefs of surrounding health, illness and sociocultural values, and because of limited accessibility. Thus, we can assert that the factors associated with the usefulness of a plant species are sociocultural traditions and belief, ecological availability, and the geo-ecological complexities. However, the indigenous systems of collection and use are affected by ecological and socio-cultural alterations and associated knowledge is often transformed. Medicinal plants offer alternative remedies with tremendous opportunities to generate income, employment. Many traditional healing herbs and their parts have been shown to have medicinal value and can be used to prevent, alleviate or cure several human diseases. Medicinal plants contribute both directly or indirectly to the economy of rural households through providing welfare and economic status. Some traditional health practitioners and knowledge-holders have chosen to market their knowledge outside of traditional settings. There has been inadequate documentation of indigenous knowledge about medicinal plants and their utilization. Medicinal plants have been one of the main ingredients in traditional medical systems, being in high demand in both rural and urban livelihoods and an important

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source of human survival and well-being. Medicinal plants used to treat and manage childhood diseases in particular are recognised in rural areas due to their ability to provide welfare and wellbeing to traditional health practitioners, particularly those who practice and believe in the use of medicinal remedies. In many rural areas, people die of preventable or curable diseases due to a lack of adequate healthcare facilities, road infrastructure and telecommunication network coverage to reach emergency facilities. It is suitable to explore the ways and pattern shift to support vulnerable rural areas populations, and improve their healthcare status, socio-economics status and well-being through prioritizing indigenous knowledge of medicinal plants. Raw materials of different medicinal plants should be harvested during proper time of season; at proper stage of developmental growth keeping in view its correlative relationship with plant and its organs. Professional doctors from tribal areas, in general, select the time and seasons for collection of medicinal plants depending on the parts used. In addition, there is a socio-economic aspect which supports future wildcollection that may be an additional income of the poor rural people. However, the highly demanded MPs are those that need immediate conservation measures. The urgency and need to protect the fast disappearing medicinal plants-based traditional knowledge, which is still rich in the highlands, cannot be overemphasized. Medicinal plants knowledge and strategies therefore, can become highly remunerative both in financial and economic terms for the small-scale growers. Creating an awareness of the use of medicinal plants and assessing the impact of different policies on knowledge accumulation is an important strategy for the growth of the local economy. Policy remains a controversial aspect to both indigenous knowledge and strategies that needs to be balanced. Policies are needed that (i) allow stronger incentives for economic agents to engage in knowledge-creation activities and (ii) encourage people and organizations to invest in research and development of new medicinal plant products.

#### **Transfer of Knowledge: Preparing for the Future**

The knowledge and skill to collect, process, store and utilise medicinal plants are an integral

part of the life of rural people, community well-being and family health are directly related to sustainable use of medicinal plants and transfer of knowledge.

#### **Transferring the knowledge to future generation were noted:**

Medicinal plants are now gaining a wide recognition and utilization as both primary health care and source of income due to the following reasons: tribal beliefs in the power of herbs or tree parts to bring fortunes or misfortunes, good health, success, easy access to traditional cure, inadequate modern medical facilities and qualified personnel in hospitals as well as emergence of new and incurable diseases such as HIV/AIDS and other diseases.

There is an urgent need to speed up medicinal plants ethnobotanical studies in view of the large number of areas where traditional knowledge is at risk of disappearing. People have acquired knowledge about medicinal properties of plants by trial and error, and have made an outstanding contribution to the origin and evolution of many traditional herbal therapies in the rural region.

Documentation of indigenous knowledge and evaluation of the use of plants for a variety of purposes assume greater significance, not just to retain it, but also to keep it alive and make it available for future use because of rapid socio-economic and cultural changes that are taking place across the traditional community of the region. But recently, decreasing populations of medicinal plants in the wild due to illegal exploitation have led to discussions among conservationists, ecologists and scientists. Several medicinal plants have been listed as endangered, vulnerable and threatened due to over-exploitation, careless harvesting from the forest. Cultivation of medicinal plants is widely viewed not only as an option for meeting current and future demands for large-volume production of plant-based drugs and herbal remedies but also as a strategy for relieving harvest pressure on wild populations. The modification of socio-cultural traditions and indigenous knowledge into livelihood means and economic opportunities also has the advantage of preserving rapidly eroding indigenous knowledge and practice. This study is an attempt to document indigenous



knowledge of local medicinal practitioners and other erudite people and develop sound strategies for medicinal plant cultivation to sustain the traditional healthcare system. This is because traditional herbs have been used to treat various human disease. The knowledge has been treasured in the hearts and minds of the indigenous people, that is, it has been kept in great mystery. The concept of IMK has been associated with terms like disease, medicine, treatment and medicinal plant. The use of traditional herbs in providing health care in rural areas is as important as doctors sometimes tell patients what kinds of food they should take or not when ill. Traditional knowledgeable people have a view that this is similar to the way they administer medicines in their communities. The traditional leaders interviewed said that indigenous plants played an important role in their daily socio-economic needs and that they are also sources of food for the communities, wherein lies the link between the nutritional and medicinal values of indigenous plants. The term medicinal plant refers to a variety of plants that have medicinal properties. These plants are a rich source of compounds that can be used to develop drug synthesis (8). The parts of medicinal plants that may be used are different types of seeds, root, leaf, fruit, skin, flowers or even the whole plant. The active compounds in most parts of the medicinal plants have direct or indirect therapeutic effects and are used as medicinal agents. In the body of these plants, certain materials are produced and stored that are referred to as active compounds (substances), which have physiological effects on the living organisms (9). Human is mainly dependent on raw plant materials in order to meet medical needs to maintain health and cure diseases (10). Medicinal plants are used for treatment because they have certain properties, including synergistic actions. Knowing the history of any science is effective in understanding and using that science. Hence, the historical significance of the past and present and future to medicinal herbs will continue to be addressed. In this perspective review, we have highlighted and discussed the history, current challenges, development and future outlook of using medicinal plants and their active compounds. Indigenous knowledge in medicinal plants is owned and practiced by the knowledge holders for different purposes. It entails the passing of skill and knowledge from one generation to the other with specific

geographical area. A tribal area is well known to be rich in plants and the people own the rich knowledge in medicinal plants. The use of indigenous knowledge by medicinal plants vendors has an important role to play in creating employment for indigenous knowledge holders and further should be invested in. The purpose of this knowledge of medicinal plants is to increase the awareness of the positive existing and potential role of the medicinal plants by providing guidance that can help identify and value the various socio-economic benefits provided by the tribal region of millennial generation.

### **Research gaps**

The new Global Biodiversity Strategy should be a help in protecting such a resource.

- Environmental: Further research on threatened endemic medicinal plant under climate change scenario is fundamental for developing conservation strategies as well as practicing of cultivating medicinal plants through the involvement of local communities with the traditional indigenous knowledge can prevent the impact of climate change and unsustainably harvested forest.
- Modern technology: The medicines for internal use prepared in the traditional manner involve simple methods such as hot- or cold-water extraction, expression of juice after crushing, powdering of dried material, formulation of powder into pastes via such a vehicle as water, oil or honey, and even fermentation after adding a sugar source. Improved methods for the processing of medicinal and aromatic plants and new techniques for quality assessment are being developed rapidly.
- Socio-cultural : The knowledge and skill to collect, process, store and utilise medicinal plants are a compulsory part of the life of rural people, community health are directly related to sustainable use of medicinal plants and transfer the knowledge to future generation. There has been inadequate documentation of

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indigenous knowledge about medicinal plants and their utilization. Many traditional practices and associated beliefs and knowledge have been irretrievably lost.

- Socio-Economic: The kavaraj who has vast knowledge on the medicinal plants and their uses against different diseases give treatment to the poor villagers with indigenous medicinal plants. Therefore, the scientific cultivation and sustainable uses of medicinal plants are very important to the socio-economic development of the rural people.

### **Statement of Research Problems**

Cultivation and conservation of medicinal plants: Besides illegal collection, there were many other threats, such as land-use disturbances, overharvesting, deforestation, soil degradation, heavy livestock grazing and changing climate conditions.

Documentation of indigenous knowledge: The majority of the old generations still possess much knowledge and deep understanding of traditional healthcare. Older people possess more indigenous knowledge of medicinal plants compared with the young. The effectiveness of medicinal plants also varies between groups and is more effective among younger people.

### **Need and Signification of the study**

- Creating an awareness of the use of medicinal plants and assessing the impact of different policies on knowledge accumulation is an important strategy for the growth of the local economy.
- Medicinal methods use: The use of medicinal plants for the treatment of different ailments. Medicinal plants to cure a variety of health-related issues like cough, cold, insect bites and skin diseases. Combination with other ingredients, different ingredients has different process is quite effective in preventing or treating various diseases

such as nosebleeds, flatulence, colds, insect stings, stomach aches, and asthma. tooth infections and gastro-intestinal disorders etc.

- Medicinal plants: The term medicinal plant refers to a variety of plants that have medicinal properties. The parts of medicinal plants used by traditional healer are may be used are different types of seeds, rhizome, root, leaf, fruit, skin, root tubers, flowers or even the whole plant. The plants are prepared in various ways For medicinal purposes, a decoction of leaves, stem, fruits and root/tuber is often used; this is either drunk or rubbed on the body to treat one or more diseases or conditions.
- Technology: The uses of medicinal plants, activity of preparing medicines, like crushing, powdering, boiling, mixing, etc., The main conservation issues faced by medicinal plants overharvesting, deforestation, soil degradation, overgrazing, loss during collection and storage, unmonitored trade, lack of clear resource tenure and custodianships, little understanding of sustainable management parameters.

Documentation of indigenous knowledge: Documents their knowledge of medicinal plants and wild edibles, and the specific manner in which they are used. Older people possess more indigenous knowledge of medicinal plants compared with the young. The effectiveness of medicinal plants also varies between groups millennial generation and is more effective among alpha generation. The conservation issues faced by medicinal plants overharvesting, deforestation, soil degradation, overgrazing etc. it is very important to document this knowledge for generation, otherwise it will vanish forever.

Socio-cultural: The knowledge and skill to collect, process, store and utilise medicinal plants are a compulsory part of the life of rural Millennial generation, community health are directly related to sustainable use of medicinal plants and transfer the knowledge to alpha generation. There has been inadequate

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documentation of indigenous knowledge about medicinal plants and their utilization. Many traditional practices and associated beliefs and knowledge have been irretrievably lost.

### **Objectives of the study**

To evaluate the contribution of knowledge of Medicinal plants resist diseases and human resources strategies of millennial and alpha generation.

**Medicinal plants:** The term medicinal plant refers to a variety of plants that have medicinal properties. The parts of medicinal plants used by traditional healer are may be used are different types of seeds, rhizome, root, leaf, fruit, skin, root tubers, flowers or even the whole plant. The plants are prepared in various ways for the medicinal purposes. Human resources strategies of millennial and alpha generation can preserving Medicinal plants knowledge which are at the stage of vanish forever.

**Medicinal methods use:** The use of medicinal plants for the treatment of different ailments. Medicinal plants to cure a variety of health-related issues like cough, cold, insect bites and skin diseases. Human resources strategies of millennial and alpha generation can preserve Medicinal plants use in the preform of different ailments.

**Technology:** The uses of medicinal plants, activity of preparing medicines, like crushing, powdering, boiling, mixing, etc., The main conservation issues faced by medicinal plants overharvesting, deforestation, soil degradation, overgrazing etc. Human resources strategies of millennial and alpha generation should modernization the Technology for the preparing medicines and cultivation development.

**Documentation of indigenous knowledge:** documents their knowledge of medicinal plants and wild edibles, and the specific manner in which they are used. Millennial generation possess more indigenous knowledge of medicinal plants compared with the alpha generation. Human resources strategies of millennial and alpha generation can preserve knowledge and utilizes for social welfare and economic of medicinal plants development.

**Socio-cultural:** The knowledge and skill to collect, process, store and utilise medicinal plants are a compulsory part of the life of rural Millennial generation , community health are

directly related to sustainable use of medicinal plants and transfer the knowledge to alpha generation. The strategies of millennial and alpha generation resources can development socio economic.

**Knowledge and skill:** The use of medicinal plants for the treatment of different health-related issues. The parts of medicinal plants used by traditional healer are may be used are different types. Through the utilization of human resources strategies of millennial and alpha generation can be use the knowledge and skill to sustainable livelihood, employment generation, economic development and self-employment.

**Research Methodology-** Two supplementary research methods were used: a vast review of secondary information about the suitable district and the collection of primary data through semi structured Enquire in the selected districts. A semi-structure questionnaire survey was carry out among knowledgeable traditional medicine men and view the Vedic document randomly knowledge on the use of medicinal plants. Field survey confirms that the cultivation of medicinal plants is capable to improve the livelihoods of poor farmers and as well as resist related to different types of diseases.

**Discussion and Analysis-** Livings in rural areas millennial generations believe on improve their healthcare status, socio-economics status and well-being through prioritizing indigenous knowledge of medicinal plants. The belief of the people rural areas in traditional medicine is a hereditary belief .The utilization of the knowledge they obtain about the use of plants comes from parents or hereditary and exchange of ideas. The level of local knowledge is influenced by age, sex, education, and the level of the millennial generation community's economy. The output of the study would benefit the millennial generations in increase of the knowledge in indigenous medicine which would help better the health condition, and could lead to improve their socio-economical situations. Conservation of biodiversity could be achieved through better living conditions which encouraged the alpha generation.

Indigenous knowledge can be said to be the knowledge of the people, by the people which should be preserved for the people and proper documentation of indigenous knowledge

system and possible value addition will be helpful for the millennial generations in the improvement of their economic conditions and it will also promote the process of human resources strategies of Millennial generation and alpha generation of the medicinal plants and providing self-employment opportunities and improving and uplifting the life, economy and social status of the tribal and rural populations. Thus, it becomes necessary to preserve this traditional system of knowledge by proper documentation because records of traditional knowledge may lead to the authenticity.

**Finding-**The contribution of knowledge of Medicinal plants resist diseases and human resources strategies of millennial and alpha generation should modernization for the development. Medicinal plants: Human resources strategies of millennial and alpha generation can preserving Medicinal plants knowledge which are at the stage of vanish forever. Medicinal methods use: Human resources strategies of millennial and alpha generation can preserve Medicinal methods use in the preform of different ailments. Technology: Human resources strategies of millennial and alpha generation should modernization the Technology for the preparing medicines and cultivation development. Documentation of indigenous knowledge: Human resources strategies of millennial and alpha generation can preserve knowledge and utilizes for social welfare and economic of medicinal plants development. Socio-cultural: The strategies of Human resources of millennial and alpha generation resources can be develop socio economic by preserving the social culture.. Knowledge and skill: Through the utilization of human resources strategies of millennial and alpha generation can be use the knowledge and skill to sustainable livelihood, employment generation, economic development and self-employment.

#### **Suggestion**

- Structure of the strategies of Human resources of millennial and alpha generation of the medicinal plants knowledge.
- Medicinal plants: Cultivation of medicinal plants is widely viewed not

only as an option for meeting current and future demands.

- Medicinal methods use: Medicinal plants are used for treatment because they have certain properties, including synergistic actions.
- Technology: To develop cultivation techniques (agro-techniques) including Quality Plant Materials, Irrigation, Fertilizer, Plant protection, Post-harvest collection and Processing, which are cost effective in different agro- climatic regions.
- Documentation of indigenous knowledge: Documentation of indigenous knowledge to keep it alive and make it available for future.
- Socio-cultural: The modification of socio-cultural traditions and indigenous knowledge into livelihood means and economic opportunities.

**Conclusion-** Medicinal plants are used by various tribes of rural areas for treating various kinds of diseases since time immemorial. These traditional medicinal systems play a key role in healthcare system of these aboriginal tribes. The methods used for curing diseases have been found to be different from one diseases to other. Combination with, different ingredients has different process is quite effective in preventing or treating various diseases. The conversion of socio-cultural traditions and indigenous knowledge due to such land-use disturbances, heavy livestock grazing and changing climate conditions, Overharvesting, deforestation, soil degradation, overgrazing, loss during collection and storage, unmonitored trade, lack of clear resource tenure and custodianships, little understanding of sustainable strategies of Human resources of millennial generation resources. Documentation of indigenous knowledge and evaluation of the use of plants for a variety of purposes assume greater significance, not just to retain it, but also to keep it alive and make it available for future use there should be utilization for strategies of Human resources of millennial generation and alpha generation knowledge and skill of the medicinal plants resist various type of diseases has great potential for employment generation, livelihood means and economic opportunities, if undertaken properly.

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# PARTICIPATORY DEVELOPMENT AND GRASS-ROOT TRIBAL POLITICAL PARTICIPATION: A STUDY OF SANTALS SELECT BLOCKS OF BIRBHUM DISTRICT IN INDIA

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**Abstract-**The notion of participatory development had been emerged during 1970s as an important part of basic needs approach to development. The goal of participatory developments (PD) is to involve the grass-root people in the development process. According to census 2011 there are (104545716 person) 8.6 percent tribal people in India. There are 5.8 percent (5296953 person) tribal people in west Bengal. There is a huge number of tribal people whose participation is essential for mainstream development process in our country. Development could not be succeeded without their inclusion in developmental machinery. It is a problem in our society that the participation of grass-root Santal people are not satisfied compared to non-tribal people in development process. Santal people's living condition is extremely poor. A huge number of tribal people in the Birbhum district are backward in respect of social, education, employment, good health, economic and human development status. Irrespective of the type of governance of the state, people's participation is considered as an important issue where the governance of the state is directly or indirectly democratic. The success of such participatory democracy depends on the overall political participation of the society. Political participations are an essential component of participatory development. In this context, present study is being highlighted the current status and development of local level political participation of Santal people in Bolpur Sriniketan and Nanoor Blocks of Birbhum District.

**Key Words:** Development, Participatory Development, Political Participation, Tribes, Santal.

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**Introduction-**Irrespective of the type of governance of the state, people's participation is considered an important issue. Where the governance of the state is directly or indirectly democratic, people's participation is the most essential part of development. Political participation is one of the most important part of people participation in development process. Relevant to this discussion that, David Held classified democracy in his book '*Models of Democracy*' and highlighted the significance of participatory democracy. The merits of such a democratic system could be said to be equal rights to freedom and self-development. Such society develops a sense of efficacy, develops thinking for collective problem solving, increase political and democratic knowledge of citizen. According to census 2011, in the district of Birbhum the total population is 3502404. Out of total population of 3502404 of

the districts, 6.92 per cent with 242484 population are scheduled tribes. In case of Nanoor block, very low percentage 2.39 with 5221, population are scheduled tribe. In case of Bolpur Srininketan block, the highest percentage 19.38 with 36906 population of schedule tribe people in the block of Birbhum District. Both of this Block, maximum tribal people are Santal people. The success of such participatory democracy depends on the overall political participation of the society. Political participation is an essential component of developmental machinery. Therefore, political participation of Santal people is an important issue in social development processes. In this context, the present study is being highlighted current status and development of political participation of Santal people of Bolpur Sriniketan and Nanoor blocks.

**Review of Literature-** Anthony Kelly and Peter Westoby jointly has written the book '*Participatory Development Practice Using traditional and contemporary frameworks*' (2018) in this book they highlighted the essentiality of participation and dialogue as the key to development. The book creates the connection from the inter-personal to community and beyond, into the inter-organizational and international spheres now required of 21<sup>st</sup> century development work. The discussion of this book is very relevant to the present study. This book has helped a lot for highlighting the importance of the participation of the Santal community in present study.

Rath Chandra Govinda edited a good book *Tribal Development in India: The Contemporary Debate* (2006). This book forwarded by Jean Dreze, is the most related book of the present study. In this book Govinda Chandra Rath expressed that mainstream development model has limited impact on the living at the grassroots, specifically on tribal people. The welfare model of development complements the gaps by enriching the standard of life of the people at the grassroots level through introducing sequence welfare policies, self-employment and wage employment programmes. The dishonesty of bureaucrats, low levels of people's adjustment with the new set of self-employment and wage employment and global forces in the form of globalization, place major problems in the path of free and unbiased performance of the welfare model of development programmes. The welfare model of development continues to be applicable today for seeking development among the tribes, but its achievement depends on the united performance of the state, market, social activities and tribal people themselves. He also discussed the importance of restructuring policies and implementing agency to accelerate the process of providing more opportunities to tribes. In this case, for the success of welfare development it is necessary to have active participation of tribal people under the policies, state, market, social activities. Therefore, this book has helped to understand the essentiality of tribal political participation.

R.P. Verma edited the book titled *People's participation in Indian politics* (2002). This book is classified into six chapters. In this book

except chapter two and five he explores political participation, female participation, and alternative political development through people participation. He mainly stresses on political participation. Although this book described so many issues related to participation like communalism, language, caste politics and class politics. So, this book also helps for present study, to justify the political participation of tribal people is an essential tools of development process.

### **Objectives**

To understand present status of political participation of Santal people in rural politics.

The study will explore essentiality of Santal people participation in all round social development process.

Understanding the importance of political participation to justify the role of Santal people in the decision-making process of local bodies in grassroots level.

**Research methodology-**The present study is based on primary and secondary data sources. The primary data is collected by simple random sampling process throughout a household survey of Bolpur Santiniketan and Nanoor block of Birbhum District in India. The study will also emphasize some key information collects through interview, and some in depth individual interview on the basis of purposive sampling appropriate to understand the objectives of the study. In depth interviews are individual and unstructured interviews, the goal is to find participants emotions, feelings and opinions concerning the political participation. The core benefit of individual interviews is that they include individual and direct exchange views between interviewers and interviewees, as well as reject non response rates. Some primary sources such as government reports and data have been collected from election commission report. Secondary data like books, journals, articles, newspaper, all these are most important data sources for this present study.

**Sampling and Sample Size -**Sampling is the most important tools for the field-based study. For present study, 200 persons selected from 20 villages by the Simple Random sampling method from Bolpur Sriniketan and Nanoor blocks. Twenty villages selected from the

(142)

twenty Gram Panchayats of two Blocks. Each village has been selected from each Gram

Panchayat in which village has the number of tribal people is high.

**Table 1: Sampling Size**

Birbhum District			
Block	Name of the Gram Panchayat	Name of the Village	Number of samples
Bolpur Sriniketan Block	Bahiri Panchshow	Chhota Simulia	08
	Kankalitala	Khoshkadampur	14
	Kasba	Bergram	12
	Raipur-Supur	Kankutia	08
	Ruppur	Ballabhpur	15
	Sarpalehan-Albandha	Mahishdal	12
	Sattor	Khanjapur	08
	Singhee	Bejra	08
	Sian-Muluk	Dwarkanthpur	15
Nanoor Block	Barasaota	Mohanpur	16
	Chandidas Nanoor	Pakurhans	15
	Charkalgram	Charkalgram	04
	Daskalgram-Kareya 1	(There are no tribal people in this panchayat)	00
	Daskalgram-Kareya 2	Kareya	04
	Jalundi	Bonagram	08
	Kirnahar-1	Kirnahar	08
	Kirnahar-2	Gomai	12
	Nawanagar-Kadda	Baitara	08
	Thupsara	Harmur	15
	Uchkaran	Goaldihi	10
Total	20 GPs	20 Village	200 Sample

**Source: Data collected from the field survey.**

**Area of study-** The Birbhum district is situated at the central western part of West Bengal. Birbhum district is surrounded by the state of Jharkhand, in the north and west, the borders on other directions are covered by the districts of Murshidabad and Bardhaman. Suri is the district headquarter. There are 03 subdivisions (Suri Sadar, Bolpur and Rumpurhat), 19 developed blocks, 27 police stations, 08 municipality, and 167-gram panchayat. Many famous people lived and worked in Birbhum, especially at Santiniketan. Nobel laureate, Rabindranath Tagore made this district his home and established his great centre for learning, Visva Bharati University at Santiniketan, and Nobel laureate economist Amartya Sen is one of them. There is a state university Biswa Bangala University at Bolpur. The present study is associated with this district in two Blocks as Bolpur Sriniketan and Nanoor.

Now, focus on the two specific Blocks, Bolpur Sriniketan and Nanoor.

**Bolpur Sriniketan Block-**Bolpur Sriniketan Block has 1 panchayat Samity, 9-gram panchayat, 148-gram sansads, 170 mouzas and 159 villages. Headquarter of this Block is Bolpur Sriniketan. Under the Bolpur Sriniketan panchayat Samity, the gram panchayats are Bahiri-Panchosowa, Kankalitala, Kasba, Raipur-Supur, Ruppur, Sarpalehanna-Albandha, Sattore, Sian-Muluk and Singhee. According to census report 2011, Bolpur Sriniketan Block had a total population of 202,554, of which 190,393 were rural and 12,160 were urban. There were 102,722 (51%) males and 99,831 (49%) Females. Scheduled Castes population are 61,960 (30.59%) and Scheduled Tribes population are 38,615 (19.06%) the highest amongst all the Blocks of



Birbhum district. As per census 2011, most of the workers of Birbhum district, belong to the Bolpur Sriniketan block. The cultivators are 13,493 (15.74%), agricultural laborers are 44,220 (51.57%), household industry workers are 3,166 (3.69%) and other workers are 24,862 (29.00%). Total workers of this Block are 85,741 (42.33% of the total population) and non-workers are 116,812 (57.67% of the total population).

**Nanoor Block**-Nanoor Block has 1 Panchayat Samity, 11-gram panchayats, 168-gram sansads, 137 mouzas, 131 villages, headquarter of this Block is Nanoor. Under the Nanoor panchayat samity gram panchayats are Bara-Saota, Chandidas Nanoor, Daskalgram-Kareya-I, Daskalgram-Kareya-II, Jalundi, Kirnagar-I, Kirnagar-II, Nownagar Kodda, Thupsara and Uchkarani.

According to census 2011, Nanoor Block had a total population of 218,654 of which 213,387 were rural and 5,267 were urban population. There were 112,185 (51%) males and 106,469 (49%) females. Schedule caste population is 71,153 (32.54%) and schedule tribes' population is 5,221 (2.39%). As per census 2011, total literates of in Nanoor Block are 133,769 (69.45%) out of which males are 74,095 (74.87%) and females are 59,674 (63.72%). The difference between male and female literacy rates is 11.56 per cent. Situation of the workers of Nanoor Block is like, cultivators 20,157 with 24.74 per cent, agricultural laborers 39,608 with 48.61 per cent, household industry workers 2,738 with 3.36 per cent and other workers 18,958 with 23.30 per cent. Total workers 81,488 with 37.27 per cent of the total population.

Nanoor block is a culturally well-known place for Dwija Chandidas. There is a fair organized annually, on the occasion of Dol Purnima at Nanoor in memory of Dwija Chandidas and Rajakini, it is called Chandidas Mela.

**Political consciousness of Santal people**-In the case of Bolpur Sriniketan block, an attempt was taken to know about the political awareness

of Santal people. To know the political awareness of Santal people has been used three criteria which are, mentions the name of various political party, interest in participating in political parties and their mentality in contesting election. In the criteria of mentioning the name of various political party, 56 per cent of the Santal people in the region are moderate minded. In this percentage of Santal people some are able to mentioning the name of various political parties but some are not. When they were asked to tell the name of the political parties, some of them were mentioning the name of the various political parties as TMC, BJP, Congress and CPIM etc. Another group of people in this percentage are Santals who could not clearly mention more than three political parties. 38 per cent of Santals in this block are politically conscious. This percentage of Santal people are able to mentioning the names of various political parties and they are able to mentioned the names of many political parties in different states of our country like AAP (Aam Aadmi Party), JMM (Jharkhand Mukti Morcha). 06 per cent of Santal people did not give any clear response when asked the name of political parties.

64 per cent of Santal people of this region are moderate in participation with political parties. When they were asked some questions like, "Are you interested in going to meetings, processions of various political parties?" In response to such questions, they replied that, if there is time, they will attend, if there is no time they will not attend. There are 32 per cent Santal people in the region who are actively interested in attending meetings and rallies of political parties. The opinion of this percentage of Santal people is that, they try to attend meetings and processions of political parties, because, they get to know about the programs of political parties which is increasing their political knowledge. Almost all of these people have primary and secondary education. 04 per cent of Santal people did not get any response in participating in various programs of political parties.

**Table 2: Political awareness of Santal people of Bolpur Sriniketan block.**

<b>Subject</b>	<b>Very little conscious or interested</b>	<b>Conscious or interested</b>	<b>Unconscious or not interested</b>
Mentions the name of various political party	56 %	38 %	06 %
Familiarity with Political party	64 %	32 %	04 %
Attitude to contesting election	44 %	36 %	20 %

**Source: Data collected from the field survey.**

An attempt was made to know the interest of the Santal people of Bolpur Sriniketan block in contesting the election, it has been observed that 44 per cent of the Santal people of this block have shown moderate mentality in contesting the elections. According to the opinion of this percentage of Santal people, if they get a chance, they will contest in the election. They do not know how to be the electoral representative, if they get to know they are willing to participate. Among this percentage of Santal people, it seems that some people of this percentage not showing any interest in contesting elections. 36 per cent Santal people are clearly willing to contest in elections. This percentage of Santals also have ideas about elections. 20 per cent people has shown no interest in contesting the election and they have no idea about the election process.

The political consciousness of the Santal people of the Nanoor block are highlighted here. In the criteria of mentioning the name of various political party of Nanoor block, it is seen that 71 per cent Santal people are very little aware about mentioning the name of various political parties. When I asked the Santal people of this region, do they know the name of any political party? or mention the names of some political parties if they know, many of these 71 per cent of Santal people could able to mention the name

two or three political parties and many of them could not able to mention the name of the political parties completely. 22 per cent Santal people of this region are politically aware, they are able to name various political parties and they have an idea about who is the leader of which political party. 07 per cent of Santal people in this block have no clear idea about political parties. Most of these people are older women and older men (who are above 60-year-old).

An attempt was made to know about the interest of the Santal people for participating in political parties. It has been found that 78 per cent of the Santal people are moderate in participating in political parties. To participate or not to participate in the political parties is not as important to this percentage of people. This percentage of Santal people sometimes participate in various meetings and processions of political parties and sometimes they do not. 16 per cent of Santal people expressed interest in participating in political parties. This percentage Santals regularly participate in various meetings and processions of political parties. 06 per cent Santal people did not seem express any interest to participate with political parties. This percentage of Santal people were asked whether they participate in the meetings and processions of political parties or not, they did not give any answer.

**Political awareness of Santal people of Nanoor block.**

<b>Subject</b>	<b>Very little conscious or interested</b>	<b>Conscious or interested</b>	<b>Unconscious or not interested</b>
Mentions the name of various political party	71 %	22 %	07 %
Familiarity with Political party	78 %	16 %	06 %
Attitude to contesting election	50 %	12 %	38 %

**Source: Data obtained from the field survey.**

To know about the position of political participation, an attempt was made to know about the attitude of Santal people in contesting election. In that case, it has been seen that 50 per cent Santal people of Nanoor block have moderate attitude in contesting elections. This percentage of people have no such idea about contesting elections. Also, their statement is that, if there is an opportunity to contest elections, some of them are interested to contest elections and some are not. 12 per cent of Santal people have actively expressed interest in contesting election. This percentage of people know about the local level election process and they are interested in participating in the election. Some of the members of this group had studied at primary school level and some at secondary school level. Bhut Lal Murmu of Harmur village in Thupsara GP was elected as the GP member in the Panchayat Election of 2018, the statement that was emerging during the conversation with him is that, he wants to contest again if he gets an opportunity to contest the next election. According to him, you have to work as a people representative, you can show case the problems of your community to the local administrative system and try to find solutions. This percentage of people have expressed interest in contesting the elections

and their opinion is that their community's various problems such as social problems can be solved through their elected representative. In Nanoor block, 38 per cent Santal people have no idea about contesting elections and do not seem to show any interest in contesting elections.

**Scenario of Santal people contesting of last three Panchayat elections**–Statistics from the last three panchayat elections of West Bengal show that, a total number of 26 Santal people contested in total 28 STs seats in the 2013 panchayat elections in Bolpur Sriniketan block. Subsequently, in the 2018 elections, 26 Santal people contested 29 STs seats. In 2023 panchayat election, total 34 Santal people contested in 33 ST seats, the number of Santal contesting candidates has increased compare to both 2013 and 2018 panchayat elections of West Bengal. Besides, in the Nanoor block the Santal contesting candidates was same in last three panchayat elections. At the Bolpur block the progress of political participation of Santal people is in a progressive mode but in the Nanoor block this kind of progress has not been seen yet. The reason for the developmental differences between the two blocks specifically Santal people of Nanoor block has lack of political awareness.

Table 3: Statistics of Santal people contesting of last three Panchayat elections

Year	Name of the Block	Total Seats	Total ST Seats	Total ST contesting candidate	Total Santal contesting candidate	
					Male	Female
2013	Bolpur Sriniketan	144	28	32	11	15
	Nanoor	153	04	04	03	01
2018	Bolpur Sriniketan	148	29	29	11	15
	Nanoor	168	04	04	03	01
2023	Bolpur Sriniketan	158	33	40	13	21
	Nanoor	204	04	04	02	02

**Source: panchayat election 2023 and Archive of West Bengal State Election Commission.**

**Major findings and Conclusion:** The important findings emerging from the present study are in terms of awareness, Santal people of Bolpur Sriniketan block are more politically aware than Nanoor block. Political consciousness, familiarity with political parties and willingness to contesting elections were taken as the criteria for measuring the political awareness of Santal people. In terms of knowledge about local administration, familiarity with various political parties, knowledge of electoral process and willingness to contesting elections as candidates, Bolpur Sriniketan block is more advance than Santal people of Nanoor block. Therefore, the various government programme for the development of the tribal community which is done by the both central government and the State government like, Integrated Tribal Development Programme (ITDP), Vanbandhu Kalyan Yojana (VKY) and various Scholarship programme etc. Santal people of Bolpur Sriniketan block knew about this programme and also participate in various tribal development programme. Besides, the Santal people of the Nanoor block could not know about the various development programme of the government, because they have lack of political awareness. For that reason, we have to increase political awareness amongst Santal people, steps are, the tribal people have to come actively for more political participation and leader of the various political parties have to take important steps to increase political awareness amongst Santal people.

Secondly, according to the statistics of last three panchayat election of West Bengal,

Bolpur Sriniketan block has more tribal population, that's why they have a greater number of GP members than the Nanoor block. It is significantly observed that, each GPs in Bolpur Sriniketan block has at least one tribal community member, while Nanoor block has many GPs where tribal people live but no tribal community members. For example, more than 600 tribal people live in Charkalgram GP, more than 375 tribal people live in Uchkaran GP, more than 300 tribal people live in Jalundi GP and more than 150 tribal people live in Nawanager-Kadda GP but there are no tribal members in these GPs. As a result, tribes of these GPs appear to show little interest in participating in the formulation and implementation of local level plans. In this case, GPs where there is no tribal representative but where tribal people live, a representative within the panchayat may be assigned the responsibility of monitoring the welfare and needs of Santal people.

Thirdly, according to last three years panchayat elections statistics shown us that, Santal women member of Bolpur Sriniketan block has contested the panchayat election more than Santal men member. In the Santal community increasing political participation of Santal men as well as Santal women. For that Santal women are gaining political knowledge and awareness. For example, it has been seen that Santal women are participating in political meetings, procession and various political activities, Santal women are talking to government officers about their various problems at 'Duare Sarkar Camp'. On the other hand, in Nanoor block, the Santal women are

lacking behind compare to Bolpur Sriniketan block in terms of political knowledge and awareness, though Santal women of Nanoor block now taking part of the various political procession and meetings and also participated to formulation and implementation the plan of local administration. Contesting Santal women candidate had increased from the 2023 panchayat election of Nanoor block. Hope, in future there will be more Santal contested women will contest election from this block and will show interest.

Fourthly, in terms of contesting elections at the local level, one thing to be noted in both the blocks is that the indigenous people are contesting only in the reserved constituencies and they are not seen contesting beyond the reserved constituencies. To increase the political participation of tribes, it is necessary to contest elections beyond the reserved seat. That means prioritizing the political participation of underprivileged indigenous people, it does not mean that the electoral candidates of unreserved constituencies compete with the electoral candidates of reserved constituencies. Though it is emerged to see that, Santal people of Bolpur Sriniketan block had contested in the few unreserved constituency. For example, Chunu Murmu and Gita Sardar from Kasba panchayat had contested from unreserved Constituency in last panchayat election of West Bengal. It is the positive remarks for the development of tribal people in the perspective of political participation. It would also reinforce the participatory development.

Political participation is an important part of participatory development. Political participation develops people's political knowledge and aware them about the political system. The political knowledge of the tribal people in the society or the knowledge about the political system has not been reached yet the expected level. However, it is gratifying that the present study has observed that the tribes are attending various political meetings, processions, participating in the voting process in all elections and many are working as elected representatives in the administration at local level and both Central and State level. In case of Gram Panchayats of Bolpur Sriniketan block, it is also observed that the number of

tribal women members is more than the number of tribal men members. Therefore, as the political participation of indigenous people is increasing, for that reason political knowledge will be expand among them, that will help them to meet the various needs of their daily life through the formulation and implementation of local administration plans and participatory development will be strengthened. As a result, there will be over all development of our society for that development will be strengthen.

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# **ANALYSING EMOTIONAL DEPTH IN AI-GENERATED POETRY: A NEW FRONTIER IN COMPUTATIONAL CREATIVITY**

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**Abstract**–With the advent of Artificial Intelligence, many aspects of human life have been greatly influenced. Every field has some kind of AI aid to it, and literature is not vacuum to this influence. The new generative AI called ChatGPT has taken academia by storm. ChatGPT has been put to work in different situations in the academic world, from writing assignments to getting assistance on any specific topic to squeeze some creative writing out of it. This paper analyses several poems written by ChatGPT to investigate how the AI is dealing with different emotions like love, happiness, sadness, anger, and remorse. To carry out our research, we will closely examine a few poems written by ChatGPT. These poems were generated with the help of prompts that asked the AI to write poems about varying emotions. We want to find out how ChatGPT expresses emotions in its poems and how it deals with feelings.

**Keywords:** Artificial Intelligence, Poetry, Emotions, Close reading, AI-generated literature.

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In an age where the boundaries between science and science fiction blur with each passing day, the realm of artificial intelligence (AI) stands as a testament to human ingenuity and innovation. I find myself irresistibly drawn to the captivating narratives woven by the ever-evolving field of AI, particularly the enchanting tapestry of Generative AI. In this paper, we embark on a literary exploration that transcends the conventional confines of our discipline to delve deep into the fascinating world of AI, with a special focus on ChatGPT. It is an exciting advancement in Generative AI which is rapidly reshaping the boundaries of human creativity, language, and expression. The concept of artificial intelligence has lingered in the realm of human imagination for centuries. Its materialization, however, as a transformative force in our lives is a recent phenomenon that has left an indelible mark on the very fabric of our society. AI, in its broadest sense, refers to the development of computer systems capable of performing tasks that typically require human intelligence, such as problem-solving, learning, reasoning, and decision-making. It encompasses a wide spectrum of applications, from self-driving cars and medical diagnosis to natural language processing and facial recognition, making it a formidable presence in our daily existence. Yet,

the term “AI” is not a monolithic entity but rather an intricate mosaic of subfields, each with its unique characteristics and functions. At the heart of this mosaic lies Generative AI, a subset that has ignited the imagination of artists, linguists, and writers alike. Generative AI, in essence, involves the creation of algorithms and models that possess the remarkable ability to generate new, human-like content autonomously. This content can take various forms, including text, images, music, and even entire stories. This singular capacity to synthesize new creations has profound implications for the realms of literature, art, and culture, as it challenges the very essence of what it means to be creative and sentient. In this context, Generative AI emerges as a literary Prometheus, imparting the gift of creation to algorithms and machines. It challenges our preconceived notions of authorship, creativity, and storytelling, as it enables computers to craft prose, poetry, and narratives that are often indistinguishable from their human counterparts. This newfound ability raises fundamental questions about the nature of creativity, the role of the author, and the authenticity of artistic expression. Is creativity, after all, a product of human consciousness alone, or can it be algorithmically engineered? The question lies at the heart of the inquiry

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undertaken in this paper, as the aim of this research is to deal with poems that have been written through ChatGPT. To answer the question, this paper performs a close reading of the produced results and analyses if it was a success for GPT in truly capturing the essence of human emotions and feelings. How is AI able to write poems?- In an article published on BigThink, Michael Wooldridge explains how ChatGPT works and generates texts, he says that this is just a sort of auto-completion, the one that we use in our smartphone's keyboard. Wooldridge writes that in being able to produce text so efficiently, ChatGPT uses what are called Large Language Models (LLMs). The LLM that is also known as GPT has the entire internet as its training data. The GPT has 575 GB of training data text, which is a huge number. Thus, GPT has learned of every way that was ever uploaded on the internet of writing text, and thus it writes in the same manner. But Wooldridge writes what GPT lacks is perception, the language model can imitate a Shakespearean sonnet because it has read all the 154 sonnets on the internet, but can it write it in a new way, no it can't. That brings up the question: is ChatGPT a true AI? Which Wooldridge denies, he writes that yes it is a part of AI which is called symbolic AI, but it is far from what is known as true AI which has some

similarities to the human mind. An article, published on the website of Spanish newspaper El País, talks about the capabilities of AI language models in generating poems. The article elucidates on why art pieces written by AIs can never be claimed as intellectual property. "Perhaps a machine can create art... but it won't be protected by intellectual property law, because for this to occur, there must be an author. As such – except in rare cases – only [human beings] can be authors," says Mario Sol Muntañola, a lawyer and expert in intellectual property. (Soufi 2023) Also, the article quotes a research done by Guillermo Marco and Julio Gonzalo, who are researchers in the field of Natural Language Processing. On how the AI writes poems, they state that "These models work like networks of artificial neurons, which are like our brain. What they do is learn to write through a cognitive simulation of how we read." Further in their experiment Guillermo Marco and Julio Gonzalo asked several participants to analyse some art pieces generated by AI and almost all of them said that the only one thing that the pieces lack is creativity; the ingenuity and artistry of the poet. This very well makes things clear as to how AI writes poems and in what ways it has limitations in the final piece of art..

#### Analysis of poems On Love

Prompt – "Write a short free verse poem on love."

#### Generated Poem -

In the vast expanse of life's unfolding canvas,  
Love rests, unanchored by convention or form,  
A force, boundless, untamed by seasons or reasons,  
It moves like shadows over moonlit waters,  
Intangible yet palpable, a paradox profound.

Echoing in the laughter of children,  
In the touch of hands weathered by time,  
In the silent language of shared memories,  
It remains, undiminished, even as everything else fades.

Love, neither a beginning nor an end,  
But a journey, a discovery,  
A flame that neither wanes nor consumes,  
But illuminates the very essence of our being.

Analysis-On asking to write a free verse poem on love, the generative AI ChatGPT returns

this poem. The poem talks about the potency of love and how it is not bound by "convention



or form”. The prompt asks ChatGPT to write a free verse poem, so it doesn’t use any rhyming scheme, but there is internal rhyme in the third line of the poem where “seasons or reasons” rhyme. This shows that the AI is following the conventions of the poem while generating a poetic text. The poem here uses superfluous language, devoid of any creativity which can differentiate this poem from any other poem written on love. However, the language model typically remembers to use literary devices like simile in the fourth line, where it

compares love to shadows which move “over moonlit waters”. In the second stanza, GPT tries to make some images of places where love can be found, on reading the lines the mind fails to picture some new images which up until now the reader is unaware of. Which points to the imaginative limitations of the AI, however the lines are not plagiarized. These sorts of images have a long literary history and thus fail to evoke any feelings of enchantment and mystic image of love.

### On Happiness

Prompt – “write a Shakespearean sonnet on happiness”  
Generated Poem -

In golden rays where happiness doth shine,  
A gentle warmth that hearts with joy imbues,  
’Tis but a fleeting dance, elusive, fine,  
Yet in its embrace, all sorrow eschews.

The merry lark sings high with gleeful voice,  
As laughter, love, and moments sweet entwine,  
In life’s grand tapestry, a chosen choice,  
To seek the light, and let one’s spirit pine.

Yet truest joy lies not in wealth or fame,  
But simple moments, cherished, held so dear,  
The whispered wind, the love that speaks our name,  
The tender touch that wipes away a tear.

For happiness, a gem both rare and vast,  
Is found in present joys and memories past.

### On Remorse

Prompt – “Write a Shakespearean sonnet on remorse”

Generated Poem -

In shadows deep, where remorse doth reside,  
A heavy burden on the soul doth lay,  
For deeds of yore, wherein the heart hath lied,  
In whispered echoes of a fateful day.

Oh, how the weight of actions done amiss,  
Doth haunt the conscience with a mournful song,  
The past’s regrets, a never-ending abyss,  
Wherein the soul doth wrestle right from wrong.

Yet, in this sorrow, lessons may be found,  
For remorse, a teacher harsh but wise,

It guides the way to higher, solid ground,  
And clears the path where virtue often lies.

So, let us heed the call of remorse's voice,  
And in its bitter depths, make wiser choice.

Analysis- When asked to write a Shakespearean sonnet on Happiness and Remorse, the following was the produce. It is exemplary of GPT as a language processing model on maintaining the rhyme scheme of Shakespearean sonnet and well utilising the information from its database about how “English sonnet, or else the Shakespearean sonnet ... falls into three quatrains and a concluding couplet: abab cdcd efef gg.” (Meyer Howard Abrams & Geoffrey Galt Harpham, 2013 p. 369). But worth noting is the fact that at the very onset it failed to keep up with one of the important feature i.e. Iambic Pentameter the rhythm of da-DUM, da-DUM, da-DUM..., although it has maintained the number of syllables . Another evident technicality of the sonnet that GPT did not apply is the rhyme pattern.

The rhyme pattern of the Petrarchan sonnet has on the whole favoured a statement of a problem, situation, or incident in the octave, with a resolution in the sestet. The English form sometimes uses a similar division of material but often presents instead a repetition-with-Generated Poem -

Beneath a sky so vast and blue,  
My heart feels heavy, dreams askew.  
Once by my side, you'd romp and play,  
Now silence speaks where you once lay.

Your wagging tail, your joyful bark,  
Now shadows cast in the quiet dark.  
Each corner, each step, feels so bare,  
Without your presence, without you there.

Oh, faithful friend, my heart does grieve,  
For moments lost, for the reprieve.  
But in the stars, I'll find your glow,  
Remembering love, forever to show.

Analysis-This prompt asks GPT to write a poem expressing the feelings of a boy who has just lost his pet dog. So, GPT understands what to write about. The boy will obviously feel sad about losing his dog, so it goes on to write a sad poem. And for that it picks up sad words from

variation of a statement in each of the three quatrains; in either case, the final couplet in the English sonnet usually imposes an epigrammatic turn at the end. (Meyer Howard Abrams & Geoffrey Galt Harpham, 2013 p. 370)

In both the poems, the lack of creativity makes it crude to a level that no emotions of happiness or remorse is felt or conveyed. It is obvious that machines lag behind in even getting a grasp of what human emotions are and most importantly how subjective they are. As such of literary device, it managed to get one alliteration in the last line of the last quatrain of Happiness and none for Remorse. Metaphor is found when happiness is compared with a gem. Overall, what actually has been done is the collection of words and facts that when combined together in the verse form would resemble a poem on that specific emotion.

On Sadness- Prompt - “write a short lyrical poem with any meter of your choice expressing feelings of a boy who has just lost his beloved pet dog.”

its vocabulary, which means we can say almost all the words in the English language. GPT tries to indicate the sadness of the boy by writing lines like “heart feels heavy” and “silence speaks”, which is an excellent example of oxymoron. Since, GPT knows it has to write a

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sad poem it includes the words like shadow and dark, and it does the same in the poems written on the emotions of remorse and anger. This is the main flaw in the language model, that it makes poetry writing a rule of thumb and applies it everywhere it sees fit. While reading the poem and keeping in mind, the rule that many creative writing experts and writers suggest to new writers is that don't write the words, show it. Meaning that if you want to write about some dark and terrifying room, do not just write how horrific the room looks. Show it to the reader through the words, and let the reader themselves feel the horror of the dark room. In the poem about sadness of a boy, GPT Generated Poem -

In yonder field, beneath the somber skies,  
Where dreams were spun and hopes did rise,  
We strove with might, with fervent cries,  
Yet Fate, she smirked with cold, stern eyes.

The ball, like Fortune, slipped away,  
Each missed chance, a dark display,  
Oh, cruel turf! Where shadows lay,  
You've turned our golden hopes to gray.

That fleeting goal, so near, yet far,  
Like a wayward, unreachable star,  
Anguish! Bitter as the deepest scar,  
For we've tasted defeat, a bitter tar.

Yet in this fire of angered throes,  
A fiercer spirit in us grows,  
For though today's game to wind it goes,  
Tomorrow, to challenge our foes.

Analysis-Since the prompt has the word Keatsian, GPT goes ahead and uses rhymes in every line like aaaa bbbb cccc dddd, which Keats never did in his most known poems, he either used aabb ccdd or abab cdcd. The AI however seems to have learned that to use the dark words like shadows, gray, dark, cruel, scar, and cold in the negative sense and relating to defeat and anguish. The language model also does not fail to change the mood of the poem in the last to inspire to win the next game, and thus is somewhat motivating the reader in the course. In this poem as well there is a use of simile comparing the ball with fortune that slipped away leading to the defeat in a football game. Personification of fate, which smirked on the defeated team with cold and stern eyes. Though the poem very likely expresses the feeling of anger through the first three stanzas

simply writers in the final stanza "my heart does grieve", in spite of inventing some new way of expressing that the boy's heart grieves and let the reader themselves feel the pain, it takes the shortcut and writes the line in a simple word. This is where it lacks, in invention, because ChatGPT has learned everything from the Internet and does not have any intellect of its own. It does not possess its own intellect, rather is a language model which implies searching and sorting method of algorithm intelligently.

**On Anger- Prompt – "Write a Keatsian type short lyrical poem which expresses anger of losing a football game."**

and turns inspiring in the final stanza, it still lacks creativity. The poem looks very objective and that may not be the case if a research would be done on higher scale with huge inputs of poems written with varying prompts. However, at the generic prompt of writing just a poem on anger, GPT fails to convey the emotions in a new way which is the essence of writing and reading poems. Otherwise, there may not have been possible to write any new love poem at all because there may be poems written in all the ways possible. The human creativity and imagination finds new ways to express themselves which differs from all the previous written art pieces.

Conclusion-Though GPT can beat humans at the speed of producing a poem, can it beat it on the scale of creativity? The question is addressed in

the research done in this paper. The poems written by ChatGPT were analysed and found that meanwhile ChatGPT miraculously follows the conventions and art forms of any poem, but what it fails to follow is the intricacies inculcated in the poems written by humans. Throughout the poems written on various emotions, ChatGPT superficially prints lines which look like an amalgam of lines taken from poems written in various ages. GPT severely lacks imagination and creativity. It uses the words from contexts of emotions and writes it in the same way that human beings have written since ages.

The literary devices used by the ChatGPT also feel like they are used up, they do not have any newness in them, they feel like a neoclassical age poem with rigid language and set patterns. Often when humans write something, they like to experiment a bit to produce the matter with some newness and twist to cater to the audience. It is the utmost priority to not make the work dull and just another generic piece of literature. ChatGPT does not consider this prospect and just produces generic poems throughout genres and emotions. The question of emotion is also not tackled by ChatGPT, in the name of emotions it just uses the same old words in the same way devoid of any new ways of writing. By looking at the poem, it tries to convince the reader that it is a sad poem by using clichéd words like shadows, dark, cold, shiver, grieve and mourn. These sorts of poems remain unnoticed by the readers and considered as an amateur writing.

What limits ChatGPT in writing poems creatively, is the technology on which it has been built. GPT uses a searching and sorting algorithm to generate text from its database, which is

updated until 2021. So what GPT has, is a huge chunk of texts: novels, poems, essays, books, articles etc which it goes through and prepares a text. In this process, there is no real intelligence involved as such. Which again comes back to the question of which has been asked time and again, is ChatGPT a real AI? The question is not tough, ChatGPT is a language model, and it has limited knowledge, and it lacks creativity.

The results of a research may vary when using different prompts to generate poems, but what remains the same throughout all the poems generated is the superficiality of language and almost no creativity in the poems composed. The LLMs may succeed in generating generic poems and pieces of art, but we're a long way from an AI which creatively generates text and pieces of art with its own perception.

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# **SOME REALISTIC MEASURES FOR THE DEVELOPMENT OF ELEMENTARY EDUCATION IN THE TRIBAL AREAS IN DAKSHIN DINAJPUR DISTRICT**

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**Abstract-**The socio-economic conditions of the tribal people of India are very poor even after so many years of freedom. Their living conditions are still low. The tribal development schemes had very little impact on the life of majority of the tribals. Growth is still not making any headway towards overall tribal development available and accessible to the tribal population of India. Steps should be taken to make these people informed about the development schemes. In India the efforts are being given to dissipate the various information in the society particularly in the tribal community in order to increase the standard of life. To enumerate some realistic measures for the development of elementary education in the tribal areas in Dakshin Dinajpur district. The researcher gathered data from the schedule tribe people, in the Gangarampur block. The population is 2, 37,628 of which the Schedule Tribe population is 32,933. The lack of institutional infrastructure, dearth of parental education, social prejudices, gender disparity are the prime obstacles in the development of elementary education of the schedule tribe students in Gangarampur block. The schedule tribe literacy rate at the elementary level of Dakshin Dinajpur district was very poor due to their high dropout. The educational development of schedule tribe was much needed and so some development measures and awareness programme should be adopted by the Government.

**Key words:** Elementary education, Realistic measures, Tribal development,

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**Introduction:** The researcher assumed that gender disparity within the male dominated society was one of the salient causes behind schedule tribe school dropouts,. The researcher questioned and interviewed family members, including parents and guardians of the 266 families related to schedule tribe dropouts to verify that cause. According to the survey, 108 (40.60%) parents emphasised education of male child while 87 (32.70%) emphasised upon education of female child and 71 (26.69%) emphasised upon both children. Moreover, according to attitude of other guardians, 177 (46.58%) of them favour education of boys while 74 (19.47%) of them thought that female education was more important, 129 (48.50%) of them emphasised upon the education for both sexes. It was found that there was asymmetry within the attitude of parents towards gender education, but disparity was found within the attitude of other guardians as most of them emphasised on education of boys. So the researcher concluded that schedule tribe girl

students were dropping out of school in greater number due to these digressive notions.

Beside this, while probing the causes of school dropouts among schedule tribe students, the researcher also assessed the opinions of 48 school teachers, 266 school dropouts and their parents and 380 other guardians. 295 (30.73%) people opined that economic instability in dropouts was one of the prime causes for them in deserting the path of education. Again 214 (22.29%) people held that child marriage caused school dropout. The third salient cause behind school dropout was the dearth in parental education as supported by 173 (18.02%) persons surveyed,. The fourth prime cause was excessive growth in number of family members / unplanned birth of children which was supported by 147 (15.31%). The last but not least cause for school dropout was found to be lack of institutional infrastructure, which was supported by 131 (13.65%) parents.

So, there was ample similarity between opinions surveyed through specimens / data and the outcome from the data gathered by the researcher.

As majority of tribals live in abject poverty, the Ministry of Rural Development plays a vital role in raising their status above the poverty line through implementation of various poverty alleviation programmes and providing them with financial and other support for taking up self-employment and income-generation activities. In addition to the poverty-alleviation programmes, this Ministry also provides basic amenities like housing, drinking water, etc. under the integrated programme of Swarnajayanti Gram Swarozgar Yojana (SGSY). 5% of benefits were earmarked for schedule tribes and schedule castes. Under SGSY, 7.49 lakh schedule tribe swarozgaris, accounting for 13.2% of the total swarozgaris were benefited during the Ninth Plan.

**Problem of the Study:** The lack of institutional infrastructure, dearth of parental education, social prejudices, gender disparity are the prime obstacles in the development of elementary education of the schedule tribe students in Gangarampur block.

**Objective:** To enumerate some realistic measures for the development of elementary education in the tribal areas in Dakshin Dinajpur district like establishing more tribal school, teaching in tribal language, availability of tribal teacher's facilities. Tribal awareness programmes.

**Methodology:** The researcher gathered data from the schedule tribe people, in the Gangarampur block. The population is 2, 37,628 of which the Schedule Tribe population is 32,933.

**Retrospection:** As majority of tribals live in abject poverty, the Ministry of Rural Development plays a vital role in raising their status above the poverty line through implementation of various poverty alleviation programmes and providing them with financial and other support for taking up self-employment and income-generation activities. In addition to the poverty-alleviation programmes, this Ministry also provided basic amenities like housing, drinking water, etc.

under the integrated programme of Swarnajayanti Gram Swarozgar Yojana (SGSY). 5% of benefits were earmarked for schedule tribes and schedule castes. Under SGSY, 7.49 lakh schedule tribe swarozgaris, accounting for 13.2% of the total swarozgaris were benefited during the Ninth Plan.

The Kanyashree scheme emphasizes the development of the tribal girl child's education and to solve the economic problems of their families. The goal of this scheme is to reduce the dropout rate of girls and prevent early marriage of girl child. In West Bengal this initiative was taken by the Government to improve childhood and status of girls, specially providing monetary support to economically backward families who cannot arrange their daughters' marriage, attaining the marital age of 18 years, due to financial hardships. This mega scheme was launched on 8<sup>th</sup> March, 2013 in West Bengal by honourable Chief Minister Smt. Mamata Banerjee, who was the pioneer of this scheme. It has been found that for the effect of this scheme, girls retention rate is growing in the district of Dakshin Dinajpur.

A project for perspective District Elementary Education Plan i.e. DEEP (2001–2010) for Sarva Shiksha Abhiyan (Universalisation of Elementary Education) was submitted to Govt. of India for necessary approval. DPEP with cover both primary education and upper primary education components of UEE in the context of SSA objective delineated by Govt. of India. The unachieved targets of perspective DPEP plan was merged into the perspective DEEP of the district to be formulated during 2001–2011. Universal Access, Enrollment, Retention and quality education were achieved only by the help of proper infrastructural support. The budget provision of DPEP in the year 2001- 2002 was 408.0075 lakhs.

**Major Findings:** The following are the several schemes which were introduced by both state government and central government to boost up the developments of tribal students in these areas.

**a) State Level Schemes:**

- i. Free textbook distribution and scholarship schemes.
- ii. West Bengal Merit-cum-Means Scholarship.

- iii. National Means-cum-Merit Scholarship Scheme.
- iv. National Talent Search Examination.
- v. Special economic package to develop backward classes in LWE affected areas.
- vi. Educational loan scheme for schedule tribe students.
- vii. Kanyashree Scheme.

**b) Tribal Development in different plan periods of Dakshin Dinajpur :** Name of the schemes as taken by the education department

- i. Payment of Tuition Fees.
- ii. Book grants of tribal students, reading in secondary school.
- iii. Coaching arrangement of secondary schools.
- iv. Examination fees for students appearing at the M. P. Examination and H. S. Examination.
- v. Special stipend to poor meritorious students in selected secondary schools.
- vi. Provision for Ashram facilities in Basic schools.
- vii. Extension of existing school hostels.
- viii. Construction of new hostel buildings.
- ix. Boarding charges of secondary schools.
- x. Grants for construction of primary schools.

**c) Centrally Sponsored Programme:**

- i. Construction of hostel for girl students.

**d) Civil work :** The problems / issues with regard to Access, Enrollment, Retention and imparting quality education can be minimized by providing interventions through SSA civil work, community, mobilization, alternative schooling, ECCE, girls' education, IED, issues relating to teachers, special drives for SFGS and capacity building of institutions, etc. Civil works were done by SSA Funds. Details of the following intervention are discussed below.

Construction of new upper primary school buildings (new setup).

Construction of additional class rooms in existing 578 upper primary schools.

Construction of CRCS.

Repairing of existing primary schools.

Construction of primary school buildings

(NSB), HT rooms, ACR upper primary and primary schools.

**Conclusion:** The socio-economic conditions of the tribal people of India are very poor even after so many years of freedom. Their living conditions are still low. The tribal development schemes had very little impact on the life of majority of the tribals. Growth is still not making any headway towards overall tribal development available and accessible to the tribal population of India. Steps should be taken to make these people informed about the development schemes. In India the efforts are being given to dissipate the various information in the society particularly in the tribal community in order to increase the standard of life. The schedule tribe literacy rate at the elementary level of Dakshin Dinajpur district was very poor due to their high dropout. The educational development of schedule tribe was much needed and so some development measures and awareness programme should be adopted by the Government.

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# MOBILE COMMERCE: SHAPING THE MODERN ERA

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**Abstract-** M-commerce is essentially the secret key to success in the realm of E-Commerce in this tech-driven era. Everyone nowadays has a mobile phone, thus if you want to capture the market, you must reach them through their mobile device. Mobile commerce (M-Commerce) has become an essential part of the modern business environment, deeply influencing how people are involved in business and developing the shape of the global market. The significant impact of mobile commerce on consumer behaviour, and looks over the changes in purchase patterns, preferences, and expectations. The convenience, accessibility, and personalized nature of mobile commerce have not only empowered consumers but have also provided fresh challenges for businesses looking for success in the digital economy. Mobile devices and smartphones have prepared the way for a seamless integration of business into the world of information, overcoming old boundaries and nurturing a dynamic ecosystem. The advancements in technology have supported the expansion of mobile commerce, such as secure payment gateways, advanced mobile apps, and augmented reality experiences.

**Keywords:** Mobile Commerce, Impact of 5G Technology, Establishing Consumer Trust, Key Shape, Challenges and Solution.

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**Introduction-** E-commerce, often known as electronic commerce, is the buying and selling of goods and services over the internet. E-commerce operations are usually carried out via desktop computers and laptops thus, consumers have to find a location to carry out their transactions. It's a broad term that refers purchasing and making payments online using electronic devices. Websites such as Amazon, Flipkart, Quikr and Olx are examples of E-commerce. Which includes transactions between Business to Business, Business and Customers, and Consumers themselves. Over the last two decades, e-commerce has evolved rapidly and has become an essential part of the global economy. Mobile commerce or M-Commerce is a major subset of Electronic Commerce, which is a business model in which organisations or individuals perform transactions over the Internet. It is the service used mostly through wireless handheld devices such as mobile phones and tablets to undertake online commercial transactions such as the purchasing and selling of products, online banking, and bill payment. Mobile commerce

target customers who prefer the convenience of mobile shopping and on-the-go transactions. It focuses on convenience and efficiency, often featuring mobile-specific features like location-based services. M-commerce examples include paytm, mobile banking and Amazon mobile app for in-app purchases. Mobile wallets, which includes Apple Pay and Google Wallet, are a popular form of m-commerce. They allow customers to securely keep payment information on their mobile devices and make purchases within few taps. Mobile wallets also include more secure features such as Biometric Authentication, Facial Recognition, AI Featured security etc. which can aid in the prevention of fraud and identity theft. The computer and the internet are two of the most important inventions of twentieth century. Mobile devices are not only a means of communication with family and friends, but they are also an essential platform for brands to connect with their customers. The way we live has been altered by mobile technology. Our smartphones appear to be always within our reach and governs our day-to-day activities. These technology advancements altered the way people communicated and provided new



opportunities for businesses. Buying and selling goods, making online payments, and paying the bills on a monthly basis are just a few of the activities that anyone can do while using M-commerce applications. Not only that, but you can perform online shopping while travelling and effortlessly make payments from your smartphone using this state-of-the-art technology. In short, this wireless solution has become an absolute necessity for many technologically aware individuals. As a result, the major eCommerce development firms are focused on it, utilising the best methodologies and practises. E-Commerce or M-Commerce have grown their importance in recent years as more individuals have gotten access to the internet and mobile devices. However, they also introduce new obstacles and dangers, which include safety issues and the need for adapting to evolving technology and consumer preferences.

**Different Mobile Payment Methods:** Mobile payment techniques revolutionise the way people conduct financial transactions, making it simpler and more convenient to pay for goods and services with mobile devices. Here's a look at several mobile payment methods, which include digital wallets, contactless payments, and mobile banking apps:

These mobile payment systems recognize how people manage their accounts and conduct transactions. They provide convenience, security, and speed, making them a popular choice for both consumers and companies. The payment method of choice is frequently determined by the user's device, preferences, and the availability of the chosen method at the point of sale or within specialized apps.

- **Businesses or Industries That Have Successfully Adapted Mobile Commerce Environment:** Many businesses and industries have effectively adapted the mobile commerce environment by introducing application-based service and has improved their online visibility for mobile devices. Here are some examples from real-life
- **Amazon:** Amazon is a perfect example of an organisation that has done well in the mobile commerce world. It has a popular mobile app that provides a

smooth shopping experience with features like one-click purchasing, product recommendations, and mobile payments.

- **Domino's Pizza:** Domino's has used mobile technology to allow consumers to buy pizza through their mobile app, track their orders in real-time, and even use the app to identify the nearest shop for pickup.
- **Banking and Finance:** Banks and financial institutions have adapted to mobile commerce by providing mobile banking application that permit consumers to check balances, transfer payments, pay bills and even invest via their cell phones. Companies such as PayPal and Square have also made mobile payment process available to companies.
- **Food Delivery Services:** Companies such as GrubHub, DoorDash, Uber Eats, Zomato and Swiggy have developed smartphone apps that allow customers to order food from different restaurants and then have it delivered to their homes, along with real-time tracking.
- **Travel & Airlines:** Airlines and travel like Delta, Vistara, Marriott, MakeMyTrip, and Goibibo, are encouraging mobile commerce by providing apps that allow users to book flights and lodgings, check-in, and access boarding cards.
- **Fashion Retailers:** Many fashion retailers, like Zara, H&M, Myntra, and ASOS, have launched mobile application to give users instant access to their latest collections, personalized recommendations, and an efficient purchasing experience which includes mobile payments.
- **Apple:** Apple has established a broad ecosystem of mobile commerce solutions, such as the Apple Wallet and Apple Pay. Users can store their information and access loyalty cards, boarding passes, and reservations for events from their mobile devices using these technologies.
- These examples show how companies and industries have effectively adapted to the mobile commerce environment

by utilising mobile apps, mobile payment solutions, and user-friendly interfaces to improve the customer experience and boost convenience and accessibility.

- **Impact Of 5G Technology on Mobile Commerce:** The introduction of 5G technology is projected to have a substantial influence on mobile commerce by improving speed, accessibility, and overall user experience. Some of the followings are the primary ways in which 5G technology is likely to impact mobile commerce:
- **Faster Data Transfer:** When compared to their predecessors, such as 4G, 5G networks offer much faster data transfer speeds. This indicates that mobile commerce apps and websites will load faster, reducing delay and creating a more pleasant experience.
- **Fast Downloads and Quicker Streaming:** With 5G technology, consumers can download mobile commerce apps and content such as high-resolution photographs and videos in a fraction of second then that of 4G technology. This results in quicker product discovery and more enjoyable shopping experiences.
- **Broader Coverage:** 5G networks are meant to give more coverage, even in highly populated locations. This means that consumers in both urban and rural areas will have improved access to mobile commerce services.
- **Reduced Congestion:** Because 5G networks can accommodate a greater number of connected devices at the same time, network congestion is reduced during peak shopping hours or events. This results in a more uniform and user-friendly mobile commerce experience.
- **Augmented Reality (AR) and Virtual Reality (VR) Shopping:** Because 5G has low latency and great bandwidth, it is suitable for AR and VR applications. Retailers can use these technologies to provide unique shopping experiences, such as putting on virtual clothes or examining 3D product models, thereby making such features more accessible.
- **Seamless Transactions:** 5G networks provide real-time, secure mobile payments. Because of the low latency and high communication speeds, transactions may be processed almost instantly, making mobile commerce payments smoother and more efficient.
- **Enhanced Customer Support:** Using 5G, mobile commerce platforms will be able to deliver high-quality video chat and AI supported, allowing consumers to obtain real-time guidance and assistance when making purchasing decisions.
- 5G technology is projected to greatly improving speed and accessibility in mobile commerce. This will result in speedier, more interactive, and personalised purchasing experiences, making mobile commerce more accessible to consumers and moving the sector forward. However, in order to take full advantage of the benefits of 5G technology, businesses must adapt and improve their mobile commerce strategy.
- **Importance of Establishing Consumer Trust in The Modern Era: Data security:** Mobile commerce platforms frequently collect and save user data. Earning consumer trust is important for ensuring that their data is used safely and not misused.
- **Brand Reputation:** Trust is deeply related to a company's reputation. Businesses that value consumer trust have a stronger reputation, which can lead to improved customer loyalty and favourable marketing through word-of-mouth.
- **Customer Loyalty:** A fundamental motivator of customer loyalty is trust. Customers who trust a brand or platform are more likely to return for future transactions, which can be less expensive than gaining new customers.
- **Transparency and Communication:** Effective communication as well as transparency in mobile commerce are essential for building trust. Clear product descriptions, shipping details, return policies, and ways to contact help users make informed decisions and feel secure in their purchases.

- Concerns about security and privacy: When it comes to mobile commerce, consumers frequently worry about the protection of their financial and personal information. Building confidence by implementing strong security measures and establishing transparent privacy policies assures that their data is secure.
- **Adoption of New Technologies:** In the age of mobile commerce, trust is necessary for the adoption of new technologies such as mobile payment solutions and emerging payment methods. To embrace and use these technologies, consumers must have faith in them.
- **Global Reach:** Mobile commerce frequently caters to a global audience. Building trust across cultural and geographical borders, making it crucial for reaching a varied client base.

In summary, trust is the backbone of mobile commerce. In an era where mobile commerce is a part of daily life, it develops customer confidence, drives participation, and leads to long-term, mutually beneficial partnerships between businesses and customers.

#### **The key shape of Mobile Commerce:**

- **Making data-driven decisions for future growth:** Data analytics is critical for optimizing mobile commerce strategies, allowing firms to make decisions that improve user experiences. With further developments like voice commerce, edge computing, and AI-driven shopping assistants, mobile commerce will remain relevant and will expand in the future.
- **Emerging technologies with security concerns:** AR (Augmented Reality), VR (Virtual Reality) are emerging technologies along with 5G technology which has opened up new opportunities for experiential and interactive purchasing experiences, shaping the future of mobile commerce. Strong security measures were developed to

secure user data, develop trust, and decrease the probability of theft.

- **Mobile-First Approach in Marketing Engagement:** Businesses have redirected their focus to prioritize mobile commerce, recognizing the widespread use of smartphones and the necessity to create excellent experiences through mobile applications and mobile-optimized websites. Mobile commerce techniques include mobile-first marketing campaigns, gamification, and social trading, and all of which aim to increase engagement and reach with mobile-centric audiences.
- **Enhanced customer experience and Efficient Payments:** Mobile commerce has evolved towards a more focused user experience, with features such as Personalization, Recommendation Engines, and Augmented Reality (AR) offering interesting and unique buying experiences. The incorporation of mobile wallets and secure payment methods has accelerated the checkout process, increasing transaction completion rates and user trust.

**Challenges and Solutions related to Mobile Commerce Security:** Where mobile commerce has numerous benefits, it also has several drawbacks. Because of the highly confidential nature of financial transactions and personal information, mobile commerce security is an essential issue. Mobile devices are more vulnerable to cyber-attacks than desktop computers. Service Provider must ensure the security of their Mobile Payment Platforms and the protection of client data. Here are some of the difficulties with M-Commerce security, along with possible solutions:

1. **Malware and Viruses:** Malware and viruses can infect mobile devices, compromising security and privacy.  
**Solution:** Encourage people to install trusted antivirus and anti-malware software. Make sure to download mobile apps from legitimate app stores, which have dedicated safety policies.
2. **Insecure Wi-fi Networks:** Public Wi-Fi networks are frequently insecure and can be used to Rob Users Data.  
**Solution:** Inform consumers that they should avoid using public Wi-Fi for

sensitive tasks. If you must use public Wi-Fi, protect the data via a virtual private network (VPN).

3. **Secure Payment Methods:** To prevent financial fraud, mobile payments, including digital wallets, must be secure.

**Solution:** Use secure payment protocols such as Mastercard, Visa and RuPay card for contactless payments. Tokenization is a technique for replacing actual card numbers with temporary tokens for transactions.

4. **App security:** Weaknesses in mobile apps can be used by attackers to gain unauthorised access to steal data.

**Solution:** Test mobile apps for security flaws on a regular basis through testing for vulnerabilities and code reviews. Encourage responsible disclosure through offering bug bounties to researchers studying security.

5. **Secure Updates:** The method of updating mobile apps as well as operating systems should be secure not to add vulnerabilities.

**Solution:** Implement secure mobile app update mechanisms and give guidance to customers to keep their devices and applications up to date.

6. **User Authentication:** It is difficult to balance security and user comfort in authentication. Users may be put off by complex authentication, while simple techniques can compromise security.

**Solution:** Use adaptive authentication methods, such as risk-based authentication, to alter the level of protection based on the circumstances. Fingerprint or facial recognition biometrics can improve both safety and user experience.

**Table 1: Meaning, example and working process of Digital Wallet**

Method	Meaning	Example	How they work
Digital wallets	Apps or software that store credit card information and allow users to perform electronic transactions known as digital wallets, sometimes also known as e-wallets or mobile wallets. They store credit card information, debit card information, and even digital currencies.	Apple Pay, Google Pay, Samsung Pay, PayPal, and many regional and bank-specific digital wallet apps	Users enter their payment card information into the digital wallet app. When making a payment, customers can use biometrics (fingerprint, facial recognition) or a PIN to authenticate the transaction. Each transaction generates a unique token, enhancing security.
Contactless Payments	Customers can use contactless payment to make payments without using cash or swiping a card. To use this method, customers must 'Tap' or 'Wave' their card over a card reader. Thus terminal will then link to the bank account and the payment will be processed immediately.	Apple Pay, Google Pay, and other mobile wallet apps, as well as contactless credit and debit cards.	Cards that allow consumers to make contactless payments depend on Radio Frequency Identification (RFID) technology. When a card is held near a card reader, it connects with it in order to complete the transaction.
Mobile Banking Apps	Banks and financial institutions offer mobile banking applications, which enable consumers to utilise a mobile device to access their bank accounts, manage their finances, and perform a variety of financial activities.	Mobile apps from banks such as Chase, Wells Fargo, and Barclays.	Users install their respective bank's mobile app and log in through their account details. They can view account balances, transfer funds, pay bills, deposit checks by snapping photographs, and make person-to-person payments.
QR Code Payments	QR code payments are made by scanning a Quick	Popular examples include Alipay and WeChat Pay	The payer scans a QR code supplied by the payee with

	Response (QR) code with a mobile device to start payment. The QR code might represent payment information, a bill, or the contact information for a merchant.	in China, as well as several global mobile banking apps that accept QR code payments service.	their mobile app. The transaction is then finalised after the payment information is processed.
Carrier Billing	Carrier billing enables customers to pay for digital content and services by charging the amount to their phone bill. This is frequently used to buy applications, games, and online entertainment.	Google Play and Apple App Store, are some examples offered by carrier billing with select mobile carriers.	Users choose carrier billing as their payment method to confirm the transaction. The fee is added to their monthly phone bill.
In-App Purchases	In-app purchases are payments made within a mobile application to gain access to premium content, virtual products, or for extra features.	Mobile games, media streaming applications, and productivity apps that offer premium or subscription content are some of the popular examples.	Consumers can make transactions within the app using their existing payment card details. These purchases are charged to the user's payment method.
Mobile Point-of-Sale (mPOS) Systems	Card readers that connect to a smartphone or a tablet are common in this process.	Square, PayPal Here, and a variety of other mPOS solutions are some of the examples.	To collect payments from clients, business employ a mobile app and a card reader attached to a mobile device. This is especially important for small enterprises and market vendors.

7. **Device Security:** Users may not completely protect their gadgets with lock screens or biometrics, making them vulnerable to unauthorised entry.

**Solution:** Encourage customers to enable device security measures such as PINs, passwords, or biometric authentication. Remote wipe function can also be used to delete data from a device that is misplaced or stolen.

Mobile commerce security necessitates a multi-pronged approach that includes both technology and user education. To safeguard both users and the confidentiality of financial transactions, it is critical to continually examine the threat landscape and change security measures accordingly.

**Conclusion -** Mobile commerce is emerging as a transformative force, shaping the modern era of business, consumer interactions, and everyday life. M-commerce has become an

essential component of our digital environment, due to the spread of smartphones and the evolution of high-speed internet. It provides ease, accessibility, and innovation, transforming how we shop, pay, bank, and use services. Mobile commerce has an impact on a wide range of industries, from retail and finance to travel and healthcare. It has not only enabled consumers to make purchases at any time and from any location, but it has also provided businesses with new ways to reach and engage their target audiences. Personalization, real-time data, and user-friendly interfaces are key to the mobile commerce experience, making it an important driver of customer loyalty and happiness. Mobile commerce is more than a convenience in the modern era; it is a requirement. Its influence is set to increase much more, powering economic growth and revolutionising how organisations and consumers interact, communicate, and transact in the age of technology. Mobile commerce has shaped the modern era, and its progress will continue to shape the future, shaping how we live, work, and conduct business.

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# **A STUDY OF AN AWARENESS OF CONSUMER RIGHTS AMONG PRIMARY SCHOOL TEACHERS IN VADODARA**

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**Abstract-** In ancient times, exchange was considered as a religion. The merchant has offered guidelines to exchange with religion and strategy. Before individuals' needs were low however at this point the circumstance has changed because of Industrial transformation, changes in innovation, advancements, change in social structure, changes in monetary condition our needs have turned out to be extremely huge lately. To accomplish our huge demand such huge numbers of merchants are accessible in the market. Many entrepreneurs did not pursue business morals to get more benefits. While merchants take advantage of woolgathering of customers from various perspectives like charging high costs than MRP, unacceptable quality merchandise, the ruin of products, tricking in the loads, giving copy products, false and misdirecting promotions. Customer should utilize the Consumer Protection Act, 1986 to battle back. This paper intends to put forward the suggestion of the inclusion of the consumer protection Act who can lead a safe and secure life, away from the evil intentions of traders.

**Keywords:** Consumer, protection, right.

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**Introduction-**In 1939, such a customer association was set up in America. It is the world's most grounded association on the planet. A detailed report is being made about it's a large number of things in its very own research facility advertise by checking the "consumer leaflet ". The imperfections of everything are uncovered. We have begun such associations on a little scale. Consumer Protection Act was acquainted in 1986 in India with securing the interests of buyers and to check their abuse from makers and merchants. Presently the conditions have changed the huge number of makers and venders accessible in the market. Customers can pick their products or services from a huge number of choices. It is difficult for consumers to figure out which item or service is increasingly valuable for him. By exploiting this, makers and vendors are enticed to mislead the client. Indian customers lose billions of rupees consistently in extortion. There is an incredible necessity for mindfulness concerning consumer rights. A three tire semi-legal executive framework has been pursued under the Consumer Protection Act, 1986. For getting real grievances changed.

- District level: Complaint can be given up to a claim of Rs.20 lakhs

- State-level: Complaint from Rs.20 lakhs to Rs.1 crore
- National level: Complaint above Rs.1 crore

In the past, the barter system was there and consumers were not able to choose from a large variety of goods but now the situation has changed, consumers can choose from a large number of alternatives. All the consumers should make use of this opportunity to getting quality products at a reasonable price. Consumer awareness should be provided to protect the rights and interests of consumers and also for encouraging consumer movement in the country. The government should enforce strict parameters for consumer protection. An efficient, effective, cost less and speedy redressal system should be provided. Consumers should demand bill/invoice without fail on all the purchases made and while purchasing, select standardized products only for ensuring quality. Before purchasing a product, information on the packet should be read carefully to have a suitable product. The consumer should never depend on the seller for information and choice. The ignorance of consumers is the main reason for their exploitation. They should try to know their rights and duties then only real consumer

protection becomes possible. Consumers should ensure that he received all the required information before purchasing a product/service. Consumers should know on a large scale the basic aspects like MRP (Maximum Retail Price), hallmarking of gold ornaments, ISI, BIS, AGMARK, etc. The present paper looks at purchaser rights mindfulness among Primary School Teachers from Vadodara, Gujarat.

**Consumer Protection Act-1986**-The Consumer Protection Act came into force on 1st July 1987 and it extends to the whole of India except the State of Jammu and Kashmir.

**General Rights of Consumers:-**A Consumer has the following rights under the Constitution of India, Judicial and Other Special Act which is set up for the consumer.

Right to Choose or Right to selection, Right to Consumer Education, Right to be informed, Right to be heard, Right to Safety, Right to Seek redressal.

The study has the following objectives.

- To outline the consumer awareness level among primary teachers of the Baroda city.
- To spread necessary awareness.
- To make suggestions for the Consumer Protection Act, 1986

**Review of literature-**Nair (2012) analyzed a negative result and limited consumer awareness among respondents in spite of various Government initiatives. Nair (2012) examined a negative outcome and constrained shopper mindfulness among respondents notwithstanding different Government activities. Singh and Sharma (2013) discovered a distinction in levels of mindfulness among respondents with the various instructive capability and calling. Singh et al. (2014) mark an unsatisfactory awareness level about the Consumer Protection Act among the medical as well as surgical specialists. Dr. Gurusamy et al. (2014) anyway found a positive outcome and watched practically complete customer mindfulness among the respondents of the Coimbatore region. Singh et al. (2014) mark an unsuitable mindfulness level about Consumer Protection Act among the medicinal just as careful authorities. A three tire semi-legal executive framework has been pursued under the Consumer Protection Act, 1986. For getting real protests changed.

**Research methodology-** For this study, data and information have been collected from primary as well as secondary sources. Primary data has been collected with the help of questionnaires among the primary school teachers located at Vadodara. Secondary data has been compiled from various books, online articles and journal papers. A sample size of 100 primary school teachers has been taken through a convenient random sampling method.

**Table 1: Basic Factors in Consumer Awareness**

No	Details	No. of respondents	
		Yes	No
1	Know about Consumer rights	92	08
2	Demand cash or Bill	95	05
3	Cross checked the weights of the products	38	62
4	Examine MRP, date of manufacturing and date of expiry on the product	96	4
5	Check standardization of product like ISI, BIS, AGMARK, HALLMARK etc.	74	26
6	Check ingredients used in the product	68	32

From the table above it is clear that (92%) of primary teachers in Vadodara are well aware of consumer rights whereas the only (08%) has no idea on consumer rights. Government, Social

Media, Internet, TV & Radio play his role properly to the aware consumer. Most of the consumers seem to be aware of the existence of a Consumer Protection Act. Even though (95%)



of primary teachers demanded bill/invoice on the purchase, only (05%) never demanded bill/invoice on purchases. It is a good habit to demand cash memos or Bill at the time of purchase .it can help the consumer in many ways. Even though (38%) of primary teachers cross-checked weight, the balance (62%) never cross-checked weight on purchases. It is common that sellers always try to sell products at less quantity. More care should be imparted on checking the weight of products. Most of them (96%) primary teachers asked about the

price of the product, just (04%) never asked the price of the product on purchases. The new generation is very conscious of the price of products. Internet facilities and online shopping create great awareness about the price. It is happy to identify the fact that (96%) of primary teachers heard about MRP. Only (4%) never heard about MRP. All the primary teachers know about the advertisement. The advertisement has a great impact on today's world. Beware about the fact that never believes advertisements blindly.

**Table 2: Sources of Information on Consumer Awareness**

No	Sources of information	N0 of respondents
1	TV & Radio	21
2	Social Media	34
3	Govt. Awareness programs	23
4	Relatives& friends	12
5	NGOs.	6
6	Other sources	4

The above table makes it clear that the main sources which help in acquiring awareness in consumer education are through advertisements, seminars, from friends and relatives, books, newspapers and journals, the internet, television, radio, magazines, cinemas,

etc. Most of the Consumers received information on consumer rights through Social Media (34%) followed by Govt. Awareness programs(23%), TV & Radio (21%) ,friends & relatives (12%),NGOs (6%) other sources (4%)

**Table 3: consumer awareness related matter**

No	Details	No. of respondents	
		Yes	No
1	Always satisfied with the quality of the product or services	24	76
2	Complain the shopkeeper in case of dissatisfaction	62	38
3	Your complain been timely attended	42	58
4	your complain attended to your satisfaction	24	76
5	Aware about Consumer Courts	40	60
6	ever gone to a Consumer Court in case of any dissatisfaction	22	88
7	know National Consumer Helpline No.	24	86

Source: Primary Data

From the table above, it is clear that (24%) of primary teachers satisfied with the quality of the product or services and (76%) not satisfied with the quality of the product, among the (76%) not satisfied consumers with the quality of the product or services only (62%)Complain the shopkeeper in case of dissatisfaction and the shopkeeper attend (42%) among this only

(24%) consumer get satisfaction. It is very strange that only (40%) Aware of ConsumerCourts and only (22%) ever gone to a Consumer Court in case of any dissatisfaction. Only (24%)know National Consumer Helpline No.and (86%)Primary teacher does not know National Consumer Helpline No.in In this area of awareness needs

more efforts from the Government to aware of filing a complaint in consumer court.

**Conclusion**-The consumer is the king of the market. Makers produce products for the consumers. They assume a fundamental job in the financial arrangement of a nation. In a consumer-driven society, it has turned out to be fundamental to advance consumer learning among individuals. Consumer learning means securing abilities, frames of mind, information and comprehension among buyers to utilize purchaser openings. Customer buys merchandise for definite utilization, not for resale. A shopper has the privilege to know how the item has been set up to decide if it is sheltered and helpful for use or not. Consumer right mindfulness is a significant factor so buyer rights mindfulness crusade ought to be directed. It is fundamental to direct more customer right mindfulness programs among provincial and uneducated individuals. The degree of consumer rights mindfulness required relies upon the education level of individuals and the profundity of social mindfulness with the goal that it changes from spot to put. At the point when the consumer is ignorant of an item,

vendors exploit that circumstance and customers are tricked effectively. At the point when Consumer Rights Awareness among individuals expands, vendors are compelled to sell products at the right amount and sensible quality.

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# A STUDY OF WOMEN ENTREPRENEURSHIP THROUGH MICRO, SMALL AND MEDIUM ENTERPRISES (MSMES)

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**Abstract-** Women Entrepreneurship is the process by which a woman or group of women starts, runs, and expands a business enterprise. The world is empowered when women are empowered, as they are the foundation of society. Through its various initiatives, the Ministry of Micro, Small, and Medium Enterprises (MSMEs) empowers women entrepreneurs by fostering their potential and enabling them to establish their identities. The MSMEs sector is crucial in developing entrepreneurial skills and distributing wealth and income at the local level. It significantly contributes to the gross domestic product, exports, employment creation, and manufacturing production. In this industry, the role that female entrepreneurs play is crucial, particularly in rural areas where their microenterprises have created jobs and bolstered the local economy. Due to social attitudes and practical issues, however, the emergence of women entrepreneurship has been modest. This article focuses on Women Entrepreneurship through Micro, Small, and Medium Enterprises (MSMEs).

**Keywords:** Women Entrepreneurship; Micro, Small and Medium Enterprises (MSMEs); Entrepreneurs; Women Empowerment.

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**Introduction-** MSMEs are essential to the best development of SME enterprises in terms of the growth of women's entrepreneurship since they get core financing from the Central Government of India and State Governments. Although there are between 8 and 10 million women-owned small and medium enterprises (SMEs) in developing markets, their average growth is marginally slower than that of men-owned SMEs. This drives research on women entrepreneurs in MSMEs and their access to financial services.

Micro, small, and medium enterprises (MSMEs) are vital in emerging nations like India. MSMEs are regarded as being extremely significant since they support the growth of the rural economy, the creation of jobs, better income distribution, the decrease of poverty, and the expansion of manufactured product exports. MSMEs are regarded as a crucial framework for women to actively participate in

economic activity, both as hired laborers and—more importantly—as entrepreneurs. For women who reside in rural areas, this is especially important. MSMEs are excellent venues for advancing women's entrepreneurship skills.

The MSME sector, which contributes around 27% of India's GDP, is regarded as the foundation of the nation's economy. It mainly aids in the growth of those from underdeveloped and rural areas. The total number of MSMEs in India is 6,33,88,000, of which 3,24,88,000 (or 51.25%) are in rural areas and 3,09,00,000 lakh (or 48.75%) are in urban areas, according to the official MSME annual report for 2021–2022.

A person's creative spirit gives rise to entrepreneurship, which is a long-term business ownership, employment generation, and financial stability. Because they are concerned

with economic emancipation, the growth of entrepreneurship, and innovation, women provide commitment and honesty. Female entrepreneurs go to business groups for both personal and professional assistance.

### **Review of Literature**

**Besher, et al., (2022).** Studying "Challenges and Prospects of Women Entrepreneurship in Micro and Small Enterprises the Case of Debarik Town," it was determined that women-owned businesses are impacted by the town administration's tax collection system. Because the tax that the government body is requesting is based on conjecture by relevant bodies rather than the selling power of the enterprises. The guessing method typically results in under or higher tax pay. Some company owners were so offended by these concerns that they closed their doors and applied to work for the government. Moreover, one could infer that there was very little training available for female entrepreneurs in municipal administration; even the training that was offered was primarily theoretical in nature rather than deeply ingrained in practical instruction. The timing of the training programme did not give priority to entrepreneurs. **R., Elizabeth Rani. (2021).** According to a study on "Issues and Challenges of Women Entrepreneurs in Micro, Small and Medium Enterprises (MSMEs) of Tamil Nadu," women entrepreneurs had much greater hope in the 1980s and 1990s because they had access to high-quality education and training. In the 21st century, their presence in business increased significantly, and many of them rose to positions of leadership. Although women's position has improved generally, their average level of success as MSME sector entrepreneurs has remained underwhelming. The government has made a number of initiatives to encourage female entrepreneurs. Sadly, women business owners sometimes don't know about the

initiatives or find that the methods don't work for them. **Rahman, et al., (2020).** An analysis of the "Performance of Women Entrepreneurs in Small and Medium Enterprises (SMEs) of Bangladesh" found that barriers to women's success included high financing interest rates, stringent collateral policies, unfavourable law and order conditions, and bureaucratic red tape. Furthermore, it is challenging for businesses to operate profitably due to financial limitations including inflation, the price of raw materials, and the paucity of infrastructure. The paucity of skilled labour, the high cost of legal support services, the lack of raw materials, and high labour expenses are further factors limiting the efficacy of women entrepreneurs. The study indicates that women entrepreneurs need to improve their skills in business planning, marketing, accounting and bookkeeping, ICT, e-commerce, and regulatory procedures as they are weak in these areas. Women entrepreneurs have made a substantial contribution to the development of the nation despite gendered realities and a range of issues affecting their success, mostly through job creation and gender mainstreaming. This is because they made adding more female employees a top priority. These female business owners have also helped their families save and spend money. **Ilahi, Saud. (2018).** A study titled "An Overview of Female Entrepreneurs in Indian MSME Sector" came to the conclusion that significant changes in people's attitudes and mindsets are required, as opposed to just creating programmes and chances for women. Therefore, it is imperative that complementary programmes that aim to modify social attitudes be implemented in addition to rules and programmes for marketing, training, and supportive services. Large-scale awareness efforts are needed to inform women of their unique identity, existence, respect, nurturing, and role in the expansion of the economy. The

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government should allow multiple private groups and industrial associations to play roles in diverse industries, rather than trying to handle everything ineffectively.

**Women Entrepreneurs in India-** The nation's industry and economy have grown significantly outcome of the rising number of women entrepreneurs. Women-owned companies are making a big difference in the country's demographics, generating jobs, and setting a good example for upcoming generations of female entrepreneurs. Startup India is dedicated to strengthening women India's women entrepreneurship through initiatives, schemes, and the creation of enabling networks and communities, and the activation of partnerships among diverse stakeholders in the startup ecosystem. The organization's vision is to promote the sustainable development of women entrepreneurs for balanced growth in the nation. Indian women are evolving and becoming more and more prominent as prospective business owners. Women in non-traditional business sectors should serve as role models to challenge preconceived notions about who belongs in certain areas. Almost every country has economies with rapidly expanding female-owned businesses. The increased understanding of the role and position of economic society has gradually altered the latent entrepreneurial potential of women. The economy's ability to adapt and the skills and knowledge of its citizens made women in business more

prevalent. In other fields, such as politics, administration, medicine, engineering, technology, social services, and education, women have already demonstrated their critical role. This is accurate for developed nations, and in our country, they have recently begun to enter these fields. In India, their foray into business is a relatively new development.

**MSMEs in India-**The Indian government has established Micro, Small and Medium Enterprises (MSME) in compliance with the Micro, Small and Medium Enterprises Development (MSMED) Act of 2006. These businesses produced manufactured, processed, or preserved items and commodities as their primary business. MSMEs have significantly boosted the socioeconomic progress of India and are an important part of the country's economy. In addition to generating employment, it aids in the development of the country's rural and disadvantaged areas. According to the Government's annual report for 2018–19, India has over 6,08,41,245 MSMEs.

After China, India has the world's biggest MSME base. The industry produces more than 6,000 products, ranging from conventional to high-tech goods, and offers a broad variety of services. The Indian MSME sector is expected to develop rapidly and is pursuing more integration with significant global value chains, in line with the government's aim for an independent economy known as Atmanirbhar Bharat.

**Table 1: Criteria for classification of micro, small and medium enterprises**

MSME – Merged Criteria: Investment (Plant & Machinery or Equipment) and Annual Turnover			
Sector/Enterprise Type	Micro-Enterprise	Small Enterprise	Medium Enterprise
Manufacturing & Services Sector, Both	Investment less than Rs. 1 crore Turnover less than Rs. 5 crore	Investment less than Rs. 10 crore Turnover up to Rs. 50 crore	Investment is less than Rs. 50 crore Turnover up to Rs. 250 crore

**Women Entrepreneurs in MSMEs-**In India, Women Entrepreneurs significantly contribute to the nation's economic expansion. According to ifc.org, they employ 10% of all workers involved in various economic activities in the nation and jointly produce 3.09% of industrial

production. Even still, India has the third-highest gender gap in entrepreneurship in the world, with just 33% of its early-stage entrepreneurs being female. In India, a significant portion of female entrepreneurs work for micro, small, and medium enterprises.

MSMEs, which employ millions of men and women across the country, constitute the backbone of the Indian economy. Nevertheless, just 13.76 percent of Indian entrepreneurs are female. It is believed that there are around 8 million female entrepreneurs, even though the number of men entrepreneurs has topped 50 million.

The goal of MSMEs is to empower underprivileged women. Micro businesses are a crucial component of a well-thought-out plan for ensuring the equitable growth of impoverished women's economies.

Official reports on the global rankings of women entrepreneurs are nonexistent. However, India is ranked 57th out of 65 nations in the "Mastercard Index of Women Entrepreneurs 2021" private research. Three components are created by the Index using 12 indicators: the results of women's advancement; knowledge assets and financial access; and entrepreneurial supportive environments.

The Reserve Bank of India's June 2019 publication, The Report of the Expert Committee on Micro, Small, and Medium Enterprises, noted that one of the main obstacles facing MSMEs, particularly those owned by women, is obtaining financing.

The Ministry of Micro, Small, and Medium Enterprises (MSME) runs a number of programmes to support female entrepreneurs. The Ministry oversees the Prime Minister's Employment Generation Programme (PMEGP), a significant credit-linked subsidy initiative designed to assist traditional artisans and young people without jobs in rural and urban areas in starting micro businesses that will create opportunities for self-employment. Higher subsidies are provided to recipients who fall under specific groups, such as Scheduled Caste/Scheduled Tribe/OBC /minorities /women /ex-servicemen /physically challenged /NER /hill and border areas, etc.

The Ministry of Micro, Small, and Enterprises, the Government of India, and the Small Industries Development Bank of India jointly established the Credit Guarantee Fund Trust for

Micro and Small Enterprises (CGTMSE). Its goals are to fortify the credit delivery system, promote credit flow to the MSE sector, and provide financing to underserved, underprivileged, and unserved populations. By providing guarantee cover for collateral and/or third-party guarantee-free credit facilities extended to Micro and Small Enterprises by eligible Member Lending Institutions, it also opens up financing from conventional lenders to new generations of entrepreneurs. The CGTMSE has expanded the guarantee coverage of financing for female entrepreneurs to 85%. To further support women entrepreneurs, CGTMSE has lowered the annual guarantee fee by ten percent.

Among the many initiatives the Ministry manages to assist and expand MSMEs, particularly women-owned MSMEs, are the Micro and Small Enterprises Cluster Development Programme (MSE-CDP), Tool Rooms & Technology Centers, Procurement and Marketing Support Scheme, Entrepreneurship and Skill Development Programme (ESDP), Scheme of Fund for Regeneration of Traditional Industries (SFURTI) etc. Shri Bhanu Pratap Singh Verma, the Minister of State for Micro, Small, and Medium Enterprises, provided this information in a written response to the Rajya Sabha. MSMEs and **Government** Schemes for Empowering Women Entrepreneurs:

The MSME schemes introduced for women entrepreneurs specifically ensure that they find it easier to start up new businesses and obtain the necessary MSME loans to start these businesses and the government around the country is providing these women entrepreneurs with alluring incentives to boost their enterprises and facilitate the acquisition of finance.

- **Mahila Udyam Nidhi Scheme:** The Mahila Udyam Nidhi Scheme was first created to provide small enterprises with financial support of up to ₹10 lakhs. However, it now also assists women in starting new initiatives and businesses. Women business owners are also free to upgrade their current initiatives under this programme. The loans under the Mahila Udyam Nidhi Scheme have a maximum payback term of ten years and a five-year moratorium period. The interest rates vary based on market rates.
  - **TREAD Scheme:** The goal of the Trade-Related Entrepreneurship Assistance and Development, or TREAD, programme is to empower women by giving them the credit they deserve for initiatives that involve training, guidance, and the know-how to manage them successfully. The goal of the TREAD programme is to increase the knowledge of women in business. The government contributes up to 30% of the project's overall cost—which is set by the financial institutions—under this programme. These organisations would provide the funding for the remaining 70%.
  - **Annapurna Yojana:** This programme is the best choice for any woman who wants to pursue her passion for catering as a company. With the Annapurna Yojana, women may start their own catering businesses by financing up to ₹50,000. This programme, which has a 36-month payback period and collateral requirements, is already helping a lot of women around the nation.
  - **Dena Shakti Scheme:** Under the Dena Shakti programme, all female entrepreneurs operating in manufacturing, agriculture, or related fields are eligible to apply for financing. The Dena Shakti Scheme offers loans up to ₹50,000 with an interest rate reduction of around 0.25%. However, loans up to ₹20 lakhs might be approved for retail commerce, housing, or education. Since women have accomplished so much in the last several decades as entrepreneurs, it is clear that they can help the nation's economy and society expand more quickly. Following a lengthy period of social norms and taboos, women have overcome several obstacles to launch new ventures and seize chances that were almost unattainable for males.
  - **Pradhan Mantri Mudra Yojana:** Women business owners may apply for loans under this central government scheme, which offers simple repayment terms and amounts between Rs 50,000 and Rs 10 lakh. Enterprises in the manufacturing, commerce, and service industries can apply for loans under this scheme, which is managed by the Micro Units Development and Refinance Agency (MUDRA).
  - **Udyogini Scheme:** The programme is perfect for women who want to start their own business but are unsure of where to start. This initiative, which does not discriminate against widowed, impoverished, or crippled women, is intended by the Government of India (GOI) for women who come from families that make less than INR 1.5 lakhs annually. This low-interest plan offers financial advances of up to Rs 3 lakh. In especially in economically developing nations, the aim is to support women in establishing their own businesses so they may become self-sufficient. Women can pursue careers in business by means of loan assistance.
  - **Cent Kalyani Scheme:** Women who work in MSMEs would greatly benefit from this scheme, which channels MSME financing for new ventures. This is a programme designed for women who own small businesses or aspire to launch one. This plan is called the Cent Kalyani plan, and it was started by the Central Bank of India. Retail and agricultural workers are two other groups of women that gain from this programme. With no need for security or guarantors, this initiative provides loans up to Rs 1 crore. Furthermore, market factors affect the interest rate on company loans under the Cent Kalyani Scheme.
- The India SME Forum and the Ministry of MSME jointly hosted the SHAKTI NATIONAL CONVENTION 2023 in New Delhi today in honour of Women's Day, 2023. Shri Narayan Rane, the Union Minister for MSME, was the principal guest of honour. Shri Bhanu Pratap Singh Verma, the Minister of State for MSME, was the guest of honour. Ms.

Laura Lane, the Executive Vice President and principal Corporate Affairs & Sustainability Officer of UPS, and Shri Bidyut Swain, the Secretary for MSME, were also present.

Panel talks on "State of Women in Business in India" and "Plugging Indian Women-Owned Businesses into Global Value Chains" were highlights of the programme. The distinguished panels included seasoned professionals, industry experts, and well-known and accomplished female exporters and entrepreneurs. The Union Minister for MSME, Shri Narayan Rane, presented the Emerging Women Entrepreneur of the Year 2023 award to twelve accomplished female entrepreneurs.

"Women entrepreneurs in India play a significant role in advancing the economic growth of the country and women owned business are currently growing significantly," stated Shri Narayan Rane during the opening of the Women Exporters Programme.

The Government of India's dedication to women's economic empowerment is encouraging because, as Ms. Laura Lane stated in her international guest speech, "when women thrive, humanity thrives."

The significance of e-commerce exports was emphasized by Ms. Chand Mazumdar, Head of Marketing & Exports Enablement at Amazon, who stated, "The number of customers choosing to shop online has grown significantly today." Programmes like Amazon Global Selling, which began in 2015 with 100 vendors and already supports over 1 lakh sellers in various categories. The Ministry encourages more women to pursue business and supports the success of these women by recognizing their efforts via this scheme.

**Women Entrepreneurs on the Map of MSMEs**-Women entrepreneurs must develop their businesses while juggling their own requirements, their families' needs, and the socially enforced cultural norms. Many women have been successful in making their presence known while completing this challenging task. However, women have not yet taken full advantage of the potential in the MSMEs sector. Even if the atmosphere is generally

supportive, the proportion of businesses owned by women is rising sharply.

Through the commencement of the Udyam registration project in July 2020, the government aimed to formalise the MSME sector. Too far, over 2 crore firms have been registered, with women accounting for 19.43% of the total. The information related to the timeframe of July 1, 2020, to July 27, 2023 was provided by Bhanu Pratap Singh Verma, the MSME Ministry's Minister of State, in response to a written inquiry in the Rajya Sabha.

The only website currently approved by the government for MSME registration is the Udyam registration portal. Over 2.10 crore MSMEs, including 2.03 crore micro, 5.61 lakh small, and roughly 52,904 medium-sized businesses, had been registered on the web as of this writing. In addition, 30.93 lakh micro units have registered via the Udyam Assist site, which was established in January of this year to enable non-GST registered micro units, such as street sellers, to access the Udyam site. It facilitates the creation of jobs for many individuals inside their own social structure.

### **Findings and Analysis**

1. The majority of female business owners prefer to launch a micro business.
2. The majority of women entrepreneurs are first-generation business owners. They launched a company on their own.
3. Women entrepreneurs are more likely to choose the service industry.
4. Employment is successfully created by them.
5. The majority of them have their firm registered.
6. The majority of women entrepreneurs avoid exporting their products because of various limitations and difficulties.

### **Conclusion and Recommendations**

Micro, Small, and Medium-Sized Businesses (MSMEs) are a major factor in the expansion and prosperity of the Indian economy. In



today's world, women entrepreneurs who were once confined to their homes' four walls are capable of overseeing both their families and businesses. The government has made several steps to support the growth of women entrepreneurs, despite the numerous obstacles and issues they confront along the way to becoming successful business owners. In summary, women entrepreneurs and MSMEs in India still have a long way to go, and the success of these businesses is closely linked to the performance of the Indian economy.

Women who are financially independent can help society grow and develop more quickly. In order to help women attain their business objectives, the Indian government has created programs to make credit available to them. As such, they will have the capacity to grow and offer employment to more women. To be successful, women entrepreneurs might receive training and education in areas such as obtaining funding, promoting their goods, building assets, choosing the type of business to start, and industry. The demand for greater access to information technology posed a significant challenge to female entrepreneurs. They must possess an education in information technology if they are to succeed in business, both locally and globally. The fact that women entrepreneurship contributes to the creation of jobs and income makes it more significant. Women entrepreneurs are starting large and medium-sized businesses in addition to cottage and small businesses. By encouraging the establishment of more banks and other financial institutions, the government should take on the role of facilitator and increase the accessibility of financing. Additionally, the government ought to expand and carry out its programs for women's empowerment in an efficient and effective manner. The growth of female entrepreneurs does not equate to the development of weaker or smaller sectors; rather, it signifies the expansion of the economy throughout society.

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