

TRANSFORMING OUTLOOK –A GLOBAL PHENOMENON

The global transformation process functions and operates in multi-faceted dimensions and influences several complex systems that structure society, including many aspects of economics, politics, culture and the environment. An ongoing shift in global economic activity from developed to developing economies, accompanied by growth in the number of consumers in emerging markets, is the global developments that executives around the world view as the most important for business and the most positive for their own companies' profits over the next five years. Executives also identified two other critical positive aspects of globalization: technologies that enable a free flow of information worldwide and, increasingly, global labor markets.

This special issue will offer a comprehensive overview of the latest theoretical and empirical research and provide sound concepts for sustainable business strategies. In order to do so, it has gathered together the experience and in-depth contemplations of leading thinkers in the fields of management theory and the social sciences. It makes highly innovative management approaches accessible to academics from various disciplines, business leaders and interested students alike.

The primary objective is to create a diaspora of thinkers in finance, management, economic affairs, and other related areas. It aims at expanding the knowledge base about the different conceptual frameworks and methods available in the above-mentioned areas towards achieving the goal. This journal issue also aims to facilitate young researchers to expand their capacity by providing them with an opportunity for cross country and cross-discipline learning and knowledge sharing.

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Analyzing Marketing Opportunities & Strategy: A Case Study On Theme Parks In Kolkata

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1. Introduction

The development of the society and the improved quality of living, has affected consumers' lifestyles and the necessitates for recreational activities began to ascend. Consumers are now ready to spend more time for recreational activities and have more variable preferences over the quantity and quality of recreational products. From the latest studies on consumer lifestyle surveys, we see that the amusement parks that have strong appeal and must constantly improve their amusement facilities along with the future expectations of modern consumers.

There are many reasons for change that includes inert, exhibition-type; manmade amusement parks that are losing their appeal. With consumers capable of comparing existing facilities, Kolkata's consumers have started to look for higher speed, higher quality and more exciting thrills in their amusement parks. The business operators are also keen to know whether the services associated with their theme park operations are well acknowledged by consumers, the kind of customer satisfaction or values generated, and actual level of customer satisfaction enough to generate positive opinion or an increased revisit rate to the theme park.

Top 10 Theme Parks In India

Park Name	Location	Area (In acres)	Attendance (In million)
Essel World/ Water Kingdom	Mumbai	90	1.8
Nicco Park	Kolkata	40	1.5
Ramoji Film City	Hyderabad	2000	1.5
Wonderla	Bengaluru	82	1.25
Wonderla	Kochi	93	1.09
Adlabs Imagica/ Aquamagica	Mumbai	132	1.06
MGM Dizzee World	Chennai	45	1
Kishkinda	Chennai	120	0.7
Adventure Island	New Delhi	24	0.7
Black Thunder	Coimbatore	65	0.5

source:

<https://economictimes.indiatimes.com/news/company/corporate-trends/meet-the-first-families-of-the-growing-theme-and-amusement-parks-segment-in-india/articleshow/62795406.cms>

(i) Aquatica

Aquatica is spreaded around 705000 sqft (17 acre) water theme park in Kolkata, India. The theme park was started in 1999. According to the believers, it is considered as one of the largest water amusement parks in Kolkata along with eastern India. Another water theme park, Wet 'O' Wild, has started up near Nicco Park in the Salt Lake City area. It is located in Kochpukur, Rajarhat, just next to the Rajarhat New Town area. The area is connected by public transport bus beginning from Howrah station to Aquatica. This venue is very well connected by buses, and taxis available to and from this venue. There are many alternative routes from different sources which makes aquatica a popular destination. Aquatica includes a number of rides including immensely exciting types like the Black Hole, the Wave Pool, Niagara Falls, surf racer, Tornado and the Aqua Dance Floor. Also, customary parties and fashion shows are also hosted here, especially in the winter. They also have almost 55 well-appointed Rooms along with Conference Hall, Party Hall, Board Room, Food Courts.

(ii) Eco Park

New Town Eco Park (Prakriti Tirtha) is an urban park in Rajarhat, Kolkata and the biggest park so far in India. The park is located on a 480 acres (190 ha) plot and which is beautifully surrounded by a 104 acres (42 ha) water body with a decorated and designed island in the middle. The park was conceptualised by Chief Minister of West Bengal, Mamata Banerjee in July 2011. West Bengal Housing Infrastructure Development Corporation (HIDCO) has been the overlooking body coordinating the construction of the park, and coordinating along with different other government bodies responsible for implementation of different works inside the park.

(iii) *Nicco Park*

Nicco Park is an amusement park in India, located in Salt Lake City, Kolkata. The park was created to attract tourists to the state by providing family-friendly recreation as well as educative entertainment. Nicco Park opened on 13 October 1991, and has since been referred to as the Disneyland of West Bengal. Presently, the 40 acre park is home to over 35 different attractions and has served over 24 million customers. Nicco Park also provides a "green" environment. The concept of an amusement park in Kolkata began with the 300th year anniversary of the recorded founding of Kolkata (then Calcutta). While planning was under way for the tricentennial celebrations by the ruling State Government, RajiveKaul, the current Chairman of Nicco Group, was in the US on a family holiday to Disneyland. As per the story, when Kaul returned, there was an inquiry as to why he left for America when he was very much required back home for the planning process. Supposedly, Rajive replied, "I'd gone to see if I could create a Disneyland here." What at first seemed to be just an excuse to justify his absence actually materialized to a joint venture with the West Bengal Government.

(iv) *Snow Park*

Snow Park is located at 6th floor of Axis Mall, Kolkata. It is spreaded around 9000 sq.ft environment. Timings are 10.30 to 9 pm. The entry fee is Rs. 500-600 approx. per person for hour slots. It is very entertaining to all ages due to its new addition in the city, but the mall remains over crowded every time. The temperature is around 0 to -5 degree Celsius. Food and extracurricular activities such as badminton, rope climbing, basketball, snow ball making, fighting with them, sliding from mountains, igloos, building snow dolls etc. The place is considered as a perfect venture trip during summer season. It gives the feel of visiting snow mountains with temperature, surroundings and activities matching requirements.

2. Literature Review

The theme parks are created based on research that is based on attention to visitor profiles as well as market segmentation. There are some studies which have observed theme park from a management perspective and shown the future trend of such theme park and attraction industry. Some research has identified the relationship between different economies and theme parks.

The customer participation level can be categorised into active and passive participation. While active participation refers to tourists who are concerned with activities, affect such activities or performance, and are responsible for both consumption and production of the service which creates their self-experience. An instance of active tourism is rafting. On the other hand, passive participants are not directly involved in activities or performance. Visiting a museum can be considered as a passive activity.

The association between people and their environment or surroundings can be branded as "absorption" and "immersion." Absorption can be capturing a person's attention by inducting the experience into person's mind from a given distance that may be during watching TV. On the other hand Immersion indicates getting involved physically or virtually as a part of the experience itself such as playing a virtual game. There are also major discussions on educational experience, when visitors take up events taking place before them and sometimes also energetically participate in such activities. These visitors are also able to expand their knowledge or learn new things through educational occurrence in a theme park. Educational experience can be both active and absorptive. Such an example could be when visitors learning about animals by participating in a safari tour. Many interactive attractions are designed to generate educational experience. When a drawing class is led by a trained artist, it allows visitors to sketch different characters, which may enhance their drawing skills. Therefore, participation is essential for visitors to engage actively to "learn something new."

Another important related experience to the above discussion can be escapism experience that indicates the extent to which an individual is exhaustively engrossed in an activity. Such an experience requires immersion and active participation. A theme park is such an environment (actual or virtual), where visitors actively participate in activities or events. One of the most looked for experience is related to entertainment. Entertainment includes absorption as well as passive participation. It is considered as one of the ancient forms of experience and well known fact in the tourism industry that entertainment is an indispensable part of tourism. In real, the entertainment experience is assumed to capture and engage guest's attention. Such an experience can be measured in terms of result of a trip, as showed by measurement variable as "fun." Some

instances of entertainment can be fireworks or live music displays provided at the theme park where visitors can inertly take part in the experience that catches their attention.

There are also many discussions on esthetical experience (like a mental presence), where visitors may get engrossed in the environment and unreceptively appreciate it without affecting anything. Many visitors while in tours involving sightseeing destinations can feel aesthetic experience. It was also found that a business's physical setting and environment impacts customers' support. Tourists are considered to be heterogeneous. Every tourist can be attracted to different types of travel destinations, may like to pursue different activities while on vacation, likes to spend on different types of entertainment facilities and make complains about different disliked things during their travel. Loyalty programs, such as membership, have been generally considered to be an efficient way to increase customer loyalty. Loyalty programs offer members with various services and benefits, which may affect their experience. Stauss, Chojnacki, Decker and Hoffmann (2001) investigated the differences between customer club members and non-members of a car company and the results showed that club members showed a higher degree of satisfaction and customer retention than non-members. McCleary and Weaver (1992) found that members tend to be more loyal than non-members in the hotel industry as well. The concept of customer satisfaction has received a great deal of attention in the literature since it strongly influences consumer purchase intentions and customer retention (Solnet, Kandampully, Kralj, 2010). Oliver (1980) pointed out that customer satisfaction was generated from a service encounter and comparison of the actual experience with expectation.

3. Conceptual Framework and Hypotheses

Conceptual frameworks based on previous studies have been developed in order to evaluate the impact of experiences on satisfaction and revisit intention, as well as group differences on the relationships. The variables were chosen based on extensive literature review of the visitors of theme parks and experiential marketing concepts. Therefore, different experiences have an impact on customer satisfaction. Francesca Cini et al. (2014) had discussed the theory of age groups in national parks. Based on such study, We had the following assumptions for theme parks:

Alternate hypothesis

- a. (H1a): the sample. age groups and park visits are correlated to each other.
- b. (H1b): age groups of the samples and the safety of park for family women and children are also correlated to each other.

4. Research Objectives

Based on the above initiative, this research aims to explore customer satisfaction through surveys of the following objectives:

- To identify the demographic features of the samples.
- To understand the characteristics of the samples related to consumer behaviour of theme parks.
- To find correlation of age groups with prime factors of theme park consumer behaviour.
- To highlight the practical implications of the findings of the research.
- To provide suggestions for possible improvements in marketing strategies of them parks.

5. Research Methodology

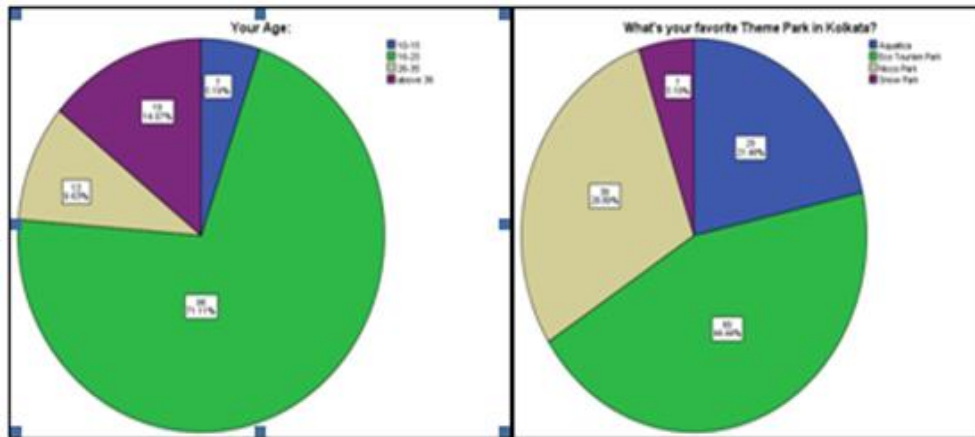
The study measured visitors' experiences, satisfaction and revisit intention in a theme park. It included reaching, visiting, scaling facilities available, satisfaction level of samples derived from the usage of theme parks. The sample population consisted of 135 samples that belonged to different age groups, data collection was done using Google questionnaire circulated among samples, and data analysis was performed using various statistical methods such as descriptive analysis, cross-tabulation method, chi-square tests, and multi variable correspondence analysis. The data was collected during two months' time period (February and March 2019).

6. Data Collection

The sample population for this research was visitors who have been to theme parks in Kolkata. The target population was visitors who have visited Nicco Park, Science City, Aquatica and Eco Park within the past 12 months. In this study, non-probability convenience sampling was utilized to collect data. The sample was composed of people

who were over or under 18 years old and had visited Nicco Park, snow park, Aquatica and Eco Park in Kolkata within the past 12 months.

7. Data analysis



Source: Author analysis

7.1 Demographic analysis

As seen above, 71.11 % of samples belong to the age group of 16 to 25 years of age which reflects the younger generation is more inclined towards visiting theme parks. In Kolkata, more samples have visited eco-tourism parks followed by nicco park (28.89%) and aquatica (21.48%).

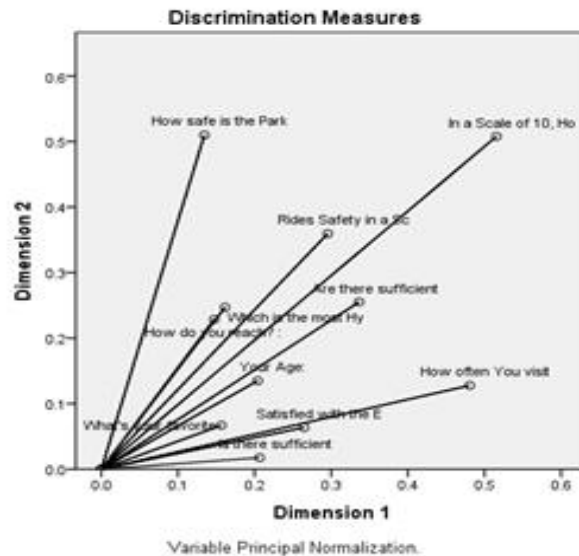
7.2 Discrimination measures (using optimal scaling mcva)

Discrimination Measures			
Factors	Dimension		Mean
	1	2	
What's your favorite Theme Park in Kolkata?	.157	.067	.112
Is there sufficient information available online?	.207	.018	.112
Satisfied with the Entry Charge according to Park Condition?	.265	.064	.164
Your Age:	.204	.135	.170
How do you reach? :	.147	.229	.188
Which is the most Hygienic among the following?	.161	.247	.204
Are there sufficient stalls for food available?	.336	.255	.296
How often You visit These Parks?	.481	.128	.304
How safe is the Parks for Family, Women & Children?	.134	.510	.322
Rides Safety in a Scale of 10	.295	.360	.327
In a Scale of 10, How much will you give to overall Theme Parks in Kolkata with its Contents	.516	.508	.512
Active Total	2.903	2.519	2.711
% of Variance	26.392	22.901	24.647

LEAST MEAN
PRIME
FACTORS

Source: Author analysis

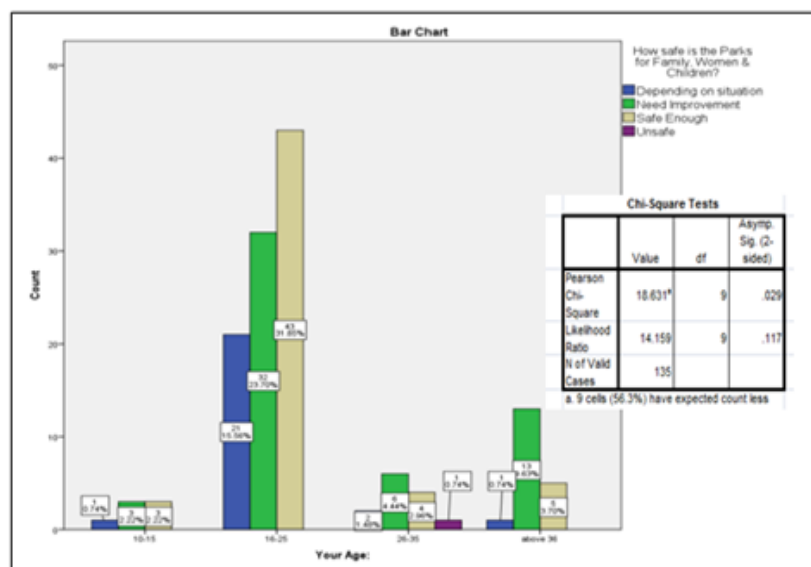
As seen above, minimum mean values indicate cluster allocation mean. Variables with lesser means indicate less error in allocation for correspondence analysis. Factors like favourite park, sufficient information, Satisfaction from entry charges or park visit, and age shows lesser means in ascending order (0.112 to 0.170).



Source: Author analysis

From multi correspondence variable analysis using optimal scaling (data reduction), it is seen that safety of theme park and visit to park seems as distant variables with (0.10,0.50) and (0.50,0.10) respectively.

7.3 Cross tabulation analysis

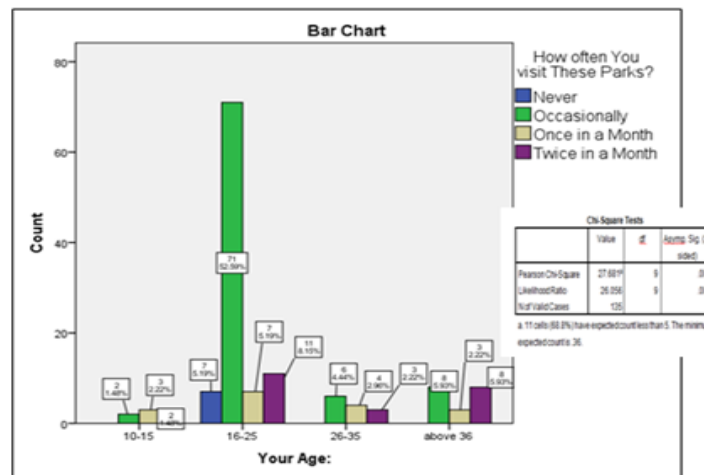


Age vs. Safety of parks
Source: Author Analysis

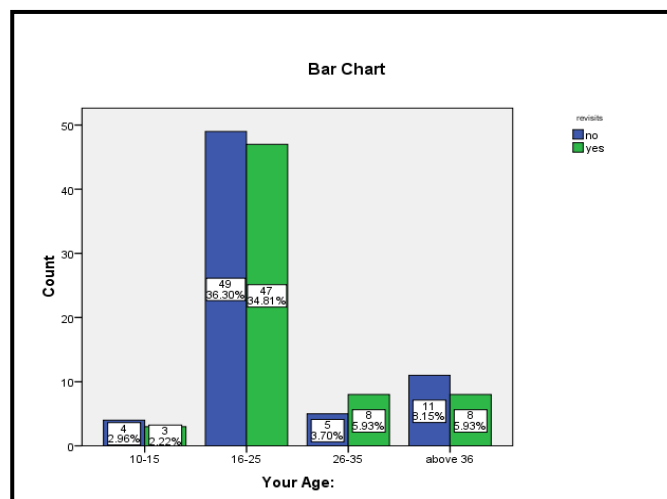
As seen in age vs. safety of parks, cross tabulation has been conducted for demographic variable age factor with safety of park. In the age group of 16- 25 years age, 43% samples feel that theme parks in Kolkata are safe enough, whereas 32% feel that they need more improvements in terms of safety. The safety factor stands as an important factor since chi-square results shows value of 0.29 (0.029< 0.05) accepted for high correlation). Therefore, there exists a strong correlation between age of the samples and the safety of park for family women and children.

As seen in age vs. visit to park, the age group of 16-25 years shows a positive attitude towards park visits with 52.59% visiting them occasionally and 11% visiting theme parks twice a month. Chi square results of 0.01 (0.01< 0.05) shows that there exists a very strong correlation between age group and park visits. Therefore, age groups and park visits are highly correlated to each other.

As seen in age vs. park revisit, we can observe that in the age group of 16 to 25 years 36.30 % of people are still not likely to visit the theme park which they have already visited once. This indicates that they are not yet fully satisfied with current services of the theme parks.



Age vs. Visit to Park
Source: Author Analysis



Age vs. Park Revisit
Source: Author Analysis

8. Discussion and Conclusions

The research conducted included identifying the importance of demographic variable age group in relation to behavioural variables. This study helped in ascertaining the visitors' experience, satisfaction and safety concerns in theme parks.

This research also helped in understanding and exploring the relationships between the frequency of trips, customer expectations, actual experiences in reaching the theme parks, customer satisfaction, customer perceived values, and customer loyalty based on surveys conducted at a theme park. Age group of 16-25 years of age were most likely to be more keen in visiting the theme parks occasionally. Their major concern was the safety arrangements made for different rides and experiences availed in the theme park. This supports our alternate hypothesis (H1a), i.e. Sample age groups and park visits are highly correlated to each other. Also, the other alternate hypothesis (H1b), age groups of the samples and the safety of park for family women and children are also correlated to each other. The null hypothesis (H0a) and (H0b) are thereby rejected.

9. Practical Implications

The theme park industry has become more and more competitive with an increasing number of business operators bringing new rides and experiences for the users of different age groups. This study provides the base of understanding consumer behaviours that can contribute to an effective sustainable business. This study provides theme park operators with a measurement tool to evaluate visitors' experiences with theme

parks. The findings will help theme park operators better understand visitors' experiences, satisfaction, and loyalty, which can be important components in developing effective marketing approaches to enhance customer satisfaction and revisit intention.

10. Suggestions

Based on the above results, we propose the following suggestions for the Theme Park:

1. Nicco Park currently has a majority of customers who are young and highly educated, are still students, or work in the commercial sector. More systematic and safety measures should be included.
2. Aquatica and Nicco Park's customers had very high expectations of the park, but their actual experiences did not meet expectations. Upgrading service quality will be an important issue to improve this. The park must take steps to tackle the problems of customer transportation facilities, having dedicated personnel for personalized services, and understanding the needs of the customers during their stay in the theme parks.
3. Snow park has unique temperature which adds to the variety of environmental setting for customers. Although many extracurricular activities are included there needs to be more additional games, entertaining activities for different age groups of children, family with adequate safety requirements. More protective cold clothing, jackets, skates etc. should be made available. Security and safety should be increased to desired levels matching customer requirements.
4. The pricing of tickets and facilities provided should be taken care of in terms of better security, safety measurements, food quality in theme parks and safety kits for more adventurous rides and events. Additionally, insurance services should also be included that can create better chances perceived value and actual value of services offered and used.
5. More informative marketing plans should be introduced that can include billboards, print medias along with information on upgraded safety measures for different age groups.
6. Modern consumers loose interest on stationary attractions and facilities very fast, therefore making necessity for up gradation as compulsion rather than option for existing theme parks.

Therefore, upgrading customer perceived values will effectively increase customer satisfaction and earning customer loyalty and should be seen as an important concern for future development.

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The Effectiveness and Sensitivity of Stochastic Oscillator and Relative Strength Index in Select Indian Stocks

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1. Introduction

The Indian stock market experiences the utilization of different technical analytical tools for short- and medium-term investments by variety of new entrants. With the help of new and advanced technologies like different analyzing portals or terminals, online trading procedures, the process of investment is quite easier and convenient for the new and young traders. That might be a significant reason behind the unprecedented development and innovation in the Indian Capital Market since the last few decades. The market has been experiencing the various investment plans and the trading strategies through the instruments like mutual funds, stocks, derivatives etc. The investment strategies or trading strategies are guided by two analyses, fundamental and technical. In case of fundamental analysis, the analyst follows the EIC framework i.e. to evaluate the Economic Condition, the Industry Condition and the Company Condition that is to determine the intrinsic value of stock and comparing such intrinsic value with the existing market price to find out the undervalued and overvalued stock, and gives suggestions to the clients accordingly. On the other hand, technical analysis depends on various chartist techniques to analyze the previous price behavior and tries to identify the trends and takes the decision based on short run or long run trends. Through technical analysis, the data are not only detected, but also analyzed and interpreted by the patterns to predict the future price. A technical indicator may indicate a numeric pattern of the prices of security or can reflects the trend of the prices by which a particular decision can be generated. This process of pattern setting is called as 'charting'. Though Fundamental analysis is very effective but the usefulness of technical analysis cannot be denied and the investors are often found being using high risk/frequency or latency trading procedure for short/long term trading and are generally able to achieve a significant amount of profit from their investment. Some of such effective technical analysis tools which are globally used are leading – lagging indicators, some oscillators and others methods like Relative Strength Index (RSI) analysis, candlestick analysis, Moving Average Technique, Pivot Support and Resistance, Fibonacci Table, Stochastic etc. These tools are used by different experts individually or collaboratively. In case of collaboration, a group psychology generates, which can control the individual activity and also can transforms a huge number of uncertain and unrelated decision into a certain outcome. As a result, this outcome explores patterned price movements and predictable behavior of the instruments in the market. This is why the discipline of technical analysis—hearing the message of the market via price movements—is such an accurate tool for making profitable trading decisions. When the returns from the stock are predictable, technical analysis is effective for the allocation of assets. This analysis aids the investor to invest in fixed proportion of wealth. On the other hand, when predictability is uncertain, “fixed allocation rule” should be applicable, combined with technical analysis due to lack of information. This paper tends to highlight on two of the most important technical analysis tools i.e. Relative Strength Index (RSI) and Stochastic Oscillators which help the traders to forecast the future price movements based on the past market price, by explaining the strong predictive power. It also focuses on the application of these particular technical analytical tools used in the Indian capital Market. Basically these two technical analytical tools are generated from the concept of Moving

Average Technique. So, it is important to explore the concept and characteristics of Simple and Exponential Moving Average at first to make the study.

2. Literature Review

(Fang, Qin, & Jacobsen, 2014), describes that technical analysis are the methods to forecast the trend of the security prices based on the past market data of a stipulated period. The professionals like Active Day traders, Market Makers or Pit Traders often use the various methods of Technical Analysis for the purpose of different decisions in the capital market. As per (Zhu & Zhou, 2013), at the time of calculating the trend of the stocks through moving average, a method named continuous-time equilibrium model has generated which has two interesting implications. On one hand, it provides a theoretical basis for using the moving averages in an explicit functional form, i.e., the closing, opening and average price divided by the current price. (Celebic et al, 2015), the firms in the capital market are divided in two parts. Investment and Non-Investment firms. As per the way of behavior in the open market, these firms change their approach of business. And these changes require constant adjustment in the technical analytical tools used by them to be efficient and competitive in capital markets. (Edwards and Magee 2007), describes as the technical analysis is the integral part of the corporate and individual trading. As per the technicians, the different methods like accounting ratios, dividend growth model, Black and Scholes Model, earning price ratio model are used to judge the company's financial conditions subject to the absence of supply and demand. According to (Brown, 2012), One of the many available tools of technical trading is something popularly called RSI or Relative Strength Index. RSI indicator is known as one of the most valuable tool in a technician's toolbox and without it most of technical analyses would be impossible. RSI indicator was developed by a legendary technician J. Welles Wilder who turned his obsession for so called momentum indicators into a RSI indicator as we know it today.

3. Objective of the Study

The primary objective of the paper is to evaluate the effectiveness of the stochastic oscillator in short term investment like day trading and others. This includes the buy-sell-hold signals given by the indicator. The secondary objective is to conduct a comparative study with some other technical analysis like Relative Strength Index in a specified time and on some select Indian stocks.

The paper also endeavors to explain the sensitivity and the response time of Stochastic Indicators to the Indian investors.

4. Data Analysis Summary

In this paper we have used some selected Indian stocks to calculate the moving average of a specified period. We have also made a comparative study between the utilization of different tools of moving average used in the stock market based on the requirement of the traders. On the basic stage we have used three PSU banks to conduct the study. In this economy the PSU banking securities are considered as the lifeline of the stock exchange. Especially, after the announcement made in October, 2017 by the central government regarding the policy of recapitalization of Rs.2 lakh crore to seven PSU banks as per Mission Indradhanush, the BSE Sensex to climb the magical 33,000-mark. According to the Indian economists, the revival of our economy is not possible without the contribution of banking stocks. Keeping this in mind, investors have extensively invested in the banking sector in the last 5 years.

- In this paper we have chosen 2 PSU Bank Stocks of NSE. These are Bank of Baroda and Bank of India.
- The time span selected for the study is 7 months, i.e. from 7th of July, 2018 to 11th of January, 2019.
- In the first step, there is a calculation of the 9 days, 12 Days and 26 Days Exponential Moving Average of the PSU Bank Stocks.
- In the second step, the Moving Average Convergence and Divergence, and Moving Average Histogram and Crossovers are identified.
- On the basis of 12 Days EMA of average upward and downward price movements, the RS, RSI, overbought and oversold situations are ascertained.
- Last but not least, the study has proven that with the help of the information generated by the lagging indicator, one can prepare a leading indicator as well as the momentum indicator which can predict the stock price very easily and smoothly.

4.1 Comparative Analysis of the Models on Bank of Baroda



Source: <https://economictimes.indiatimes.com/markets>

Trade Decisions	RSI Indicator		MACD			EMA		
	Date	Remarks	Date	Lagging	Remarks	Date	Lagging	Remarks
Sell	27-07-18	The overbought situation (75.73) indicated the trader to sell the stocks	27-08-18	30 Days	Due to the negative Value of MACD Crossover (0.47 negative) and the Crossover of MACD Signal Line from above of MACD Line	19-09-18	23 Days	Simple Crossover of 12 Days EMA from above of 26 Days EMA line.
Buy	19-09-18	The oversold situation (22.56) indicated the trader to buy the stocks	22-10-18	33 Days	Due to the positive value of MACD Crossover (0.13 positive) and the Crossover of MACD Signal Line from below of MACD Line	19-11-18	28 Days	Simple Crossover of 12 Days EMA from below of 26 Days EMA line.
Sell	NA	No Signal - Still stand on Buy Signal	03-12-18	NA	Due to the negative Value of MACD Crossover (0.02 negative) and the Crossover of MACD Signal Line from above of MACD Line	05-12-18	2 Days	Simple Crossover of 12 Days EMA from above of 26 Days EMA line.
Buy	04-12-18	The oversold situation (28.01) indicated the trader to buy the stocks	18-12-18	14 Days	Due to the positive value of MACD Crossover (0.32 positive) and the Crossover of MACD Signal Line from below of MACD Line	19-12-18	1 Day	Simple Crossover of 12 Days EMA from below of 26 Days EMA line.

4.2 Comparative Analysis of the Models on Bank of India



Source: <https://economictimes.indiatimes.com/markets>

Trade Decisions	RSI Indicator		MACD			EMA		
	Date	Remarks	Date	Lagging	Remarks	Date	Lagging	Remarks
Buy	24-07-18	The oversold situation (1.01) indicated the trader to buy the stocks	NA	-	No Signal - as per the previous signal - Continue Sell	NA	-	No Signal - as per the previous signal - Continue Sell
Sell	24-08-18	The overbought situation (72.81) indicated the trader to sell the stocks	06-09-18	16 Days	Due to the negative value of MACD Crossover (0.13 negative) and the Crossover of MACD Signal Line from above of MACD Line	NA	-	No Signal
Buy	05-09-18	The oversold situation (22.87) indicated the trader to buy the stocks	18-09-18	12 Days	Due to the positive value of MACD Crossover (0.12 positive) and the Crossover of MACD Signal Line from below of MACD Line	12-10-18	24 Days	Simple Crossover of 12 Days EMA from above of 26 Days EMA line.

5. Analysis & Findings

From the comparative study between EMA, MACD and RSI, it has been clearly shown that the RSI momentum indicator provides signal better than MACD and EMA. From this graph we can see that the trade signals from RSI alerts the trader on an average of 15 Days earlier than MACD and 30 Days earlier than the exponential moving average prediction regarding the buy and sell of stocks by analyzing the trend of the same.

If the trader is risk averse investor, then it is better to use RSI rather than MACD, because the signal in RSI is more reliable than MACD. If the investor is a short or very short term investor and willing to get rapid result and quick profit, he should use MACD rather than RSI.

6. Conclusion

In the above discussion, we can conclude that the MA technique and RSI indicator, which are considered as a basis of chart analysis and time series analysis, are one of the best reliable predictive tools used in the capital market. These EMA, MACD and RSI help the traders to predict the trend of the price movements of any securities. This is not necessary that one technique is better than another but as per the demand and the psychology of the trader they will choose these indicators. It also serves well as support and resistance lines. At the time of upper trend, the price will often hold to the MA area and then cross the line. In the reverse case, the upward trend may be considered as a warning, or at least the market may be consolidating. If prices break above a moving average is in a decreasing trend, the trend will move up and vice versa. Other traders aren't as concerned about prices moving through the MA but will instead put two MAs of different length on their chart and then watch for the MAs to cross.

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Application of numerical modeling to evaluate the role of mangroves in wave attenuation: A first order analysis in the domain of disaster management

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1. Introduction

Mangrove forests tolerant to saline environments prevent coastal erosion by wave damping and trapping sediments. The vegetation causes a loss of energy resulting into a decrease of the wave energy flux and new wave conditions. The formulation of Dalrymple (1984) gave the best numerical approximation of wave attenuation due to vegetation input in the SWAN (Booij et al., 1999) model. He describes the amount of dissipated wave energy in terms of vegetation characteristics and wave parameters. Vegetation characteristics are the drag coefficient, vegetation diameter, density and relative vegetation height. Wave parameters are amplitude and water height. Indian Sundarbans is highly vulnerable in terms of climate change related issues like sea level rise (approx 3.14 mm/yr), frequent cyclonic depression, wave actions and tidal surges (Mitra, 2013). The mangroves act as the buffer to these disastrous events. This study highlights the role of mangroves in combating the wave actions. Few model exists in which mangroves have been considered as the sum total of different species but there is no work till date on the isolated role of mangrove species in the domain of wave attenuation. Even it has been documented that the same species of mangrove has different relative density and biomass (which is a function of height, wood density and radius of the species) in different salinity profiles. The present work fills up this gap by considering the real time data of 4 dominant species of mangrove thriving in different salinities in attenuating the waves. The output of this study helps in disaster management by identifying the right kind of species in wave attenuation for different salinity profiles. The work has immense societal benefit in the preparatory phase of natural disasters that frequently occur in the mangrove dominated deltaic complex.

Spectral wind-wave models, known as third-generation models, such as WAM (WAMDI Group, 1988), WAVEWATCH III (Tolman, 1991), and SWAN (Booij et al., 1999) solves the spectral action balance equation without any a priori restrictions on the spectrum for the evolution of wave growth. Based on the wave action balance equation with sources and sinks, the shallow water wave model SWAN is an extension of the deep water third-generation wave models. SWAN is stationary and optionally nonstationary and can be applied in Cartesian or curvilinear (recommended only for small scales) or spherical (small scales and large scales) co-ordinates. SWAN has an option to include wave damping over a vegetation field (mangroves, salt marshes, etc.) at variable depths. A popular method of expressing the wave dissipation due to vegetation is the cylinder approach as suggested by Dalrymple et al. (1984). The mangroves act as buffer against sea level rise and vulnerability and this potential of the vegetation is basically the origin of the present study.

Quartel et al (2007) studied wave attenuation in a coastal mangrove system in the Red River Delta, Vietnam. They approached the drag force by a function containing the projected area of the under water obstacles at a certain water depth. Comparing the wave height reduction for similar water depths, the wave height reduction by mangroves was 5 to 7.5 times larger than by bottom friction only. This indicates clearly the importance of the mangrove vegetation for coastal defence. Bao (2011) conducted a study in two coastal mangrove forests of Vietnam. They set up 32 plots to measure wave attenuation from the edge to the forest centre and showed wave height is closely related to cross-shore distances in an exponential equation. Horstman et al (2014) measured wave attenuation along two cross-shore transects, through mangroves fringing estuaries in the southern Andaman region of Thailand, having contrasting vegetation. There was significantly increasing wave attenuation rates with volumetric vegetation density. They gave relations between vegetation densities, wave attenuation rates, sediment characteristics and sedimentation rates in mangroves. Wave attenuation in the mangroves was found to facilitate sediment deposition rates. Leonardi et al (2015) determined general response of salt marsh boundaries to wave action under normal and extreme weather conditions. Based on the analysis of two decades of data, they found that violent storms and hurricanes contribute less than 1% to long-term salt marsh erosion rates. Thus salt marshes seem more susceptible to variations in mean wave energy rather than changes in the extremes. Parvathy et al (2017) studied wave attenuation by vegetation over varying seabed slopes. The study reveals that the wave height decays exponentially for the mild slope but as the degree of bottom steepness increases, the wave height reduction becomes gradual, and this can be attributed to the water depth variation, shoaling, breaking, and reflection characteristics associated with different slopes, in the presence of mangroves. Parvathy et al (2019) studied the impact of muddy bottom on the wave evolution characteristics over the head Bay of Bengal. With a multiscale modelling approach they simulated wave evolution during a cyclonic period. The study quantifies the cross-shelf wave attenuation characteristics during rough and fair weather seasons. The study shows a maximum attenuation rate of 84% during fair weather whereas 33% rate during extreme weather events. Thus the attenuation rate is lesser for high energy waves.

Sinha et al (2019) analyzed the role of dominant mangroves in reducing wave related vulnerabilities along two major estuaries of Indian Sundarbans namely the Hooghly estuary and the Matla estuary, which have significantly contrasting salinities. The biomass and growth of mangrove along the Hooghly estuarine complex is relatively higher compared to the mangroves thriving along the mudflats of Matla estuary. In the study the SWAN model is used with vegetation and mud input to evaluate the wave attenuation along the Indian Sundarbans. The study considers the major mangroves floral species (*Sonneratia apetala*, *Avicennia marina*, *Avicennia alba* and *Avicennia officinalis*) in two separate estuaries namely Hooghly and Matla having contrasting salinities. The work is the first attempt to evaluate the species-wise attenuation of waves using SWAN model on the basis of real time data that have been collected from the mangrove ecosystem of Indian Sundarbans. It is observed that the wave height has been reduced in the Hooghly estuarine stretch by 31% in November and 57% in July compared to the wave height of Matla estuary. The model simulations also highlighted that during the monsoon season the mangrove vegetation has greater ability to attenuate waves compared to the postmonsoon season.

In the present work ten stations are selected, 5 each in hypo saline and hyper saline region in the Indian Sundarbans. The SWAN model is used to study the impact on wave attenuation, by 4 dominant mangrove species (*Sonneratia apetala*, *Avicennia marina*, *Avicennia alba* and *Avicennia officinalis*) thriving in different salinity zones of Indian Sundarbans, considering the relative density, height and diameter of the tree as the primary inputs. The experiments calculates and compares the wave attenuation for SWAN runs with and without vegetation and mud inputs. During the transition month of March a constant wind speed is given as model input. Comparisons are held between the wave heights for hypo and hyper saline stations with and without vegetation and mud inputs.

2. Objective

This study is an attempt to evaluate the attenuation of waves by mangroves using numerical wave model on the basis of real time data collected from the mangrove ecosystem of Indian Sundarbans. The main objective is to identify the role of mangrove species that grows on intertidal mud flats, in retarding the damage caused by waves and thereby save the hinterland villages from inundation.

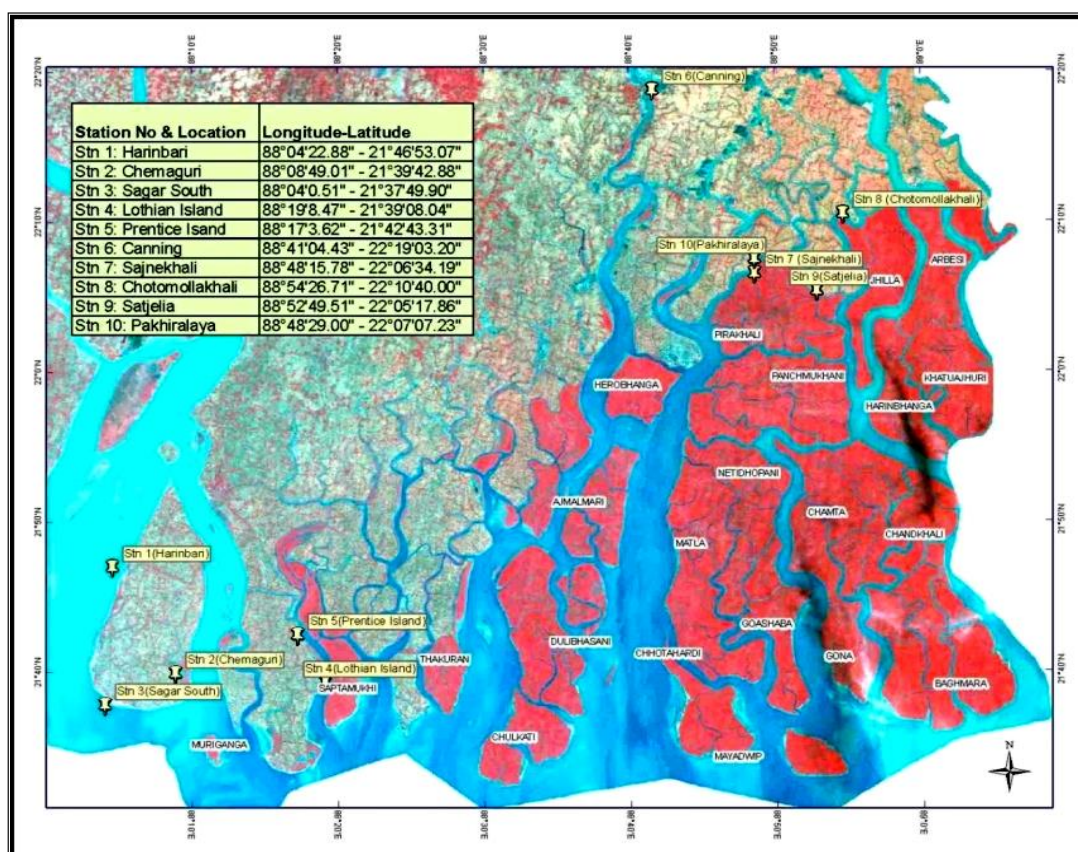
3. Theory

The mangroves present in the study region have different height and diameter due to the effect of variable salinity and their wave attenuation potential differs accordingly. These species play important roles in wave attenuation which again is regulated by the relative density (abundance) and biomass of the species. Considering these data as primary

inputs along with the substratum characteristics in terms of density and thickness of the muddy layer a numerical model is developed. It is expected that the output will help to identify the role of individual species in retarding the damage caused by waves and thereby save the coastal regions from vulnerabilities.

4. Methods

The methodology encompasses selection of stations in the Indian Sundarbans based on the salinity profile. 5 stations (Harinbari, Chemaguri, Sagar South, Lothian Island, Prentice Island) are selected in the western Indian Sundarbans along the Hooghly estuary where the aquatic phase is relatively hyposaline in nature due to Farakka discharge. Remaining 5 stations (Canning, Sajnekhali, Chotomollakhali, Satjalia, Pakhiralaya) are selected in the hypersaline central Indian Sundarbans along the Matla estuary. Figure 1 highlights the names and locations of the 10 stations of the Indian Sundarbans.



Selected stations in Indian Sundarbans

Table below gives the sampling stations along with their salient features.

Study site	Longitude & Latitude	Site Description
Harinbari (Stn. 1)	88°04'22.88" E 21°46'53.07" N	Situated in the western region of Indian Sundarbans almost in the middle of the Sagar Island; receives the water of the Hugli River.
Chemaguri (Stn. 2)	88°08'49.01" E 21°39'42.88" N	Situated on the south-eastern side of Sagar Island and receives the water of the Mooriganga River.
Sagar South (Stn. 3)	88°04'0.51" E 21°37'49.90" N	Situated on the south-western part of the Sagar Island at the confluence of the River Hugli and the Bay of Bengal. Anthropogenically stressed zone due to presence of passenger jetties, fishing activities and pilgrimage.

Lothian island(Stn.4)	88°19'8.47" E 21°39'08.04" N	Situated east of Bakkhali island; a Wildlife sanctuary; faces the River Saptamukhi.
Prentice island (Stn.5)	88°17'3.62" E 21°42'43.31" N	Situated north of Lothian island; receives the water of the Saptamukhi River.
Canning (Stn.6)	88°41'04.43" E 22°19'03.20" N	Situated in the central part of the Indian Sundarbans and faces the mighty River Matla, a tide-fed river. Due to presence of fish landing stations, passenger jetties and busy market, the area is anthropogenically stressed.
Sajnekhali (Stn. 7)	88°48'15.78" E 22°06'34.19" N	A Wildlife Sanctuary and a part of Sundarban Tiger Reserve; adjacent to River Bidhya and Gomor. Tourism pressure is extremely high in this station particularly during postmonsoon.
Chotomollakhali (Stn. 8)	88°54'26.71" E 22°10'40.00" N	Situated in the upper portion of Central Indian Sundarban adjacent to Jhila forest; receives the water of Rangabelia and Korankhali Rivers.
Satjelia (Stn. 9)	88°52'49.51" E 22°05'17.86" N	Situated adjacent to River Duttar in the upper region of Central Indian Sundarban facing western part of the Jhilla forest.
Pakhiralaya (Stn. 10)	88°48'29.00" E 22°07'07.23" N	Situated adjacent to River Gomor; opposite to Sajnekhali Wild Life Sanctuary.

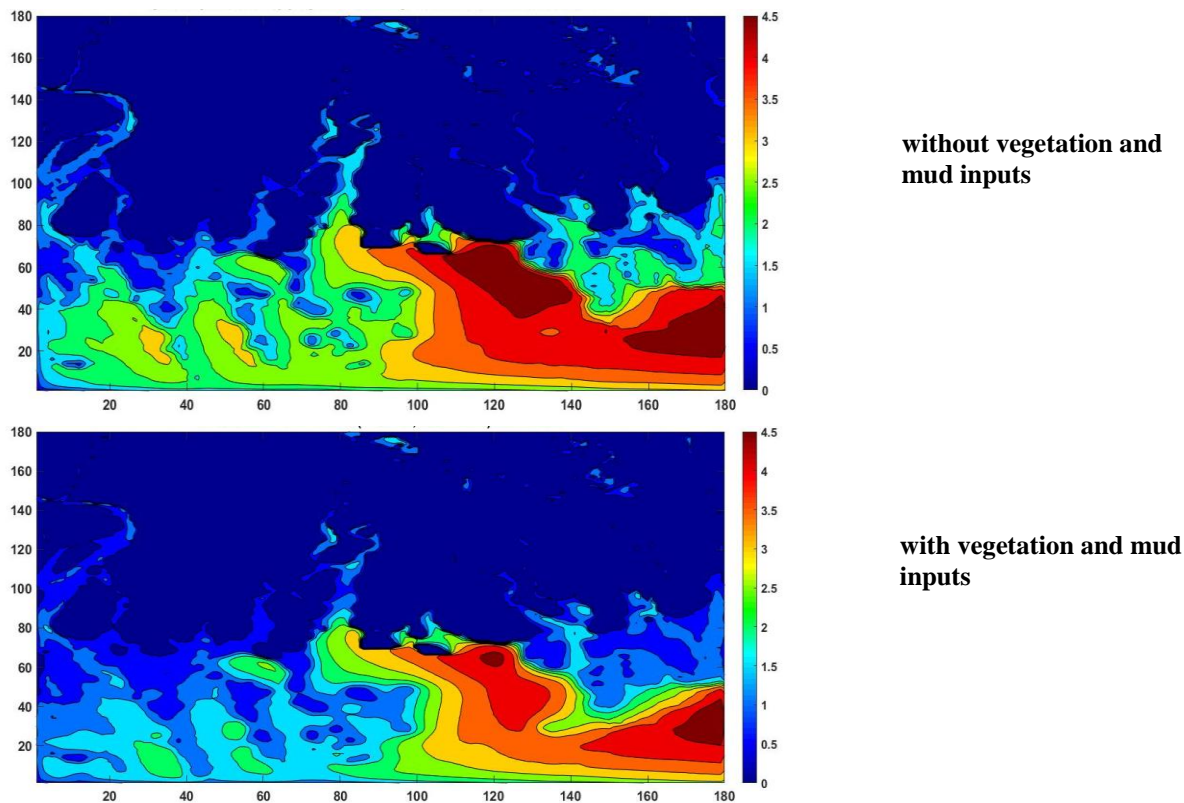
The numerical wave model is simulated with real time *in situ* collected data for four dominant mangrove species (*Sonneratia apetala*, *Avicennia marina*, *Avicennia alba* and *Avicennia officinalis*) during March. The input data includes height of the tree, diameter of the tree, mud thickness and bulk density as real time data. It may be observed that *Sonneratia apetala* is adapted to low saline environment (range 5 psu to 15 psu), whereas *Avicennia marina*, *Avicennia alba* and *Avicennia officinalis* prefer hyper saline condition (greater than 20 psu as observed in the inshore waters of central Indian Sundarbans). GEBCO (<https://www.bodc.ac.uk/>) gridded data with spatial resolution 30 seconds (0.008333 degree or 833.3 meter) is used to generate the bathymetry for the study area (longitude from 88.0°E to 89.5°E and latitude from 21.0°N to 22.5°N). For the model simulations the above bathymetry and constant wind fields are given as model inputs. A course SWAN run is performed for the Indian Ocean region to generate the boundary conditions. The significant wave heights (SWH) generated are compared for different salinity zones.

5. Results

Experiments are conducted by integrating the SWAN model first without giving the vegetation and mud inputs and then giving the same along with constant wind speed for the study region. Figure without vegetation and mud input depicts the spatial contour plot of the SWH parameter **without vegetation and mud inputs**. A maximum wave height of 4.5 meter is obtained during March in the region for a constant wind speed of 28.28 m/sec. Figure **with vegetation and mud input** depicts the contour plot of the same with the vegetation and mud effects. Although a maximum of 4.5 meter is attained but the region of highest wave heights is much reduced. On comparison of both the plots the reduced wave heights in the entire study region are very obvious due to the vegetation and mud effects. Thus the SWAN model simulates the wave attenuation characteristics reasonably as desired. Above table gives a quantitative analysis of the same by calculating the percentage of attenuation (ATT). The first 5 stations with hyposaline profile has wave attenuation in the range of 30 to 42 percentage while the rest 5 hypersaline stations has 8 to 17 percent attenuation. There is a distinct reduction in attenuation in the areas with higher salinity. This is due to lower mangrove

biomass in the respective regions. After running SWAN model it is observed that the magnitude of wave attenuation is a function of biomass and density of the mangrove species. The magnitude of wave attenuation is greater in areas or stations with high mangrove vegetation.

SWAN model computed SWH in meter with constant wind speed



Model computed wave heights without vegetation (SWH1) and due to vegetation and mud (SWH2) at constant wind speed during March.

	Stations	Longitude	Latitude	Depth (m)	SWH1 (m)	SWH2 (m)	% ATT
1	Harinbari	88° 04'	21° 46'	2.3	0.88	0.53	40
2	Chemaguri	88° 08'	21° 39'	3.4	1.23	0.71	42
3	Sagar South	88° 04'	21° 37'	5.8	1.62	1.03	36
4	Lothian Island	88° 19'	21° 39'	8.1	2.22	1.44	35
5	Prentice Island	88° 17'	21° 42'	10.4	2.21	1.55	30
6	Canning	88° 67'	22° 19'	7.9	0.86	0.79	8
7	Sajnekhali	88° 62'	22° 06'	4.7	0.83	0.70	16
8	Chotomollakhali	88° 62'	22° 06'	6.2	1.26	1.05	17
9	Satjelia	88° 63'	22° 05'	15.7	1.50	1.38	8
10	Pakhiralaya	88° 62'	22° 07'	7.6	1.02	0.90	12

6. Discussions

The Indian Sundarbans is noted for extreme climate change induced vulnerabilities (Mitra, 2013). This region is noted for extreme event also. In this context the severe cyclonic storm Aila that occurred on May 2009 is to be noted. This cyclone resulted in the intrusion of sea water in the hinterland and caused massive damage of agricultural crops (Mitra et al 2011). Such natural disasters are frequent in this mangrove dominated deltaic complex and hence the role of mangrove ecosystem (comprising of mud and substratum) need to be ascertained as a part of disaster management. The mangroves however exhibit different growth

pattern under the influence of salinity. The hypersaline environment causes stunted growth of the mangroves as witnessed in central Indian Sundarbans (Raha et al 2014, Mitra and Zaman 2014, Mitra and Zaman 2016). Huge quantum of mud has accumulated in the central sector of Indian Sundarban due to siltation of the Bidyadhari river since the late 15th century (Choudhuri and Choudhury, 1994). This muddy substratum also plays a regulatory role in wave attenuation along with the overlying mangrove vegetation. Considering the output of SWAN in the present case it can be inferred that the relatively less biomass of mangroves in the central sector compared to the western sector has resulted in less wave attenuation. To sum up it can be stated that conservation of mangroves along with the substratum should be given priority to protect the lives and properties of the people of Indian Sundarbans.

7. Limitations and future directions

The present work is based on real time data collection in the Sundarban areas which is exposed to frequent extreme weather conditions during the premonsoon and monsoon months. Thus long term data of the input parameters to the model is a limitation. Remote sensing technologies may be used in future for data collection.

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Impact of Artificial Intelligence In Making Better Marketing Decisions In Healthcare Industries**¹Swaraj Kumar Nandan,²Mausumi Das Nath**

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¹s.k.nandan@sxccal.edu, ²m.dasnath@sxccal.edu**1. Introduction**

Artificial Intelligence is the recreation of human brainpower performed by machines, specifically by a computer. It has the capability of learning and solving problems by three phases-learning (by acquiring the rubrics and information for using such information), reasoning(using rules and facts to gather knowledge and drawing inferences) and finally by self-correction. The different applications of AI are speech recognition, expert system and machine vision. All these applications are dissimilar. In fact, artificial intelligence has shifted with the expansion in technology. Recently, the Artificial Intelligence (AI) and Business policies discover the exponential growth of artificial intelligence in the business horizon. It focuses on how AI is affecting the development and execution of multiple strategies in different organizations.AI can be applied in various sectors like finance, manufacturing, law, education, healthcare, business and so on. For instance, AI applications like Turbo Tax or Mintcollect personal data and offers financial advice to the clients. Even certain applications of AI help to buy a property.In manufacturing, industrial robots are being used in the workflow process which yieldsin higher productivity and efficiency. The same is also applicable in law where the process of documentation is automatized and is often helpful to the lawyers and their clients. It also saves the processing time. Moreover, artificial intelligence in education helps to automate the grading system which in turn reduces the knowledge-giver's time in assessing the students. The students are also benefited by the AI support system and at times they are able to carry out their work without the intervention of their tutors.AI can be applied in business too, particularly in decision-making process. Earlier, executives and senior level managers had to depend on inaccurate, inconsistent tend incomplete data. With the use of artificial intelligence, several business paradigms and simulation techniques can be applied which can be used reliably to carry out the same tasks repeatedly and accurately with high precision. It helps the firms to reduce costs by automating the tasks and also improves upon the customer experiences by suitably applying the appropriate data models. Mar. Rao of PwC specifies that there are limitless outcome modelling, and it is one of the breakthroughs in today's AI systems. He further states that immense opportunity is available to use AI in all kinds of decision making. Presently, AI deals with big data, deals with the intelligence and helps the officials with suitable data models to make the decision-making process easier. This paper focuses on how AI benefits the healthcare industry and the ways it helps the companies to take better marketing decisions.

The rest of the paper is organized as follows. Section 2 presents a brief overview of the relevant works. Section 3 briefly explains how AI technology can work to improve the decision making process. A theoretical analysis on impact of AI in health industry is discussed in Section 4. Section 5 concludes the paper along with the future scope.

2. Related Work

A few empirical studies have been conducted recently to determine the innovation and the challenges of AI in Healthcare. As the use of AI in Healthcare Industry is growing it had become a subject of great concern. Research has been conducted on AI interface and its use by consumers, officials, doctors for decision making and its related work in the field of healthcare industries.

Aanchal Aggarwal, Nupur Kapoor and Anchal Gupta (2013) focused their research on healthcare innovation and challenges and concluded that the recommendations given by High Level Expert Group on Universal Health Coverage on institutional reforms, to make quality health care reasonable, the medical insurance infiltration should rise from 15 per cent to at least 50 per cent of the population by 2020 and 80 percent by 2030.

Suman Devi and Dr.Vazir Singh Nehra (2015) made an effort in the area of health insurance to find out its problems and some solutions. The study discussed though health insurance is one of the growing segment of insurance industry but the problems are insurance companies, consumers (policyholders), Third Party Administrator (TPA) and hospitals also. Insurance companies have high claim paid-out ratio, consumers are less aware about health insurance basic terms, hospitals charges more expenses from insured patients and TPA make delay in payment of claims which are made on behalf of insurer to insured.

Dolores Derrington (2017) stated that it is indeed a worthy idea to feed in data of human anatomy into machine language, but it should also be noted that due to course of time the anatomy of human being changes in context of its size, quality and performance. To maintain each and every data of human anatomy in course of its changes may be burdensome and in due course may lose its integrity.

Nuffield Council on Bioethics (2018) focused on AI technologies which were used for detection of ailments, management of chronic conditions, delivery of timely health services, and drug discovery. It was explored for research activities too. They also stated that AI technologies have massive role to provide assistance and report several important health challenges, but might be limited by the quality of available health data, and AI is unable to possess some human traits like emotional health. A number of social and ethical issues crop up due to the use of AI, which often coincides with matters raised by the use of data and healthcare technologies more broadly.

The Academy of Medical Royal Colleges (2019) focussed on the fact that AI could alter the type of person who would prefer to become a medical professional. If sophisticated intelligent tools were to take on a dominant role in talking to patients, information processing and decision-making, the reduction in direct patient interaction and shift in professional role could immensely modify the daily scenario of medicine as a career.

3. Artificial Intelligence in Decision Making

Decision making has always been a judgemental factor for being an efficient leader. Experienced leaders who have been recognised for sound decision making have, at some point of time made drastically poor decision which has somehow affected their reputation. In an interview, John Kelly III, IBM Senior Vice President for Research and Solutions stated, "The success of cognitive computing will not be measured by Turing tests or a computer's ability to mimic humans. It will be measured in more practical ways, like return on investment, new market opportunities, diseases cured and lives saved. "Artificial Intelligence has paved a way for effective business decisions on the basis of the following fields.

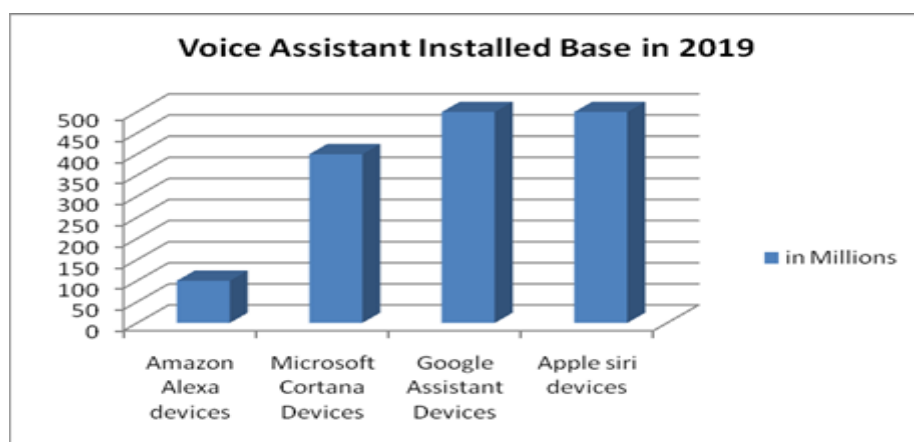
- (i) **Better Human Judgement:** Emotional intelligence is far more effective in better decision making compared to any AI factor. Cases where decision making is far simpler in context machines can be used to make decisions which do not require emotional intelligence neither experience. But in case for complex situations where the probability and cost of mistakes are high, a human mind is a better option for decision making as it understands the organization in terms of values, risks and goals and hence provide a sound judgement. But, Artificial Intelligence should be still instilled in decision making as it provides human with all the facts and possible predictions.
- (ii) **Quality Decision making:** Psychological studies stated that with multiple decisions within a short span of time depletes the mental energy and declines the quality of decision making. Machines with strong algorithms are not prone to fatigues and hence can compute multiple decisions each day accurately. Executives who have adopted AI have an advantage over the edge of decision making irrespective of human mental constraints.
- (iii) **Assist in predictions:** Business now use predictive analysis for better decision making. Currently Data mining is a popular approach that provides a best seat to the businesses in adopting prompt and quality decisions in this competitive market. Predictive analysis with the use of data mining and studying the various datasets anticipates the future events and trends. Machine language and algorithms which are programmed to identify and understand data sets provide proper solutions and assist in predicting future models which in turn yield an effective marketing strategy for the company.

(iv)**Acquisition of best fit talent:** Recruitment and selection of the best possible candidates are some of the most complex decision a leader has to face and hence it becomes difficult to sort the best out of it. Hiring leaders and recruitment managers has to go through loads of applications and acquire the best fit talent. Currently, Artificial Intelligence and automation can provide enough support by automating multiple tasks, sifting through different applications and CVs, analysing the data and provide the best fit for the organizational culture on the basis of the set of skills and competencies. Bruhat Insights Global, a new age manpower consulting company uses AI and Big data to prevent ghosting, whereas Phenom People, a Talent Relationship Marketing (TRM) Company uses AI based solution to cover the entire recruitment procedure including CRM and internal recruitment facilities.

4. Artificial Intelligence in Healthcare Industries

The waves of Artificial Intelligence has not only flourished in the business sector but also have highly impacted on the healthcare industries. Particularly in the case of machine learning, automation, hospitals, doctors, insurance companies and organization that have contracts with healthcare have been impacted in more positive way than any other industries. Initially the effort and the time consumed on focusing both minor and major healthcare issues were quite difficult. Recently with the use of AI and the Internet of Medical Things (IoMT), consumer health applications have been a boon to mankind. With the advent of voice assisted installed base in many smart gadgets, consumers are more dependent on AI for their regular updates which also includes healthcare. As per xappmedia.com the user for Amazon Alexa devices are more than 100 million whereas for Microsoft Cortana are 400, Google Assistant and Apples Siri are more than 500 million users in 2019. With the growth of AI, healthcare specialists are facilitated to understand and recognise the day to day patterns of patient's need and with the inferences drawn can provide better feedback and support to maintain a healthy life. According to American Cancer Society, AI is already being used to figure out terminal diseases like carcinomas more accurately in their early stages. Initially a high rate of tests were recommended which yielded false results, but AI is enabling reviews and translating mammograms 30 times faster which yielded in 99% accuracy. Thus, it reduced the need for unnecessary biopsies and significantly lowered the mental and physical stress among patients and their relatives.

Recent studies portray that patient-interface creation is a new area of research which has significant applications for some patients. In certain trauma and neurological disorders, patients lose their capacity to talk, carry out movement freely and even unable to communicate properly with friends and relatives. But, applications of AI and Brain-computer interfaces help the patients to perform their activities with ease. This has helped in improving their quality of life and overcome emergency situations like stroke or any kind of locked-in syndrome.



Number of Users Using
AI Assistants

Certain diagnostic centres and some clinicians still prefer and depend on physical tissue samples having received through biopsies, although non-invasive techniques like CT-scan, MRI machines are available. This might create a risk of infection. Artificial intelligence will help to replace the requirement for tissue samples in some cases, as predicted by clinical experts. Imaging information of certain tumours helps the medical practitioners to get a clear understanding about the nature of the unwanted growth and thus, can offer an accurate treatment decision. In certain developing countries, there is a dearth of skilled technicians, healthcare providers and even radiologists. This restricts in quality health care for the patients. AI could solve the

deficiency of such people in extending adequate care to those in need. Artificial Intelligence tools and techniques can perform screening for certain diseases like cancer, tuberculosis which yields a higher level of accuracy.

Electronic health records play a significant role in the healthcare sector, but the shift from manual data has invited numerous problems concerning the user's involvement in documentation and their tiring efforts. This too, has been solved by the use of artificial intelligence by automating some of the routine tasks that take away user's time on order entry, medical documentation and arranging the records. Dictation and Voice recognition system acts as a saviour and virtual assistants extend a helping hand to the medical practitioners too. AI helps the clinicians carry out their task easily and efficiently.

Furthermore, it is noticed that thousands of patients succumb to their injuries due to antibiotic resistance. Data from Electronic health records helps to identify the infection pattern and figures out the potential risks before they show up as symptoms. AI tools and machine learning help in analysis and help in more accurate and faster delivery of alerts for clinical practitioners.

It is known from several reports and studies that seventy percent or more of all decisions in healthcare are based on pathology results. Digital pathology result and usage of artificial intelligence tools delivers more accurate images which might escape the human eye. Thus, this expert system helps in drilling down the fact whether carcinoma infection in patients is progressing slowly or at a faster pace or not which, in turn help the doctors to choose the method of treatment. Hence, this increases the efficiency level of both the pathologist and the clinician.

People are highly dependent on smart devices and gadgets. It has taken over the medical environment too. These devices are used to monitor patients' health in the ICU and other areas also. AI enables the ability to identify any complications, health deterioration, etc. which can drastically do cost-cutting for the hospital as well as for the patients. Acquiring unstructured data and organizing them for early intervention of the doctors for the critical patients is something which humans cannot do it easily and efficiently. All these are taken care of by incorporating intelligent algorithms in the devices and thus patients receive quality care on time. Recently, it has been noticed that oncologists do not have any reliable method for finding out which patients will respond to the current treatment for cancer called immunotherapy, and which option would suit best to a particular patient. AI with its machine learning algorithms comes at a rescue for both the healthcare professional as well as the patient.

Moreover, extracting, integrating and analysing from a huge set of unstructured and inconsistent patient data leads to an effective accurate and faster prediction and better clinical decision with the help of special intelligent tools. Although it has some limitations, the deep learning algorithms significantly improve clinical care.

5. Conclusion

Artificial Intelligence is becoming the crux of healthcare and now it is rapidly evolving to make its presence in the medical field. AI is becoming extremely sophisticated at human level intelligence and performs tasks more quickly and at a lower cost. It is needless to say that AI and robotics are taking its place in our medical eco-system. IBM's Watson for Health is assisting healthcare institutions by influencing them to apply cognitive technology to explore wide range of health data and diagnosis. It can identify and store loads of medical information such as case studies, past records, symptoms, treatments much quicker than human. On the other hand Google's Deep Mind Health is associating with researchers, doctors and patients to identify the various issues and solve practical healthcare issues. Through technology combining with machine language and systems, algorithms are framed as similar to neural networks that replicate or mimic the human brain. Hence, it could be understood that improved and quicker results through AI provides appropriate timely decisions and predictive analysis that can assist in decision making and framing strategies to come out with innovative ideas for the betterment of the healthcare industries. In Indian market, AI is yet to take a leap in the healthcare industries but due to several factors such as shortage of qualified physicians, lack of uniformity in accessible healthcare facilities, low accredited hospitals and high private expenditure on healthcare, the impact of AI in healthcare industries are considerably low. As per the data of PWC, India provides 4.6% budget in healthcare industries while 1.3% in national GDP compared to the other BRICS countries. The challenges faced by India in adopting AI and IoMT in the Indian healthcare ecosystem are basically absence of healthcare

regulatory body, low collaboration between various stake holders, privacy and security of data, unaffordability, interoperability and lack of effective data. But it can also be concluded that in a developing country like India, the scope of AI in healthcare is also vast provided the changes that are expected to drive the adoption of IoMT could be taken into consideration. Indian market are expected to adopt AI and IoMT in health care provided India adopts emerging technologies for better framework, adopt budgets for emerging technologies, formulating and implementing stronger regulations, collection of suitable data and providing incentives. Using the recognisable patterns fed into the machine language, AI's would hence begin to take a major hold in the healthcare industries.

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Water quality management through seaweed cultivation

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1. Introduction

Seaweeds are thallophytes with no differentiation of roots, stems and leaves. They are abundantly distributed in the estuarine, coastal and marine waters. The mangrove dominated Indian Sundarbans sustains a variety of seaweeds of which *Enteromorpha intestinalis* is dominant (Mitra, 2013; Mitra and Zaman, 2015; Mitra and Zaman, 2016). This species of seaweed has thread-like appearance and is capable of accumulating conservative wastes in their body tissues. Several works have been done on the bioaccumulation of heavy metals by common seaweeds prevalent in the estuaries of Indian Sundarbans (Pramanick et al., 2015; Pramanick et al., 2016; Pramanick et al., 2017).

Due to rapid industrialization and urbanization, various wastes containing different types of metal ions are discharged into aquatic environment which causes environmental pollution and threats to marine life (Bishop, 2002; Wang, 2002). In the coastal region, these heavy metals can be monitored by indicator organisms particularly algae through accumulation of pollutants in their body cell (Ganesan et al., 1991; Rajendran et al., 1993).

On this background the present research work aims to evaluate the levels of Zn, Cu and Pb in the thallus body of *E. intestinalis* with the vision to upgrade the water quality of Sundarbans estuary through seaweed culture. This approach has the possibility of providing two-fold ecosystem services of which the first one is upgradation of water quality and the second one is the generation of the alternative livelihood.

2. Materials and Methods

a) Study site

The Indian Sundarbans, located at the apex of the Bay of Bengal (between 21°13' N to 22°40' N latitude and 88°03' E to 89°07' E longitude) in the maritime state of West Bengal, is a mangrove dominated deltaic complex. This mangrove forest known as 'Sundarban Biosphere Reserve' (SBR) occupies an area of about 9630 sq. km, of which the forest area is about 4200 sq. km.

The present study was carried out in three stations namely Gosaba (22°08'53.66" N; 88°56'34.20" E), Bali Island (22°04'35.17" N; 88°44'55.70" E) and Jharkhali (22°05'52.82" N; 88°41'47.25" E) during three seasons (premonsoon, monsoon and postmonsoon) in 2018.

b) Sample collection and analysis

Enteromorpha intestinalis, belonging to Chlorophyceae family, is a dominant seaweed species in Indian Sundarbans. It is found on the hard substrata like boulders, rocks etc. *E. intestinalis* was collected during high tide from each station and brought to the laboratory for further analysis.

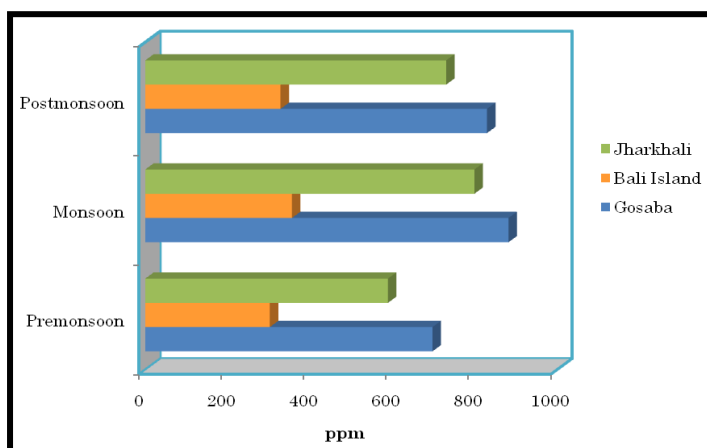
10 gm of the collected sample (from each station) was dried at 60°C overnight. The dried sample (1 gm on dry weight basis) was digested with a mixture of nitric acid and hydrogen peroxide followed by addition of hydrochloric acid (Kumar et al., 2012). The digested sample was analyzed for Zn, Cu and Pb against standard concentration of each metal on a Perkin Elmer Atomic Absorption Spectrophotometer (Model 3030) equipped with an HGA-500 graphite furnace atomizer and a deuterium background corrector. Blank correction was carried out to bring accuracy to the results.

c) Statistical Analysis

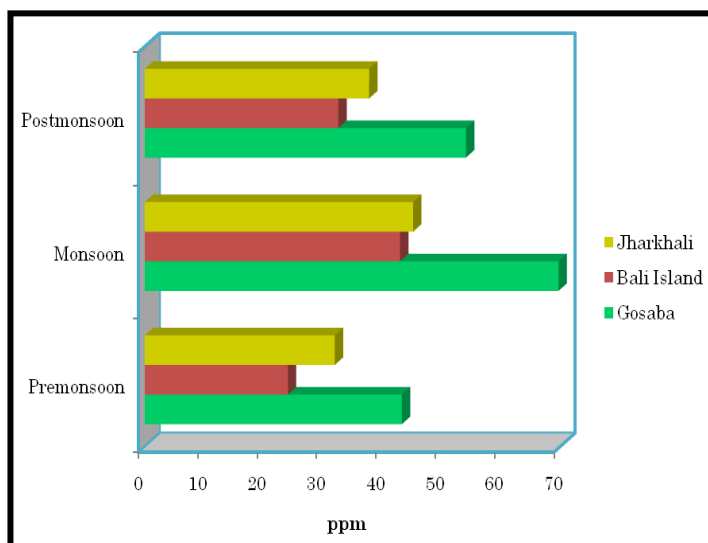
Analysis of Variance (ANOVA) was performed through SPSS 16.0 to assess whether all the selected heavy metals varied significantly between species and seasons; possibilities less than 1 % ($p < 0.01$) were considered statistically significant.

3. Result

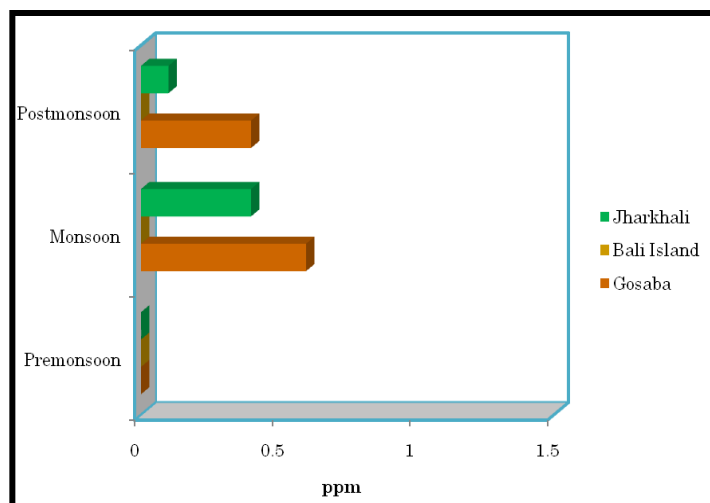
The concentrations of selected heavy metals (Zn, Cu and Pb) in the thallus body of *E. intestinalis* collected from three stations during three seasons are represented in figures. The metal accumulation followed the order $Zn > Cu > Pb$. Highest levels of the heavy metals were documented in Gosaba followed by Bali Island and Jharkhali during all the seasons. ANOVA computed on the data sets exhibits significant variations between stations and seasons.



Concentration of Zn (ppm dry weight) in *E. intestinalis* during three seasons



Concentration of Cu (ppm dry weight) in *E. intestinalis* during three seasons



Concentration of Pb (ppm dry weight) in *E. intestinalis* during three seasons

ANOVA result of spatio-temporal variation of Zn in *E. intestinalis*

Source of Variation	SS	df	MS	F	P-value	Fcrit
Stations	376344.1	2	188172.1	97.62243	0.000403	6.944272
Seasons	34747.26	2	17373.63	9.013326	0.032978	6.944272
Error	7710.198	4	1927.549			
Total	418801.6	8				

ANOVA result of spatio-temporal variation of Cu in *E. intestinalis*

Source of Variation	SS	df	MS	F	P-value	Fcrit
Stations	832.3622	2	416.1811	37.10014	0.002616	6.944272
Seasons	574.2022	2	287.1011	25.5934	0.005254	6.944272
Error	44.87111	4	11.21778			
Total	1451.436	8				

ANOVA result of spatio-temporal variation of Pb in *E. intestinalis*

Source of Variation	SS	df	MS	F	P-value	Fcrit
Stations	0.166667	2	0.083333	3.125	0.15229	6.944272
Seasons	0.166667	2	0.083333	3.125	0.15229	6.944272
Error	0.106667	4	0.026667			
Total	0.44	8				

4. Discussion

The estuaries of Indian Sundarbans are mostly contaminated with heavy metals due to presence of highly urbanized city of Kolkata, Howrah and Haldia industrial complex. The wastes generated from these cities and towns pollute the western part of the deltaic complex to a great extent due to its proximity to the industrial belt (Mitra, 2013; Mitra, 2018).

Among the selected heavy metals in the present study, Zn and Cu are the essential elements while Pb is a non-essential element for living organisms. The main sources of Zn in the coastal region are the galvanization units, paint manufacturing units and pharmaceutical processes. On the other hand antifouling paints, particular type of algacides used in different aquaculture farms, paint manufacturing units, pipe line corrosion and oil sludges are sources for Cu in the water of estuarine system. Pb which is most toxic metal, enters the coastal waters through the discharge of industrial wastewaters, such as from painting, dyeing, battery manufacturing units and oil refineries.

The primary sources of heavy metals in the present study area of Indian Sundarbans are tourist boats, fishing vessels, use of antifouling paints for conditioning boats *etc.* apart from industrial discharges (Mitra *et al.*, 2011; Mitra, 2013; Mitra and Zaman, 2016; Pramanick *et al.*, 2016).

The order of bioaccumulation of the selected heavy metals in the thallus body of *E. intestinalis* is $Zn > Cu > Pb$ in all the selected stations and their concentrations was highest during monsoon followed by postmonsoon and premonsoon.

Considering the bioaccumulation potential of heavy metals in the thallus body of seaweed species, it is recommended to upgrade the water quality of Sundarbans estuaries by culturing seaweeds within the impounded waterbodies. The bioengineering part of seaweed culture consists of stocking of estuarine water in the artificial pond on either side of the estuary, which will be filled by gravity. The stocked water may be provided with nutrients obtained from mangrove litter and detritus for propagating and multiplying seaweed thallus in the nutrient rich ambient water. Thalli of *E. intestinalis* may be tied with the ropes of the raft or bamboo as initiation of the culture. This technology will not only upgrade the quality of water but will also generate considerable biomass of seaweed (*E. intestinalis*) that may be used as raw materials for organic fertilizer, compost *etc.*

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Development of Food Products from Mangrove Associate Species: A Step Towards Health Security

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1. Introduction

Salicornia brachiata is a mangrove associate floral species found abundantly in the supralittoral zones of Indian Sundarbans. The species grows on coastal marshes and can tolerate extreme saline conditions. They grow in shallow gradients, mud flats, sloughs, seashores and drainage channels (Ksouri et al., 2008). *Salicornia* sp. is noted for its wide range of ecosystem services particularly in the field of health care.

Several species of *Salicornia* sp. possess antibacterial and anti-hypertensive properties and are quoted in folk medicine for relief of toothache and chronic rheumatism (Rizk, 1986), constipation, obesity, diabetes and cancer. Leaves and stems of another mangrove associate species *Suaeda monoica* is used for antiviral, antidiabetic and toothache (Revathi et al., 2015). Thus the importance of halophytes in the domain of health care cannot be ignored.

In regions like Indian Sundarbans there are no medical facilities and services for the island dwellers and local inhabitants of the deltaic complex. The people are often attacked by sharks, snakes, crocodiles and even tigers while penetrating inside the deep forest to collect timber, honey, wax, fishes etc. (Mitra and Zaman, 2016). On this structural configuration, the island dwellers and local inhabitants depend on medicinal plants for their instant curing and solving health related problems like snake bites, dysentery, diarrhoea etc. Due to extreme poverty the people of Indian Sundarbans often suffer from malnutrition. Under this scenario the present research aims to solve the issue of malnutrition by preparing mineral rich food items.

In this programme we used semi-dried leaves of *Salicornia brachiata* to prepare common snacks like samosa and kachuri with the vision to improve the health of the sundarban people and provide alternative livelihood that can upgrade their economic profile. It was therefore needed to evaluate the nutrient levels of the species. The research encompasses study of the biochemical composition (protein, fat, carbohydrate, fibres, calcium, sodium and potassium) of semi-dried leaves of *Salicornia brachiata* and food items (samosa and kachuri) prepared from the species.

2. Theory

Mangrove associate floral species are rich in mineral content due to their survival and growth in the marine and estuarine system. This property of the species is of great importance to improve the health of the people particularly who are suffering from mineral deficiency. The vision of combating the problem of mineral deficiency can be translated into practical through the preparation of food products from mineral rich halophytes like *Salicornia brachiata* that grow luxuriantly in the supra-littoral zone of Indian Sundarbans.



3. Materials and Methods

The entire network of the analysis of biochemical composition includes the estimation of protein (by Lowry method), fat (by Soxhlet extraction method), carbohydrate (by Anthrone method), fibres (by alkali digestion method), calcium (by flame photometric method), sodium (by flame photometric method), and potassium (flame photometric method) both in the semi dried leaves of the species and the food items.

4. Results

Salicornia brachiata semi-dried leaves exhibited highest level of total carbohydrate followed by protein, fibre and fat. The high mineral contents in the food items (samosa and kachuri) prepared from the mangrove associate species compared to those available in the market is a unique finding of the work. The nutrient level of the species and the food items prepared from the species by mixing it in different proportions with potato (for samosa) and sattu (for kachuri)) is considered.

Proximate analysis and elemental composition of *Salicornia brachiata* based samosa

S. No	Species & product	Total Protein (g 100g ⁻¹)	Total Carbohydrate (g 100g ⁻¹)	Total Fat (g 100g ⁻¹)	Total Fibre (g 100g ⁻¹)	Ca (mg g ⁻¹)	Na (mg g ⁻¹)	K (mg g ⁻¹)
1	Samosa	1.57±0.11	17.21±0.98	0.13±0.03	2.15±0.29	0.17±0.04	0.09±0.04	4.38±0.73
2	<i>Salicornia</i> samosa 50:50 (1:1)	1.90 ±0.17	21.34±1.02	0.19±0.06	1.85±0.17	0.71±0.22	0.20±0.07	3.44±0.22
3	<i>Salicornia</i> samosa 70:30 (7:3)	1.73 ±0.18	18.13±0.98	0.13±0.05	2.12±0.28	0.80±0.27	0.31±0.09	4.15±0.36
4	Potato	2.16±0.13	15.98±0.83	0.17±0.04	2.17±0.33	0.16±0.08	0.09±0.04	4.51±0.49
5	<i>Salicornia</i> sp.	3.12 ± 0.29	4.83 ± 0.41	0.18 ± 0.07	2.16 ± 0.39	2.37± 0.98	17.88±1.02	2.93± 0.36

Proximate analysis and elemental composition of *Salicornia brachiata* based kachuri

S. No	Species & product	Total Protein (g 100g ⁻¹)	Total Carbohydrate (g 100g ⁻¹)	Total Fat (g 100g ⁻¹)	Total Fibre (g 100g ⁻¹)	Ca (mg g ⁻¹)	Na (mg g ⁻¹)	K (mg g ⁻¹)
1	Kachuri	8.15 ± 0.88	50.96 ± 2.05	2.94 ± 0.73	2.68 ± 0.78	1.32 ± 0.55	0.12 ± 0.04	2.87 ± .72
2	<i>Salicornia</i> kachuri 50:50	4.05 ± 0.29	56.29 ± 2.13	1.09 ± 0.08	3.02 ± 0.83	1.82 ± 0.39	8.79 ± 1.60	3.14± 0.65
3	<i>Salicornia</i> kachuri 70:30	3.98 ± 0.20	40.13 ± 1.35	0.76 ± 0.05	3.40 ± 0.60	2.07± 0.31	10.50±1.04	4.37± 0.48
4	Sattu	12.15 ±0.93	63.29 ± 2.39	4.10 ± 0.99	2.98 ± 0.80	1.73±0.21	0.13±0.04	3.34±0.32
5	<i>Salicornia</i> sp.	3.12 ± 0.12	4.83 ± 0.95	0.18 ± 0.07	2.16 ± 0.59	2.37± 0.15	17.88± 1.43	2.93± 0.28

5. Discussion

Salicornia brachiata is a mangrove associate species, which is commonly known as pickleweed, glasswort, sea beans, sea asparagus, crow's foot greens, and samphire. It is a halophyte, belonging to Amaranthaceae family (Singh *et al.*, 2014). In fact, *Salicornia* name has originated from the Latin word meaning 'salt'. Studies report that

some species, for example *Salicornia europaea* show tolerance towards salinity as high as 3% NaCl (Yamamoto *et al.*, 2009). This fleshy plant is found at the edges of wetlands, marshes, sea shores, and mudflats, actually on most alkaline flats (Smillie, 2015).

Salicornia has been historically used for both non-edible and edible purposes. Usage of the plant as a source of soda (sodium carbonate) for glass making dates back to centuries. Oriental pharmacopeia reports its medicinal uses. The efficacy of *Salicornia herbacea* against oxidative stress, inflammation, diabetes, asthma, hepatitis, cancer, gastroenteritis has been reported (Essaidi *et al.*, 2013). Food use was not altogether new, with multiple reports of their consumption as a salt source. However, recent dearth in food availability, quest for sustainable food sources and foraging interest has pushed this genus to prominence. The aerial parts of the halophytes are consumed in salads or processed into pickles, beverages etc.

Salicornia sp. is noted for its medicinal value as well as mineral contents. Several works had been carried out on different aspects of the species (Prakash *et al.*, 1989; Maathus *et al.*, 1992; Ramanathan, 2002; Ohlson *et al.*, 2002; Lakshmanan *et al.*, 2013; Revathi *et al.*, 2015). However, very few works have been conducted on the species that grows in the intertidal mudflats of Indian Sundarbans (Mitra and Zaman, 2016). Considering the mineral level of the species attempt has been taken to develop food products (preferably snacks) from the leaves of the species. In this paper proximate analysis and elemental composition of samosa and kachuri prepared by mixing different ratios of *Salicornia* sp. have been highlighted. Samosa was prepared from potato and in kachuri the main ingredient was sattu.

In potato the percentages of protein, carbohydrate, fat and fibre are 2.16, 15.98, 0.17 and 2.17 respectively. The levels of Ca, Na, K are 0.16 mg/gm, 0.09 mg/gm and 4.51 mg/gm respectively.

In kachuri, the ingredient was sattu where protein percentage is 12.15, carbohydrate percentage is 63.29, fat percentage is 4.10 and fibre percentage is 2.98. The values of the minerals Ca, Na and K are 1.73, 0.13 and 3.34 mg/gm respectively.

It is observed that for protein, carbohydrate and fat the values are less when the ratio of *Salicornia* sp. : sattu or *Salicornia* sp. : potato was changed from 1:1 to 7:3 (Tables 1 and 2). This may be attributed to increase of biomass of *Salicornia* sp. whose protein, carbohydrate and fat content are less. However, for Ca, Na and K, a reverse picture is observed. The values of the minerals increased when the ratio was changed from 1:1 to 7:3. This may be due to more input of *Salicornia* sp. (by mass) in the 7:3 proportion compared to 1:1 proportion in the food items. The relatively high levels of minerals in the food items prepared from the species may solve the problem of mineral deficiency amongst the population. Thus edible products prepared from this mangrove associate species may help in the improvement of human health particularly in context to mineral requirements for normal functioning of the body.

The overall results point towards the eradication of malnutrition by using *Salicornia* sp. as food ingredient. The food products developed from *Salicornia* sp. are not only rich in nutrients and a ground zero example of value addition, but can upgrade the snack industries of Indian Sundarbans at cottage level. This can be an alternative livelihood for the island dwellers and local inhabitants of the deltaic complex. Thus the present work may assure both health and economic security to local community of Indian Sundarbans. However, to ensure a continuity in the supply of raw materials (*Salicornia brachiata*), mass scale cultivation of the halophyte is suggested.

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Work Participation and Accessibility of Financial Services of Differently-Abled and Not Differently-Abled Persons- A comparative Study

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1. Introduction

For growth of any country it is imperative that all sections of the society gets an equal opportunity of participating in the production and distribution process of goods and services in form of employment (whether as an employer or employee).

As per **The Right of Persons with Disabilities Act, 2016**, 'a person with disability' or 'differently-abled person' means "a person with long term physical, mental, intellectual or sensory impairment which, in interaction with barriers, hinders his full and effective participation in society equally with others"

Work Participation refers to the labour rate of participation. In other words, it would aim to measure the total active Differently-Abled population (beyond age 18) participating in productive generation of returns. Financial Position of them on the other hand would reflect their current status of income, assets and liabilities.

Work Participation provides opportunities for financial self-sufficiency and improvement in their living condition. For persons with disabilities (PWD), employment is considered a vital step towards their rehabilitation and empowerment in that it provides a sense of belonging, independence and increases their social inclusion and overall well-being.

This study would aim to depict a current comparative scenario of differently-abled adults with respect to their participation in the economy via employment and financial independence with respect to their awareness and accessibility of financial and banking services.

2. Aims and Objectives of the study

The study aims to reflect the current proportionate participation of PWD in the economy and depict their current financial position in comparison with the rest of the non –PWD candidates within the same age bracket (21-41).

To be more specific, the study focuses on:

- i. To find out the **comparative work participation** rate of PWD and Non PWD in both organised and unorganised sector.

- ii. To **identify the** existence of wage parity among PWD and Non- PWD in both organised and unorganised sector
- iii. To analyse comparative awareness and ease of accessibility of financial services (Banking, Loan and Investment services) of PWD and Non-PWD in both organised and unorganised sector.

3. Rationale /Relevance of the Study

Persons with disabilities encounter many disadvantages in society and are often subjected to stigma and discrimination. **They remain largely marginalized, disproportionately poorer, frequently unemployed and have higher rates of mortality.**

Various studies have been undertaken from time to time on social exclusion of PWD and linking disability with poverty. However, there is a gap in analysing the cause-effect relationship of lack in economic participation and unstable financial position of PWD in comparison to Non-PWD.

- i. The study would aim to identify (a) existence of **employment gap** and (b) **wage discrimination** and thereby highlight areas requiring Government interventions.
- ii. The extent of Financial inclusiveness of PWD's thereby reflecting their **access** and **awareness** towards financial services and how far **banks** have been successful in incorporating ICT compliances (issued by RBI) to serve the PWD.

4. Conceptual Framework

UNDP (United Nations Development Program) mentions that many groups are excluded from development because of their gender, ethnicity, age, sexual orientation, disability or poverty. The effects of such exclusion are the rising levels of inequality around the world. Development cannot effectively reduce poverty unless all groups contribute to the creation of opportunities, share the benefits of development and participate in decision-making. The goal of inclusive development is to achieve an inclusive society, able to accommodate differences and to value diversity.

There is presence of an invisibility trap owing to lack of awareness and empowerment of differently-abled persons which like a vicious cycle disrupts their development and participation at large.

European Disability Forum (EDF) policy paper graphically represents the cyclic nature of invisibility:

CYCLE OF INVISIBILITY¹



1. The Cycle of Invisibility 'EDF Policy Paper: Development Cooperation and Disability' prepared by European Disability Forum (EDF) in 2003.

Thus in order to escape from this vicious cycle initiatives for Disability-inclusive development should be taken, as defined by IDDC (International Disability and Development Consortium). Disability-inclusive development refers to "ensuring that all phases of the development cycle (design, implementation, monitoring and evaluation) include a disability dimension and that persons with disabilities are meaningfully and effectively participating in development processes and policies".

Inclusive development also implies a rights-based approach to development, understood in terms of a framework for human development as a process firmly grounded in international human rights standards and focused on the promotion and protection of human rights.

In other words, inclusive development:

- Ensures that persons with disabilities are recognized as equal right-holding members of society who must be actively engaged in the development process irrespective of their impairment or other status such as race, colour, sex, language, religion, political or other opinion, national, ethnic, indigenous or social origin, property, birth, age or other status;
- Assures that development institutions, policies and programs must take into account and be assessed in accordance with their impact on the lives of persons with disabilities and consistent with the promotion and protection of internationally recognized human rights.

Time and now it has been noted that when persons with disabilities are empowered to participate and lead the process of development, the entire community benefits, as their involvement creates opportunities for everyone-with or without a disability.

Thus it is imperative that developmental efforts around the World include disability issues when determining policies, programs, as well as allocating funds for developmental programmes and projects. **Empowering differently-abled persons is a developmental strategy for achieving equality.**

5. Research Question

An extensive study is required to study the extent of parity between work participation and accessibility of financial and banking services of Differently-abled with Non-differently abled people. Thus following are the research questions drawn:

Research Question 1: Is there existence of equal work participation from both differently-abled persons and non differently-abled persons?

Research Question 2: Is there existence of parity in wages for both differently-abled persons and non differently-abled persons?

Research Question 3: Are financial and banking services equally accessible to both differently-abled persons and non differently-abled persons?

6. Research Hypothesis

Formulation of hypothesis helps in validating the research questions. As the study is exploratory in nature in order to answer the above stated research questions, following are the hypothesis drawn

For Research Question 1: Is there existence of equal work participation from both differently-abled persons and non differently-abled persons?

- H01: There lies no significant difference in work participation owing to physical/intellectual disability.

For Research Question 2: Is there existence of parity in wages for both differently-abled persons and non differently-abled persons?

- H02: There lies no significant difference in wage/salary earnings owing to physical/intellectual disability.

For Research Question 3: Are financial and banking services equally accessible to both differently-abled persons and non differently-abled persons

- H03: There lies no significant difference in the ease of accessing Financial /Banking services owing to Disability.

7. Research Methodology

A. Nature of study

The study follows an Exploratory Research Approach as very few previous studies on the subject matter depicting the current scenario are available. To study the identified propositions an **Empirical study** was conducted.

B. Data Source

Both **primary and secondary sources** of data have been used for the purpose of the study.

B.1. Primary data source:

Primary data has been generated through self-structured questionnaire, administered on a sample of 50 adult individuals drawn on convenience sampling basis in Kolkata. A 5 point Likert scale was used for studying the extent of accessibility of financial and banking facilities.

B.2. Secondary data source:

Published electronic disclosures and Annual reports from official websites of:

- ❖ Ministry of Social Justice and Empowerment, Government of India

- ❖ Department of Child development, Women development and Social Welfare, Government of West Bengal
- ❖ Rehabilitation Council of India.
- ❖ Various official bulletins and research papers and journals on disability and inclusive development etc.

C. Research Tools for analysis

To find out answers to the established research questions, data were analysed using the Independent sample T test along with using tabular and graphical representations.

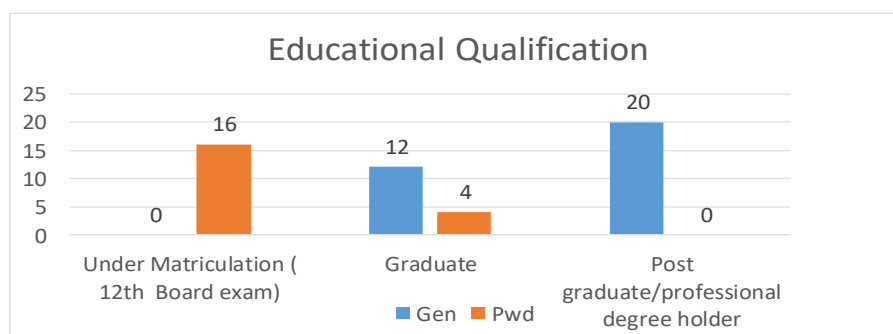
SPSS v 20 software was also used for the analysis.

8. Analysis of Data and findings

TOTAL NO. OF RESPONDENTS		GENERAL(NON PWD)	PWD
GENDER	MALE	30	20
	FEMALE	22	12
AGE	15-30	8	8
	31-45	10	0
	45-60	16	8
Educational Qualification	Under Matriculation (12 th)	4	12
	Graduate	0	16
	Post graduate/professional	12	4
Employment status	Employed	18	0
	Unemployed	30	12
Income /wage earned	1-4999	0	8
	5000-9999	0	4
	10000-14999	0	4
	15000-19999	8	0
	20000-24999	0	0
	25000-29999	4	3
	30000-34999	10	1
	35000-39999	0	0
	40000-44999	0	0
	45000 and more	0	0

From the demographic profile of data, we can see that 60% of the total respondents are people without any type of disability and 40% are those who suffer any kind of disability (above 40%). It is worthy to note here that with respect to employment only 12 out of 20 i.e., 60% of PWD are employed as opposed to 100% employment in case of Non-PWD.

Moreover with respect to education also as the following graph shows majority of PWD fall under the first group that is 'Under Matriculation', negligible portion of them have undergone 'Graduation' and none of them have gone for Post- graduation degree. The situation is much brighter in case of their Non-PWD counterparts where majority have done post-graduation and remaining are at least graduates.



Wage Discrimination and Disability

The Equality and Human Rights Commission 2017 Report found that the Disability pay gap –the difference between what Non-disabled and disabled workers earn is approximately 14.7% .With respect to men this gap stands at approximately 13.6% whereas with women the pay gap is even further exceeded to 17.8%.(EHRC Report: 2017-18).

The focus of our study was also to establish if the pay gap exists in Kolkata w.r.t the selected sample or not. For this an independent sample T test was conducted with the following results:

H0: There is no significant difference in Income/Wage earned on the basis of Disability

H1: There lies significant difference in Income/Wage earned on the basis of Disability

Group Statistics

	Physical/mental Disability	N	Mean	Std. Deviation	Std. Error Mean
Income/Wage earned monthly	No physical/mental Disability	30	6.20	2.592	.473
	Physical Disability	20	1.70	2.105	.471

The income/wage of the group without any disability (N=30) is associated with mean of 6.20 and S.D=2.592 as compared to income /wage of group with disability (N=20) is associated with numerically smaller mean of 1.70 and

Independent Samples Test

		Income/Wage earned monthly	
		Equal variances assumed	Equal variances not assumed
Levene's Test for Equality of Variances	F	.844	
	Sig.	.363	
t-test for Equality of Means	t	6.466	6.742
	df	48	46.016
	Sig. (2-tailed)	.000	.000
	Mean Difference	4.500	4.500
	Std. Error Difference	.696	.667
	95% Confidence Interval of the Difference	Lower	3.101
		Upper	5.899

S.D=2.105.

In order to test the Hypothesis that the income earned by persons with disability and persons without disability are associated with statistically significant different means, an independent T test is conducted and the results as depicted in Table 2 shows p value of <.001 that is at 99% confidence limit the chance of Null hypothesis being true can be rejected or in other chance there is only 1% chance that the Null hypothesis might be true.

Thus at 99% confidence limit we reject Null hypothesis and accept the alternative hypothesis **that Income/wage earned is not independent of Disability.**

Ease of accessing Financial and banking services

Equal Awareness and accessibility of financial & banking services are a bare necessity to ensure full inclusive participation of all segments of the country in the economy and thereby establishing financial independence. Reserve Bank of India with this vision has issued directives (as per RBI report published on 9/11/2017) to make banking and financial services easily accessible to all differently abled people with initiatives like:

- ▶ Dedicated counters and preferences to differently abled people
- ▶ Automatic conversion of status of accounts
- ▶ Designated disability friendly ATMs
- ▶ E-services to facilitate visually impaired i.e., making the web pages disability friendly
- ▶ Easy access of loan and financial services
- ▶ Convenient ramps and sitting arrangements etc.

The study makes an attempt to check how far the initiates have made accessing financial and banking services by differently abled people at par with not differently abled people.

H0: There lies no significant difference in the ease of accessing Financial /Banking services owing to Disability

H1: There lies significant difference in the ease of accessing Financial /Banking services owing to Disability

Group Statistics

	Physical/mental Disability	N	Mean	Std. Deviation	Std. Error Mean
Services provided by your bank	No physical/mental Disability	30	4.03	.718	.131
	Physical Disability	20	3.00	.649	.145
Distance to the bank is cost effective	No physical/mental Disability	30	3.90	.803	.147
	Physical Disability	20	2.60	.821	.184
Confidentiality about customer account information	No physical/mental Disability	30	3.73	.691	.126
	Physical Disability	20	2.00	1.124	.251
Bank employees' attitude and behavior	No physical/mental Disability	30	3.87	.629	.115
	Physical Disability	20	2.80	.768	.172
Financial institution's interest in your problem	No physical/mental Disability	30	3.27	.691	.126
	Physical Disability	20	2.60	.821	.184
Education given by the banks for you to be compatible with the bank services	No physical/mental Disability	30	4.00	.525	.096
	Physical Disability	20	1.70	.801	.179
Branch timings	No physical/mental Disability	30	3.87	.346	.063
	Physical Disability	20	3.60	.821	.184
Banking procedures like documentation & identification	No physical/mental Disability	30	3.87	.346	.063
	Physical Disability	20	3.60	.821	.184
Quick access to your deposit/loan account	No physical/mental Disability	30	4.00	.743	.136
	Physical Disability	20	2.60	.503	.112
Availability of ATM	No physical/mental Disability	30	3.87	.346	.063
	Physical Disability	20	3.60	.503	.112
Availability of disability friendly ATM	No physical/mental Disability	30	1.00	.000 ^a	.000
	Physical Disability	20	1.00	.000 ^a	.000
Insurance services	No physical/mental Disability	30	3.47	.681	.124
	Physical Disability	20	1.70	.923	.206
Mobile banking services	No physical/mental Disability	30	4.20	.407	.074
	Physical Disability	20	2.30	.470	.105
Internet banking services	No physical/mental Disability	30	3.83	.747	.136
	Physical Disability	20	2.20	.410	.092
Overall satisfaction	No physical/mental Disability	30	3.83	.531	.097
	Physical Disability	20	2.60	.821	.184

a. t cannot be computed because the standard deviations of both groups are 0.

Different dimensions are identified and studied to see if the ease of accessing financial and banking services are at par between the two selected groups.

For the study 18 variables are studied on a 5 point Likert scale ranging from not accessible(0) to most easily accessible(5) to study the hypothesis.

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Services provided by your bank	Equal variances assumed	.652	.423	5.175	48	.000	1.033	.200	.632	1.435
	Equal variances not assumed			5.283	43.645	.000	1.033	.196	.639	1.428
Distance to the bank is cost effective	Equal variances assumed	.257	.614	5.559	48	.000	1.300	.234	.830	1.770
	Equal variances not assumed			5.534	40.248	.000	1.300	.235	.825	1.775
Confidentiality about customer account information	Equal variances assumed	3.522	.067	6.760	48	.000	1.733	.256	1.218	2.249
	Equal variances not assumed			6.163	28.606	.000	1.733	.281	1.158	2.309
Bank employees' attitude and behavior	Equal variances assumed	2.257	.140	5.377	48	.000	1.067	.198	.668	1.466
	Equal variances not assumed			5.165	35.183	.000	1.067	.207	.647	1.486
Financial institution's interest in your problem	Equal variances assumed	1.714	.197	3.098	48	.003	.667	.215	.234	1.099
	Equal variances not assumed			2.993	35.960	.005	.667	.223	.215	1.118
Education given by the banks for you to be compatible with the bank services	Equal variances assumed	13.084	.001	12.282	48	.000	2.300	.187	1.923	2.677
	Equal variances not assumed			11.317	29.839	.000	2.300	.203	1.885	2.715
Branch timings	Equal variances assumed	32.044	.000	1.587	48	.119	.267	.168	-.071	.605
	Equal variances not assumed			1.374	23.545	.182	.267	.194	-.134	.668
Banking procedures like documentation & identification	Equal variances assumed	32.044	.000	1.587	48	.119	.267	.168	-.071	.605
	Equal variances not assumed			1.374	23.545	.182	.267	.194	-.134	.668
Quick access to your deposit/loan account	Equal variances assumed	.214	.646	7.367	48	.000	1.400	.190	1.018	1.782
	Equal variances not assumed			7.949	47.974	.000	1.400	.176	1.046	1.754
Availability of ATM	Equal variances assumed	17.352	.000	2.226	48	.031	.267	.120	.026	.508
	Equal variances not assumed			2.069	30.866	.047	.267	.129	.004	.530
Insurance services	Equal variances assumed	.591	.446	7.785	48	.000	1.767	.227	1.310	2.223
	Equal variances not assumed			7.329	32.495	.000	1.767	.241	1.276	2.257
Mobile banking services	Equal variances assumed	2.400	.128	15.200	48	.000	1.900	.125	1.649	2.151
	Equal variances not assumed			14.760	36.710	.000	1.900	.129	1.639	2.161
Internet banking services	Equal variances assumed	7.983	.007	8.908	48	.000	1.633	.183	1.265	2.002
	Equal variances not assumed			9.940	46.625	.000	1.633	.164	1.303	1.964
Overall satisfaction	Equal variances assumed	10.418	.002	6.464	48	.000	1.233	.191	.850	1.617
	Equal variances not assumed			5.943	29.561	.000	1.233	.208	.809	1.657

The analysis shows that all the variables selected to study the ease of accessibility of financial and banking services of the group without any disability (N=30) is as compared to the group with disability (N=20) is associated with numerically smaller mean and standard deviations.

In order to test the Hypothesis holds statistically significant between the two selected groups an independent T test is conducted and the results as depicted in Table 3 shows that p value of <.001 that is at 99% confidence limit. The chance of Null hypothesis being true can be rejected or in other chance there is only 1% chance that the Null hypothesis might be true in majority of the variables (16 out of 18). Specially accessibility towards-

- Disability friendly ATM
- Insurance services
- Mobile banking services

- d. Education given by bank to ease the service and Confidentiality –have specifically shown a higher difference in their mean values depicting a picture of huge disparity.

Only two variables:

- Branch timings and
- Documentation and identification related factors **do not show** a significant difference among the groups.

Thus taking the 16 variables where $p < .001$ at 99% confidence limit we reject Null hypothesis and accept the alternative hypothesis that there lies significant difference in the ease of accessing financial /banking services owing to disability.

9. Conclusion

Work participation whether in form of self -employment or via providing employee services are essential tools of self- financial independence as the income earned via employment not only gives an individual a means of sustaining his existence but also earning economic and social security and acceptability. On the other hand the different financial & banking services **help** an individual to save for contingencies and also plan for a better future.

For maintaining a good independent and financially stable lifestyle all these three aspects should be equally, actively and without any discrimination be made available to all segments of the society.

Any physical disability or intellectual restriction should not be a detriment in access to full participation in the economy.

However the study throws a light towards scenarios where disparity exists in work participation, income/wage earned and also accessing the banking and financial services which hints towards looking at the problem from grass root level being-

1. Disparity embedded in accepting disability as not a failure but just a physical restriction
2. Gap in the education system
3. Lack of infrastructural facilities that could help the differently-abled people to overcome these restrictions
4. Banking facilities being more disability friendly
5. Government initiatives at creating awareness among society

And most importantly self-awareness towards the right and facilities among differently-abled people themselves would definitely bring in a brighter picture.

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An Enquiry into the Challenges of Organic Farming in Sikkim- a study of agriculture and agri-business and rural change in India

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1. Introduction

India was not self-sufficient in food until 1964 and had to repeatedly ask for foreign aid. The Green Revolution was thus, a necessity whose importance cannot be downplayed even today. The use of chemical fertilisers and pesticides resulted in the development of high yielding variety of crops that transformed India from a food importer to a food exporter. At that time, these technological breakthroughs were lauded, and the practices slowly became main stream.

Sixty years later, the side effects of widespread chemical use have started to show. The Malwa region in Punjab has been dubbed as the cancer belt of India – with the unusually high incidence of cancer cases being linked to the excessive use of chemical pesticides by cotton farmers. In its fifth National Report on Desertification, Land Degradation and Drought, the Government of India has conceded that land degradation is a major environmental concern for the country. The report revealed that one-third of India's soil is degraded while 25 percent of land is facing desertification which has affected its productivity and food security of millions across the country.

The solution to the problem is to build a sustainable agricultural system without the use of chemicals – a phenomenon that has been termed as “Organic Farming”. According to the United States Department of Agriculture (USDA), “Organic Farming is a system which avoids or largely excludes the use of synthetic inputs (such as fertilisers, pesticides, hormones, feed, etc.) and to the maximum extent feasible relies upon crop rotations, crop residues, animal manures, off-farm organic waste, mineral grade rock additives and biological system of nutrient mobilisation and plant protection. While the concept of organic farming is new to the country – and to most of the world – it is being increasingly hailed as the safe and preferred alternative to chemical-based farming. With consumers becoming increasingly health conscious, the Indian organic food market is projected to grow over 25 percent by 2020.

In spite of this, organic farming was perceived by many to be a second non-mainstream agricultural alternative – accounting for only 1 percent of the total agricultural produce of the country. However, Sikkim has shown the way for organic farming by becoming the country's first organic state – a move which has emboldened other states (such as Andhra Pradesh) to replicate which has come to be widely known as the “Sikkim model”.

2. Literature Review

Muller (2009) points out the benefits of organic farming as a climate change adaptation and mitigation policy for developing countries. Aher et al. (2012) has examined how organic farming plays a role in the sustainable utilisation of resources in food production and in reducing pollution. However, Wynen and Vanzetti (2000) opine that the success of organic produce would be much greater if the organic produce were priced similarly to conventional produce, as for the most part, the lower demand for organic produce may be attributed to consumer aversion to higher prices.

In contrast, Dimitri and Kemp (2012) argue that farmers are expected to not only earn more but also to turn profits, thus justifying higher prices of organic produce. Siddaraju and Indira (2013) contributed a similar study where they have tried to highlight economic performance of organic and modern agriculture. They found that the performance of organic agriculture was more economically profitable comparing with the modern agricultural system and the income generated from organic agriculture is greater than that of modern agriculture. Singh and Grover (2011) have dealt with economic viability of organic farming on an empirical experience of wheat cultivation in Punjab. The study touches on the major issues of organic farming like area of production, total variable cost per acre and net returns of organic as well as inorganic cultivation. The study has revealed that the major share of organic area was dominated by wheat crop (about 15%) and the total variable cost on per acre for organic wheat cultivation has been found to be less compared to inorganic wheat. Simultaneously, the net returns over variable cost have been found to be higher for organic wheat (Rs.21895/acre) compared to the inorganic variety (Rs. 16700/acre).

Pandey and Singh (2012) hold the opinion that growth of organic farming is relatively slower in India than other countries. According to Reddy (2010), this is due to the fact that organic farming has been largely excluded from the agricultural policy of the country, resulting in less government assistance than in case of conventional farming. Archana (2013) has carried out the study on the role of Indian Government for the development of organic agriculture. The author argued that, for enhancing organic agriculture government interference is much needed in Indian Agricultural sector particularly in organic farming. By providing more subsidies and providing knowledge based on adverse effects of chemical based agriculture sector, organic agriculture can be encouraged.

Other benefits of organic farming have been explored by Subrahmanyeswari and Chander (2011) who examined the possibility of using organic farming as a tool for achieving gender equality in India. Kundu (2012) has reported similar findings by working with women empowerment and has found that participation of women in different socio-economic activities based on the self-help group model has resulted in a distinct improvement in their respective status.

3. Statement of the Problem

Organic farming is a practice that has been historically favoured by the farming community in the state of Sikkim. However in the course of time chemical fertilisers and pesticides replaced organic nutrients.

With reference to the literature on Sikkim there is a plethora of descriptive work and hardly any exploratory efforts. If contemporary issues like community development and sustainable livelihood are taken into consideration, research on organic agriculture in the state would be beneficial at the national level in general and Sikkim in particular. This will have particularly resonant effects in the present scenario when Sikkim is the country's first organic state and other states are aiming to follow its model.

The present study could be beneficial for both policymakers as well as cultivators for the development of organic farming and sustainable livelihood practices in Sikkim. The study has, on a basis of a survey conducted by the authors, prepared a case study that explores the issues of organic farming in Sikkim and its effect on the livelihood of farmers and the economy of the state. It also looks into the problems that organic farming brings in its wake and how they can be mitigated. Thus it could be beneficial for providing a more holistic view of organic agriculture as it is carried out in the state of Sikkim.

4. Objectives of Study

In order to enquire into the challenges of organic farming in Sikkim, the following objectives were laid down:

- Identify the various factors that define success of an agricultural scheme
- Develop quantifiable measures of the factors as identified above
- Assess the challenges faced by the organic farmers in Sikkim
- Develop a model of mitigating said challenges
- Assess the viability of such model in the present context.

5. Research Methodology

In order to achieve the aforesaid objectives, the following research methodology has been adopted in this study:

- i. A case study has been framed after careful consideration. The case study is completely factual, and the data presented therein is true. The study makes an enquiry into the state of affairs of organic farming in Sikkim, with regard to the condition of the farmers, the volume of yield, government aid and marketing initiatives of organic produce.
- ii. The challenges faced by organic farming in Sikkim have been identified on the basis of the case study and the same have been summarised.
- iii. The deeper problems that might arise from the problems and result in the failure of the organic farming initiative in the state have been identified.

6. An In-depth Analysis of the Sikkim Model of Organic Farming

In January 2016, Sikkim became India's first "100 percent organic" state. Today, all farming in Sikkim is carried out without the use of synthetic fertilisers and pesticides, providing access to safe food choices and making agriculture a more environment-friendly activity.

The seeds of the transition from chemical-based to organic farming that Sikkim effected were sown in 2003 when the Pawan Chamling-led government decided to make Sikkim an organic farming state through a declaration in the legislative assembly.

The declaration outlined important measures to discourage use of artificial fertilizers and pesticides and gradually substitute plant nutrients by organic manures and fertilizers to control diseases and pests & insects as well. It also started basic infrastructure and statutory development providing the pre-requisites for initiation of actual organic farming in Sikkim, including the created markets for organic food products along with the evolution of related strategies.

The Government of Sikkim had shown an outstanding inclusiveness through none-left-untouched vision and effective implementation of the organic programme. As a part of the capacity building, Govt. of Sikkim took many steps, from including study of organic farming in the school curriculum to training sessions at micro level.

A state-wide organic farming requires serious infrastructural facilities and basic amenities. The Sikkim Government not only standardised the products as per the market demand but also certified the agricultural products for their marketability. Making availability of recognised marketplace and infrastructural facilities for transportation played a pivotal role in the overall development of Sikkim as an organic state.

The Government of Sikkim realised that a behavioural shift in the habit of farmers to using organic requires a policy makeover where it is necessary to simultaneously encourage organic farming and make the chemical fertiliser and pesticides unavailable.

From 2003, the state began reducing the subsidy on chemical pesticides and fertilisers by 10 per cent every year and banned them completely in 2014. Their sale and use were made punishable by law with an imprisonment of up to three months or a fine of up to Rs 1 lakh or both.

Although there were initial apprehensions about farmers refusing organic techniques, the Sikkimese people were originally organic farmers, well-accustomed to traditional ways of making manures and pesticides. The government campaigned and organised various programmes and seminars to encourage the native people to return to their traditional and biological techniques for making manures and pesticides but in a more scientific way.

The transition from chemical-based to organic farming was easy for Sikkim as the per hectare consumption of fertilisers in Sikkim was already among the lowest in the country (at 5.8 kg per hectare). Farmers had also traditionally never used chemicals in the cultivation of cardamom, one of the main cash crops of the state. The government saw huge potential for the trade of high-value crops such as cardamom and ginger and, hence, the 2003 resolution to the effect was passed in the Sikkim Legislative Assembly.

Of all steps taken by the Sikkim government towards becoming an organic farming state, the largest effort was devoted to getting all its agricultural land (78,000 ha) certified as organic. From the beginning of the state's organic plan in 2003 until 2010, the state had got only 8,000 ha certified. But with the launch of SOM (Sikkim Organic Mission) in 2010, the proportion of certified land in Sikkim saw a steady increase. Farms spread over 18,234 ha were certified in 2010-11, 19,216 ha in 2011-12, and 19,188 ha in 2012-13. Finally, by December 2015, the entire agriculture land in Sikkim had been converted into "certified organic".

The work of over 12 years culminated in the spread of organic farming to over 75,000 hectares of land in Sikkim and it was certified as India's first organic state. Contrary to initial speculation, the title is not merely cosmetic as out of 1.24 million tonnes of organic produce of the country, Sikkim accounts for 80000 million.

7. Case Study

We visited 16 farms spread over the four districts of the state—North Sikkim, South Sikkim, West Sikkim and East Sikkim—in November 2017 and found that the farmers' experience of organic farming was far from satisfactory.

In Poklok-Denchung gram panchayat near Namchi, the headquarters of South Sikkim district, 85-year-old Nar Bahadur Rai is a disappointed farmer who grows maize, ginger and cardamom on their two-hectare (ha) farm. Since 2011-12, when he stopped using synthetic chemicals, his ginger production has plunged to only a third of the amount he used to grow. A fungal disease called sheath blight has affected his crop and Rai has received no medicines for it from the government and that the manure promised was also in short supply.

Six kilometres away, farmer Revathy Sharma faces other challenges. He grows pulses and maize on his small farm of about 0.6 ha. His pulse yield has fallen drastically since he switched to organic farming. “When chemicals were allowed, I could grow 280 to 300 kg of pulses and now, after 4 years, I barely manage to grow 80 to 85 kg,” he says. Sharma cites low productivity of seeds and the outbreak of pest attacks as the culprits.

In West Sikkim district, Dawa Cessering Lepcha, confirms that his ginger yield has halved since he stopped using chemicals. “Pest attacks are common, and we have not received sufficient training on dealing with them. The department taught us how to make some medicine for pest attacks, but that was ineffective,” he says. Sharma from South Sikkim says he has reverted to the traditional practice of using cow dung and cow urine to fight pest attacks, none of which match the effectiveness of chemical pesticides.

Government data shows that apart from Sikkim mandarins (a native orange variety of Sikkim), the productivity of every crop has either remained stable or improved slightly from 2010-11 to 2015-16. But we found that only two of 14 private farmers reported an increase in yield and one said that his ginger yield had stabilised after an initial decline. Seven farmers who grew rice, maize, ginger, cardamom, pulses and vegetables said that their yield has worsened since they stopped using chemicals.

The farmers are unable to charge a premium price for their produce – which is usually the norm for organic produce. One of the farmers told us that ginger used to sell for ₹1,500 per maund (1 maund equals 37 kg), but now fetches only ₹1,000-1,200 per maund. The reasons for this reduced price are varied: some cite a general decline in market prices, while others say organic produce commands a lower price than conventional produce as it tends to spoil faster. Farmers also complain that they still depend on middlemen for the sale of produce, often at exploitatively low prices.

Chumsang Lepcha, a farmer in North Sikkim, owns 7 ha of land and grows maize, cardamom, millets, buckwheat, squash and some vegetables. He also has a vermi-composting pit. Lepchasays that though his crop yield has stabilised since he shifted to organic farming in 2010, it still does not earn him a higher price. The middlemen to whom he sells his produce claim that they do not care whether the food is organic or not.

The state government admits that marketing initiatives are lagging due to the paucity of funds. It has now zeroed in on four high-value crops—large cardamom, ginger, turmeric and buck-wheat—for profitable domestic sale and export. However, not every crop can be processed and the marketing of fresh produce such as fruits and vegetables remains a challenge.

8. Findings

The problems faced by the farmers in Sikkim and the challenges in front of the Sikkim Government which are hampering organic farming from achieving its true potential can be summarised as follows:

Reduction in Agricultural Produce: The major problem plaguing organic farming in the state is decline in yield. Permanent disbandment of chemical-based pesticides have resulted in the development of crop diseases which were easily combated erstwhile. Similarly, the ban on chemical fertilisers has resulted in the absence of high yielding crops. Thus, the farmers are faced with low produce to begin with and even that is reduced by the outbreak of crop diseases and pest attacks which organic methods are unable to combat.

Lack of Proper Government Aid: Although the entire state of Sikkim has been certified as organic, the government does not have the required resources to aid the farmers all throughout the state. Although it is true that the Sikkimese farmers have traditionally tilted towards organic methods, most of them made selective use of chemical pesticides and fertilisers to keep the crops free from disease, pest attacks and to increase their yield and earnings. Although the government had won them over by promising them proper training in the latest techniques in organic farming and in the use of better organic manure and pesticides, it has – according to the farmers interviewed- largely failed in this regard. Training has been sporadic and non-holistic, while the promised new types of manure and fertilisers have largely failed to reach the farmers.

Lack of Proper Marketing Initiatives: One cannot distinguish between conventional produce and organic produce by mere inspection. Organic yield needs to be tagged by a definite form of identification, which would help in justifying their premium prices to interested potential customers. In the same vein, the organic produce from Sikkim was decided by the government to be marketed under the brand name of “Sikkim Organic” so as to distinguish them from general produce and to gain a strong foothold on market niches where the demand of organic produce is

high. However, the initiative has suffered due to paucity of funds and the lack of proper marketing strategies. It would seem that lack of proper funds has rendered the government unable to market all organic produce under the brand “Sikkim Organic” resulting in the new plan to market only four cash crops under that brand. It would seem that the officials in-charge of framing and executing marketing strategies for organic products hail from a conventional agricultural background and do not have a very sound understanding of organic farming.

Distribution Channel: Agriculture, both conventional and organic, are plagued by an inefficient distribution channel in which there is unneeded abundance of middlemen. The middlemen increase the cost of distribution and while when the organic produce reaches the final customer it might cost ₹50, the farmer might get only ₹10, with the remaining ₹40 going to the middlemen. The middlemen are also unsuitable for a state that is fully organic because they do not operate in niche markets and are only concerned with their own profits. Thus, whether the produce they are selling is organically produced or produced through chemical-based farming methods is of no importance to them. They actually damage the entire distribution channel of organic produce.

Land Certification: There are two types of organic certification systems in India: Third Party Certification, which is essential for exports, and Participatory Guarantee System (PGS), meant only for domestic sales. While Third Party Certification is an expensive affair, especially for an individual farmer, PGS involves almost no cost. Sikkim has spent an average of ₹8,400 per ha for three years for third party certification and is now expected to pay about ₹1,425 per ha per annum for renewal of certification. This means that the three-year cost of renewal will be a little more than half the cost of conversion. Between 2010 and March 2016, SOM has spent about ₹77 crores, 78 percent of which (about ₹60 crores) has been spent on certification and related processes. Such high cost of certifications is unsustainable in the long-term and impractical as it deters the government from allocating the budget to more important activities such as training the farmers in the latest methods of organic farming and providing them with effective organic pesticides and manure to increase the yield.

9. Problems That Might Arise of the Challenges

Challenges, when left unsolved may result in several problems. These are summarised as follows:

Migration of Farmers: Generic low yield, destruction of crops by pests and diseases and lack of proper aid from the government might lead the farmers to migrate to non-organic states such as West Bengal. Lowland areas such as Siliguri which are very near to Sikkim have no ban on using chemicals in farming and have high yield which they export and even supply to other states (including Sikkim). Higher yields generate more earnings for farmers in that region and ensure smoother lifestyles, which might motivate farmers to migrate from Sikkim to other parts of the country.

Loss of Organic Produce Market: In between low yields of marketable produce and regular pest and disease outbreaks, there is a large gap between demand and supply of organic produce. Interestingly, Sikkim shifted to organic farming with the aim of becoming self-sufficient in food production – an agenda since forgone by its regular foodcrop imports from neighbouring West Bengal. Dismal distribution channels and the presence of middlemen uninterested in distributing to niche markets results in the failure of Sikkim’s organic produce to meet demands therein. Lack of restriction on imports of cheaper conventional produce from other states has seen the brand “Sikkim Organic” biting the dust as it falls behind in the intense competition on all fronts. All these factors widen the gap between the demand and supply between organically produced crops.

High Food Import Costs

As the gap between demand and supply of agricultural produce widens, it will be increasingly difficult for Sikkim to feed its domestic populace and the tourists that visit the state every year. Ever since the state went fully organic the influx of tourists has seen an increase of 25 percent annually – due to Sikkim’s focus on wellness tourism – which compounds problems. The state has already been actively engaged in bringing agricultural products from other states to meet the gap in supply. The cost of such buyouts will only increase with time if the core challenges are not addressed and mitigated.

10. The Way Forward – Mitigating Challenges to Organic Farming in Sikkim

As has been previously explained in detail, the challenges that Sikkim faces in the realm of organic farming will deter it from achieving the true potential. In addition to this, the challenges are of vicious nature – birthing more

long-term problems which would be difficult to solve. Thus, it is necessary to have a plan for the mitigation of these challenges. After careful consideration, we have the following to be sustainable measures to mitigate the challenges:

- a. Sikkim must aim for an improvement in its organic farming policy and implementation. Instead of spending a large chunk of its budget on third party certification, Sikkim must demarcate areas which are not expected to contribute to export and switch to PGS certification.
- b. It must ensure greater focus on training farmers to help them sustain organic farming. The state can achieve this by increasing its budget allocations to incorporate more training sessions for farmers and ensuring availability of bio-inputs. It must support farmers till the time each farmer is able to manage her farm with inputs produced on the farm itself. Sikkim must also assess the performance of the policy so far to ascertain which areas need work. It is important for the state to get data on the frequency and nature of pest attacks and organise research in those areas.
- c. The state must ensure that farmers get the price organic food deserves, even for fresh produce. Marketing of produce must be streamlined to enable the average consumer in Sikkim to access locally grown organic food. It is not enough to state that organic farming has proved beneficial to the environment in Sikkim. The state must commission an impact study to evaluate whether the shift to organic farming has had the desired effect.
- d. Produce of Sikkim have always gone to traditional markets via established channels. But now with new produce and that too organic, disruption of traditional markets will happen. This will engender new opportunities to garner greater value. These opportunities must be seized. Export markets can be tapped to get better value but then produce must be at a particular scale as well as quality standards.
- e. If the pricing of produce is stabilised and with modern farm practices, organic farming proposes to change the life and lifestyles of our farmers and young people as much as it did during the green revolution in Punjab.

11. Conclusion

It is no secret that the current method of chemical-based farming is not a sustainable agricultural practice as it is harmful to both humans and the environment. Organic farming is the only viable alternative that has presented itself. In this context, the story of Sikkim takes the spotlight since it has shown the courage to be the only state in the country to produce crops in a completely organic manner. While all of us pray for the success of this initiative, as such success will open doors to further innovation in the field of organic farming, the Sikkim model is plagued with several challenges which need to be nipped in the bud so as to prevent them from burgeoning to unmanageable size. The present study has taken a step in that regard, citing possible solutions to the challenges. Further research into the state of affairs of organic Sikkim needs to be carried out in order to regularly assess the situation and provide mitigating measures which will benefit the government, the farmers, the environment and, above all, India.

12. Limitation of the study

The study shall be processed further using primary data and applying required statistical tools.

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Present Status Of Integrated Reporting In India: An Analytical Study

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1. Introduction

Corporate reporting has focused mainly on the financial performance of companies. It provided the investors with an insight into the performance of the companies evaluated on key financial indicators. But with the rapid spread of globalization, business leaders have begun to realize that we live in an inter-connected world where mutual interdependence forms the basis of our existence and progress. For the survival and the growth of the business it is not sufficient to limit our thoughts and concerns within the boundaries of the organization. Thus the spectrum of initiatives around CSR is an ever expanding one that may include the employees, shareholders, the customers, the suppliers, the government, the natural environment and even the competitor. Moreover with increasing thrust on responsible Corporate Governance, there has been a shift from preoccupation with interests of shareholders to engagement with concern for multiple stakeholders from diverse constituencies. At a micro level, with the championing of transparency as a value that demands availability and smooth flow of information, companies can no longer afford to manipulate the customers and arm-twist the vendors. At a macro level, corporate leaders are compelled to consider the impact of their business decisions on the community and the environment at large – the distant others. Further, with increasing dependence on stock market for equity financing, there is also the growing need to attract and fulfil the expectations of conscious investors who value the goodwill of companies that invest in CSR initiatives. CSR today is a strategic imperative directly linked to business results for long term sustainability of organizations. Communication to stakeholders thus assumes prime importance. We have travelled a long way and thus we find that apart from financial disclosures companies are going in for non-financial disclosures as well, be in the websites or annual reports or sustainability reports or Business Responsibility Reports. However, the information provided in them is disjointed. They're often generated by different departments within the organization and are not products of integrated thinking.

Integrated Reporting is the company's financial report and its corporate social responsibility or sustainability report integrated into a single document. An Integrated Report provides its readers with a complete picture of how an organization is performing by also including non-financial information on environmental, social and governance performance along with financial information. Integrated Reporting is based on integrated thinking by considering the various types of capital, their interaction and impact on short, medium and long term prospects of the company and their link with the strategy, performance and governance of the company.

The International Integrated Reporting Council (IIRC) was established in August 2010. Its main aim was to reduce the gap between current reporting and information needs of investors and other stakeholders through the introduction of the concept of Integrated Reporting (IR). Integrated Reporting applies principles and concepts that focus on bringing in efficiency to the reporting process, and adopting 'integrated thinking' as a way of reducing duplication. It improves the quality of information made available to the stakeholders of the company to enable a more efficient and productive allocation of capital. Its focus is on value creation, and on the 'capitals' used by the business to create value over time. There is not, at present, a universally agreed framework or template for an integrated report, although IIRC members agreed to an International <IR> Framework in December 2013 which specifies the different capitals and elements that help in understanding the value of a firm.

Capitals

- Financial Capital
- Manufactured Capital
- Intellectual Capital
- Human Capital

- Social and Relationship Capital
- Natural Capital

Content Elements

- Organizational overview and external environment,
- Governance
- Business Model
- Risk and Opportunities
- Strategy and Resource Allocation
- Performance
- Outlook

Besides in India recently, a circular has been released by SEBI that encourages Top 500 BSE listed companies to use Integrated Reporting as a framework to improve the quality and relevance of the information. SEBI said that information related to Integrated Reporting should be provided in the Annual Report separately or by incorporating it in the 'Management Discussion & Analysis' or by preparing a separate report.

2. Literature Review

The first publication about integrated reporting was in June 2005, by Allen White, one of the co-founders of the GRI, where he had observed integrated reporting as the future of corporate reporting. Globally speaking studies on integrated reporting are more as compared to that of India. Eccles and Krzus (2010) in their study found that the integrated reporting has improved the credibility and accuracy of sustainability information due to an improvement in the management information systems and control procedures related to the sustainability data. DeVilliers, Rinaldi & Unerman (2014) in their paper made an attempt to study and synthesize the insights from accounting and accountability research into the rapidly emerging field of integrated reporting and proposes a comprehensive agenda for future research in this area. They concluded that there is a rapid development of integrated reporting policy and early developments of practice of Integrated Reporting. They also stated that at present there are theoretical and empirical challenges because of the different ways in which integrated reporting is understood and enacted within institutions. The paper also highlights many areas where further robust academic research is needed to guide developments in policy and practice. Ioana & Adriana (2013) in their study provided a very brief history of integrated reporting. It identifies three stages in the evolution of the integrated report: The emergence of non-financial reporting initiatives, the sustainability era and Contemporary integrated reports. The paper does not specify specific areas of future research but implies that one could consider the role of global reporting standards to encourage the production of high quality integrated reports. Humphrey, O'Dwyer & Unerman (2014) examined the rise of Integrated Reporting. The paper studies the rise of Integrated Reporting through the attempts made by the International Integrated Reporting Council (IIRC) to institutionalize such reporting practice as being critical not only to the longer term relevance and value of corporate reporting, but also to the maintenance of social well-being and the longer-term sustainability of businesses. The paper finally reveals a number of important opportunities and challenges for both theoretical and practical development through its consideration of the relationship between conceptualizations of enlightened corporate reporting and enlightened investment behavior. From the Indian perspective we find very limited research has gone in to the aspect of integrated reporting. For instance Thiagarajan & Baul (2014) wanted to provide an integrative and comprehensive summary on both the theoretical and empirical underpinnings as well as to focus readers on the important issues affecting the understanding and application of value reporting and integrated reporting. They concluded by stating that value reporting and integrated reporting have a holistic approach. Application and performance of all the resources are reported through an integrated report which would be very beneficial for the stakeholders. Usha Kiran & Goud (2015) in their study wanted to analyze and explore the need for Integrated Reporting in Banks. They concluded that Indian Banks should adopt and establish a sound reporting process for identifying its material issues and target audience, stakeholders before embarking on the integrated reporting agenda. The more they project their sustainability, higher their stakeholders' confidence. Further they emphasized that Indian Banks should now move from limited or partial integration to full integration.

3. Objectives

- To understand the need and importance of Integrated Reporting.
- To analyze the extent to which the companies in India are integrating financial and non-financial data in their annual reports.

- To construct an Integrated Reporting Index for the financial year 2016-17 across the selected companies and to differentiate the companies on that basis.

4. Methodology

Top hundred most valuable companies were selected from, the ET 500 list published in Economic Times, belonging to the Times Group, for the year 2016-17 as per average market capitalization. Market capitalization refers to stock price multiplied by the number of outstanding shares. Average market capitalization is chosen to rank the 500 most valuable companies since this parameter gives us an indication of not only the present but future prospects of the company as well. Now from the list of five hundred most valuable companies for the year 2016-17 the common companies which had succeeded in maintaining its rank and position within the list of “500 most valuable companies” for two years was selected. From this total data set, banking companies were excluded. An empirical and analytical study was undertaken for the study for the financial year 2016-17 to give us an overview about integrated reporting for said period. The study is based on secondary sources, i.e., by analyzing the company’s annual reports. An integrated report is intended to be more than a summary of information in other communications (e.g., financial statements, a sustainability report, analyst calls, or on a website). It may be either a standalone report or it can be included as a distinguishable, prominent and accessible part of another report. In India integrated reporting normally has been made a part of the annual report and hence the company annual reports were studied and analyzed. Data was then generated from such an analysis using Longitudinal Qualitative Document Analysis. Qualitative Document Analysis according to Glaser and Strauses (1967) described the meanings, prominence and the theme of messages and emphasized the understanding of the organization as well as how it was presented.

5. Analysis and Discussion

Section I: Companies that publish an Integrated Report as mentioned by IIRC

Integrated reporting is a management and communication tool which helps in understanding and measuring the organizations value now and in the future. The main objective of an integrated report is not to provide more information, but to provide better information to the investors. Thus, a company in its integrated report needs to address the following areas:

- Organizational overview
- Governance
- Business model
- Risk and opportunities
- Strategy and resource allocation
- Performance
- Outlook

Organizations also mainly depend on the various forms of capital. They are Financial Capital, Human Capital, Intellectual Capital, Manufacturing Capital, Natural Capital and Social and Relationship Capital. These capitals are stores of value that become inputs to the organization’s business model. They increase, decrease or transform through the activities of the organization.

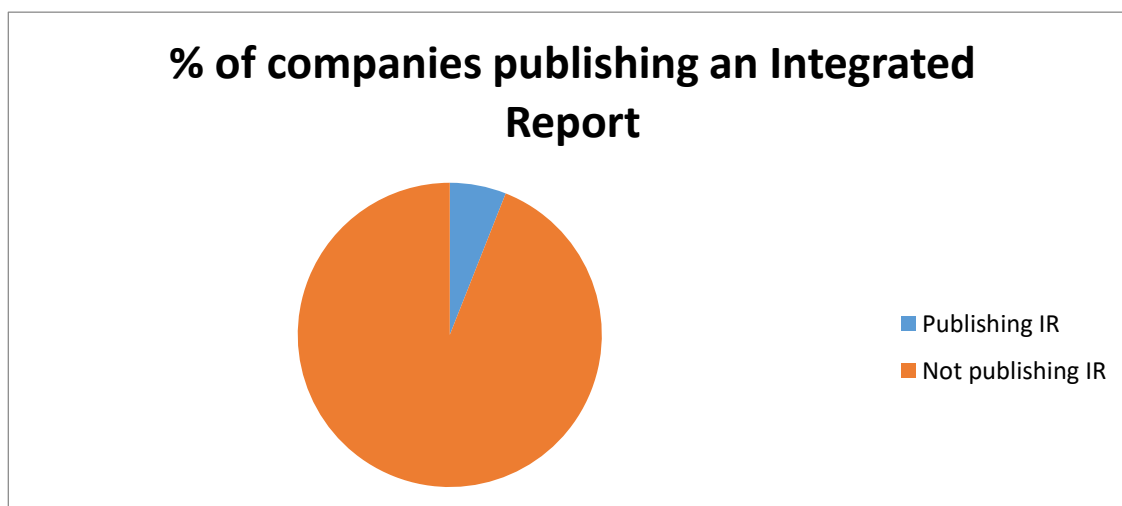
Annual reports of selected 100 companies from the ET survey have been studied to calculate disclosure score of reporting elements and capitals. ‘1’ is assigned for reporting and ‘0’ for not reporting the elements and capitals for making a check list.

Thus, from our analysis we can see that, out of the 100 companies, only 6 companies have disclosed information and spoken about all the content elements and capitals specified by IIRC in the year 2016-17.

Company Name	Sector
Reliance Industries Ltd.	Conglomerate
Tata Motors Ltd.	Automobile Sector
Tata Steel Ltd.	Manufacturing Sector
Wipro Ltd.	Information Technology Sector

Tata Chemicals Ltd.	Manufacturing Sector
Titan Industries Ltd.	Consumer Packaged Sector

The main aim of Integrated Reporting was to reduce the gap between current reporting and information needs of investors and other stakeholders. In the chart below, we see that only 6% of the companies published an Integrated Report in the year 2016-17, thus showing the real picture of Integrated Reporting in India. Out of the top 100 companies, 94% of the companies still fail to show the complete picture of how the organization is performing.

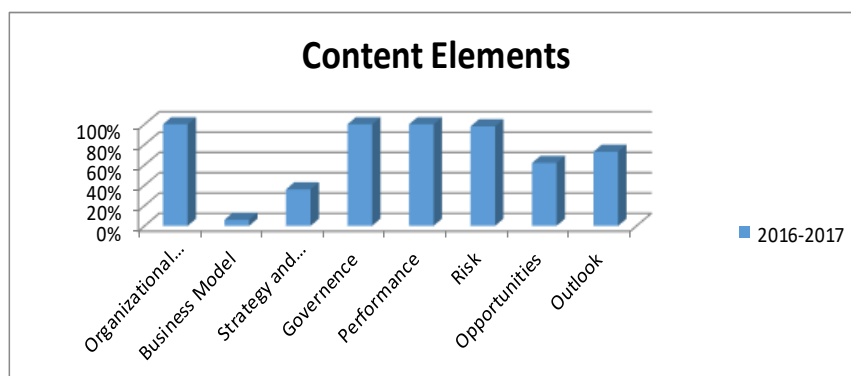


It is also observed that out of the 6 companies, 2 companies i.e. Tata Steel and Tata Chemicals, belong to the manufacturing sector thus showing that the manufacturing sector is slowly and steadily understanding the importance of providing its customers with a complete picture of how it is performing by also including non-financial information on environmental, social and governance performance along with its financial information.

Section IIa: Companies That Provide Information about Different Content Elements

The table below shows the percentage of companies who disclose the different content elements in the year 2016-17. For the above data to be presented we have compiled the presence and absence of the particular content element for top 100 companies as per the ET survey. '1' is assigned for the presence and '0' for absence the elements for making a check list.

Content Elements	2016-2017
Organizational overview and external environment	100%
Business Model	6%
Strategy and Resource Allocation	36%
Governance	100%
Performance	100%
Risk	98%
Opportunities	62%
Outlook	73%



It has been seen that all the 100 companies have disclosed information regarding their business overview, performance and their governance model. The content element of Governance talks about the organization's leadership structure also including the skills and diversity i.e. the background, gender, competence and experience of those charged with governance. The main goal of Integrated Reporting is understanding value creation over time. In this respect, governance element shows how remuneration, incentives and proper functioning of the company are linked to value creation in the short, medium and long term, including how they are linked to the organization's use of and effects on the capitals and therefore to maintain stakeholders interest in the company, it is seen that the companies focus on governance as an important content element of integrated reporting.

Another content element with 100% disclosure is Performance. It mainly concentrates on stakeholder relationships and whether the organisation has been successful in meeting the stakeholders needs and interests or not. So, it becomes very important for the company to present its performance report which mainly shows the link between past and current performance.

At the same time, it can also be noted that business model is presented by the least number of companies. It is seen that only 6 companies out of the top 100 companies show their business model, which basically includes key inputs, business activities, output and outcomes. It is also to be noted that companies like Indian oil corporation, Airtel, ONGC, etc, still do not present its business model in their annual report. The reason could be related to the fact that any failure in the achievement of the stipulated growth can lead to the destruction of company's value created over the time and this will be a great setback for the company.

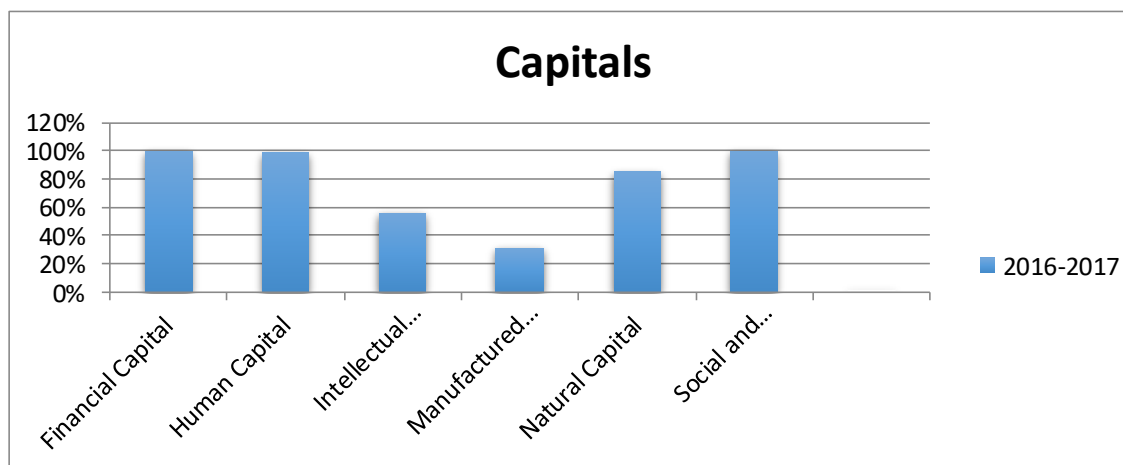
Section IIb: Companies That Disclose the Various Capitals

For their success, organizations mainly depend on the various forms of capital. They are Financial Capital, Human Capital, Intellectual Capital, Manufacturing Capital, Natural Capital and Social and Relationship Capital. These capitals are stores of value that become inputs to the organization's business model. They increase, decrease or transform through the activities of the organization. The table below shows the percentage of various capitals disclosed by the top 100 companies. '1' is assigned for the presence and '0' for absence the various capitals for making a check list.

Capitals	2016-2017
Financial capital	100%
Human Capital	99%
Intellectual Capital	56%
Manufactured Capital	31%

Natural Capital	85%
Social and Relationship Capital	100%

After going through the annual reports of the top 100 companies it was observed that almost all the companies had disclosed and spoken about the Financial, Human and Social and Relationship Capital.



Intellectual capital is a key element in an organization's future earning potential, with a tight link between investment in R&D, innovation, human resources and external relationships, which can determine the organization's competitive advantage. The companies in today's competitive world prefer not to disclose their intellectual property and hence we see that only 56 companies out of 100 companies disclose their intellectual capital.

Manufactured capital is basically human-created, production-oriented equipments and tools. This capital contributes to the firm's productive capacity and therefore still many companies prefer not to disclose their manufactured capital. As it can be seen that, only 31 companies out of 100 companies disclose information regarding the manufactured capital.

COMPANY NAME 2016-2017	IR SCORE	INTEGRATION LEVEL
Indian Oil Corporation Ltd.	78.57	HI
Reliance Industries Ltd.	100	HI
Tata Motors Ltd	100	HI
Bharat Petroleum Corporation Ltd.	78.57	HI
Hindustan Petroleum Corporation Ltd.	85.71	HI
Rajesh ExportsLtd.	71.42	LI
ONGC	50	LI
Tata Steel Ltd.	100	HI
TCS Ltd.	85.71	HI
Bharti Airtel Ltd.	64.28	LI
Larsen & Tourbo Ltd.	85.71	HI
Hindalco Industries Ltd.	71.42	LI
Coal India Ltd.	78.57	HI

NTPC Ltd.	92.85	HI
Mahindra & Mahindra Ltd.	78.57	HI
Vedanta Ltd.	92.85	HI
Infosys Ltd.	85.71	HI
Maruti Suzuki Ltd.	71.42	LI
Gail India Ltd.	85.71	HI
Wipro Ltd.	100	HI
HDFC	64.28	LI
Adani Enterprises Ltd.	85.71	HI
HCL Technologies Ltd.	71.42	LI
JSW Steel Ltd.	92.85	HI
ITC Ltd.	64.28	LI
Mangalore Refinery and Petrochemicals Ltd.	78.57	HI
Steel Authority of India Ltd.	92.85	HI
Tata Power Ltd.	92.85	HI
Motherson Sumi Systems Ltd.	78.57	HI
Grasim Industries Ltd.	78.57	HI
Vodafone	71.42	LI
Redington India Ltd.	64.28	LI
Hindustan Unilever Ltd.	92.85	HI
Ruchi Soya Industries Ltd.	78.57	HI
Hero MotoCorp Ltd.	78.57	HI
Sun Pharma Industries Ltd.	78.57	HI
Bharat Heavy Electricals Ltd.	78.57	HI
Power Finance Corporation Ltd.	78.57	HI
Petronet LNG Ltd.	64.28	LI
Tech Mahindra Ltd.	78.57	HI
Chennai Petroleum Corporation Ltd.	64.28	LI
UltraTech Cement Ltd.	64.28	LI
Adani Power Ltd.	64.28	LI
Rural Electrification Corporation Ltd.	71.42	LI
COMPANY NAME 2016-1017	IR SCORE	INTEGRATION LEVEL
Bajaj Auto Ltd.	64.28	LI

Jet Airways India Ltd.	50	LI
Reliance Communication Ltd.	57.14	LI
Power Grid Corporation of India Ltd.	71.42	LI
Ashok Leyland Ltd.	64.28	LI
Tata Communication Ltd.	64.28	LI
Reliance Infrastructure Ltd.	57.14	LI
MMTC Ltd.	64.28	LI
Jindal Steel & Power Ltd.	64.28	LI
Tata Chemicals Ltd.	100	HI
Jaiprakash Associates Ltd.	50	LI
Hindustan Zinc Ltd.	78.57	HI
Asian Paints Ltd.	71.42	LI
Dr. Reddy's Laboratories Ltd.	71.42	LI
EID Parry India Ltd.	71.42	LI
Lupin Ltd.	71.42	LI
Videocon Industries Ltd.	64.29	LI
Amtek Auto Ltd.	78.57	HI
Gitanjali Gems Ltd.	64.28	LI
Aurobindo Pharma Ltd.	64.28	LI
PTC Ltd	64.28	LI
Cipla Ltd.	85.71	HI
GMR Infrastructure Ltd.	64.29	LI
MRF Industries Ltd.	78.57	HI
Bajaj Finserv Ltd.	57.14	LI
UPL Ltd.	78.57	HI
Alok Industries Ltd.	85.71	HI
Bharti Infratel Ltd.	78.57	HI
Sundaram Clayton Ltd.	78.57	HI
Eicher Motors Ltd.	71.42	LI
LIC Housing Finance Ltd.	71.42	LI
CESC Ltd.	71.42	LI
Torrent Power Ltd.	64.28	LI
ACC Ltd.	100	HI
Apollo Tyres Ltd.	92.85	HI
Coromondal International Ltd.	85.71	HI

TVS Motor Company Ltd.	78.57	HI
Siemens Ltd.	85.71	HI
Titan Industries Ltd.	100	HI
Godrej Industries Ltd.	78.57	HI
Oil India Ltd.	71.42	LI
Reliance Power Ltd.	57.14	LI
Bosch India Ltd.	85.71	HI
Suzlon Energy Ltd.	64.28	LI
State Trading Corporation of India	64.28	LI
United Spirits Ltd.	64.28	LI
Chambal Fertilizers and Chemicals Ltd.	64.28	LI
COMPANY NAME 2016-2017	IR SCORE	INTEGRATION LEVEL
Rain Industries Ltd.	64.28	LI
JSW Energy Ltd.	57.14	LI
Shriram Transport Finance Company Ltd.	64.28	LI
NHPC Ltd.	71.42	LI
Zuari Agro Chemicals Ltd.	57.14	LI
Reliance Capital	64.28	LI
Cadila Healthcare Ltd.	64.28	LI
Shree Renuka Sugars Ltd.	71.42	LI
Future Enterprises Ltd.	71.42	LI

HI: High Integration; LI: Low Integration

HIGH INTEGRATION	LOW INTEGRATION
Indian Oil Corporation Ltd.	Rajesh Exports Ltd.
Reliance Industries Ltd.	ONGC
Tata Motors Ltd	Bharti Airtel Ltd.
Bharat Petroleum Corporation Ltd.	Hindalco Industries Ltd
Hindustan Petroleum Corporation Ltd.	Maruti Suzuki Ltd.
Tata Steel Ltd.	HDFC
TCS Ltd.	HCL Technologies Ltd.
Larsen & Turbo Ltd.	ITC Ltd.
Coal India Ltd.	Vodafone

NTPC Ltd.	Redington India Ltd.
Mahindra & Mahindra Ltd.	Future Enterprises Ltd.
Vedanta Ltd.	Petronet LNG Ltd.
Infosys Ltd.	Chennai Petroleum Corporation Ltd.
Gail India Ltd.	UltraTech Cement Ltd.
Wipro Ltd.	Adani Power Ltd.
Adani Enterprises Ltd.	Rural Electrification Corporation Ltd.
JSW Steel Ltd.	Bajaj Auto Ltd.
Mangalore Refinery and Petrochemicals Ltd.	Jet Airways India Ltd.
Steel Authority of India Ltd.	Reliance Communication Ltd.
Tata Power Ltd.	Power Grid Corporation of India Ltd.
Motherson Sumi Systems Ltd.	Ashok Leyland Ltd.
Grasim Industries Ltd.	Tata Communication Ltd.
Ruchi Soya Industries Ltd.	Reliance Infrastructure Ltd.
Hindustan Unilever Ltd.	MMTC Ltd.
Sun Pharma Industries Ltd.	Jindal Steel & Power Ltd.
Bharat Heavy Electricals Ltd.	Jaiprakash Associates Ltd.
Power Finance Corporation Ltd.	Asian Paints Ltd.
Tech Mahindra Ltd.	Dr. Reddy's Laboratories Ltd.
Tata Chemicals Ltd.	EID Parry India Ltd.
Hindustan Zinc Ltd.	Lupin Ltd.
Amtek Auto Ltd.	Videocon Industries Ltd.
Cipla Ltd.	Gitanjali Gems Ltd.
MRF Industries Ltd.	Aurobindo Pharma Ltd.
HIGH INTEGRATION	LOW INTEGRATION
Alok Industries Ltd.	PTC Ltd
Bharti Infratel Ltd.	GMR Infrastructure Ltd.
Sundaram Clayton Ltd.	Bajaj Finserv Ltd
UPL Ltd.	Eicher Motors Ltd.
ACC Ltd.	LIC Housing Finance Ltd.
Apollo Tyres Ltd.	CESC Ltd.
Coromondal International Ltd.	Torrent Power Ltd.
TVS Motor Company Ltd.	Oil India Ltd.
Siemens Ltd.	Reliance Power Ltd.
Titan Industries Ltd.	Suzlon Energy Ltd.
Bosch India Ltd.	State Trading Corporation of India

Godrej Industries Ltd.	United Spirits Ltd.
Hero MotoCorp Ltd.	Chambal Fertilizers and Chemicals Ltd.
	Rain Industries Ltd.
	JSW Energy Ltd.
	Shriram Transport Finance Company Ltd.
	NHPC Ltd.
	Zuari Agro Chemicals Ltd.
	Reliance Capital
	Cadila Healthcare Ltd.
	Shree Renuka Sugars Ltd.

6. Conclusion

An Integrated report helps its readers to understand the value creation process in a better way which will lead to them making better and informed decisions. Integrated reporting benefits the organisation both internally by helping the companies to understand the value creation process as well as externally by presenting the companies reports in such a way that it clearly shows its value to its stakeholders.

For this purpose, our study gives us an overview about integrated reporting in India presently. Our study on the top 100 companies of India shows that integrated reporting is slowly growing as around 6% companies have already presented integrated reports. The study also revealed that, with an average IR Score of 74.56%, 46% of the companies chosen for our study are highly integrated which shows us that these companies are ready and are on its way to adopt integrated reporting in the coming years. But at the same time, around 54% of the chosen companies fall below the IR Score of 74.56%, thus indicating that they are Low integrated companies. So steps should be taken to encourage these companies to adopt integrated reporting. This would not be a simple task to achieve as it would require everyone, i.e. from all persons to companies, in India to understand the benefits of integrated reporting and encourage the reporting of financial as well as non- financial information. Finally it is also observed that the tendency to report non-financial information among the various companies is growing and is likely to continue.

7. Limitation and Further Scope of the Study

The study was conducted and observations were made completely based on secondary data i.e. by studying the annual reports of the top 100 companies selected for the study. Keeping the time constraint in mind, only the top 100 companies from the ET survey could be selected. To make a proper study on this topic, a larger sample size for a longer period of time would be very helpful.

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Pioneering a Framework to Assess Customer Acceptance towards 24x7 Convenience Stores: A Study in Kolkata

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1. Background Observations

The retail sector in India has borne testimony to remarkable transformations and is one of the fastest growing in the world (IBEF, 2019). It has been evolving significantly from traditional-format shops to large-scale multi-format stores (Kejriwal, 2018). In 2017, India had overtaken China to claim the foremost spot in terms of retail expansion across the world (GRDI Report, 2017). Such an unprecedented growth may be attributed to an array of boosters ranging from rapid urbanisation and digitisation, escalating disposable incomes and lifestyle changes, especially in case of the burgeoning middle-class populace (Kejriwal, 2018). Retail encompasses all the activities involved in selling goods or services to the final consumers for personal, non-business use (Kotler & Keller, 2015). It is broadly categorized under two heads, organized and unorganized (Khan & Sharma, 2017). Organized retailing refers to the various trading activities undertaken by licensed retailers under a single roof, usually in a fixed location. Such retailers constitute the corporate-backed retail chains and hypermarkets, departmental stores, discount stores, drug stores, factory outlets, and large retail businesses. On the other hand, unorganized retailing refers to the archetypal form of low-cost retailing, and happens to be the most high-volume and discernible form of retailing in India. (Raghvendra, 2014) These constitute the local *baniyas* in a given neighbourhood, general stores, local *kirana* shops, provision stores, local markets, hand carts, pavement vendors, fruit and vegetable vendors, convenience stores, weekly haats and bazaars, to name a few.

1.1 The Concept of '24x7' Convenience Stores

Convenience stores are establishments that cater to the everyday requirements of consumers by selling daily-needs products such as toiletries, dairy products, groceries, snack foods, soft drinks to name a few. A 24x7 Convenience Store is a standalone small retail outlet in a convenient location, catering to daily needs of the consumers staying in the vicinity, 24 hours a day, 365 days in a year. Convenience Stores offer a variety of products ranging from groceries, snacks, dairy products, beverages and confectioneries to newspapers, magazines as well as stationery items. Convenience stores enable consumers to make purchases in a prompt manner without having to surf through a large-format retail store and wait in tedious checkout processes, which makes it the most convenient option, especially for working adults (World Bank, 2017).

India bore testimony to the launch of the '24Seven' retail stores in 2005, by Samir Modi. These stores were positioned as India's first convenience store chain that stays open round the clock. Such stores provided Indian consumers with a fascinating shopping experience, comparable to international shopping experiences, with product offerings ranging from ready-to-eat foods, beverages, groceries, provisions as well as versatile convenience services across 24 hours in a day, seven days a week. Presently, there are 101 '24Seven' Stores in India, in the states of New Delhi, Chandigarh, Haryana, Punjab and Uttar Pradesh (Lamba, 2018).

1.2 The Concept of the 'Product Acceptance Model'

From a universal perspective, acceptance is an antagonism to the term refusal and means the positive decision to use an innovation (Taherdoost, 2019). Hence, it is obligatory for marketers to comprehend and subsequently address all the pertinent issues influencing the behaviour of consumers towards a new concept or product.

The current study proposes a novel approach to understanding how consumers adopt to a new concept or a product. In this light, the Product Acceptance Model may be construed as a theory, which evaluates the willingness and perception of the consumers to accept and use a new product. The theory suggests that when users are presented with a new concept and/or product, a number of factors influence their decision about how and when they will use that particular product and/or concept. The proposed model has been developed on the lines of the Technology Acceptance Model developed by Davis (1985). There are multiple factors, which could be used to analyse the levels of acceptance of consumers to the new concept of retail shopping in 24x7 convenience stores. With the aid of this model, marketers

shall gain a more holistic insight into the positioning of similar product and/or concepts in the minds of their consumers, thus, it enabling them to make requisite customizations.

Thus, the current study proposes the development of a new Product Acceptance Model (PAM) in order to ascertain the acceptance of consumer towards 24x7 convenience stores in the city of Kolkata. The study also endeavours to ascertain the demographic impact on consumer acceptance of 24x7 convenience stores in the city. Additionally, the study aims to gauge the consumption preferences of respondents as well as determine the most pertinent factors influencing the consumer perception towards such 24x7 convenience stores in the city.

2. Background Literature

A.T. Kearney's Global Retail Development Index puts India at the top of the list of 30 developing countries, ahead of China, which has been a long time index leader. India's retail sector is witnessing a growth at an annual rate of 20% (Kearney, 2017). Digitization, rising purchasing power of consumers, urbanization and rapidly changing lifestyle of the consumers are the major factors that have led to the growth of the estimated growth of consumer expenditure to \$3,600 billion by 2020 from \$1,824 billion in 2017 (Verma, 2019). Nargundkar (2010) observed that a safe and secure environment would embolden the establishment of 24-hour convenience stores and the operation of shopping plazas, while encouraging shopping expeditions for the entire family. The presence of adequate parking facilities or excellent public transportation would further motivate consumers to be more mobile in their choice of retail stores. Modi (2014) observed that the time was ripe for 24x7 convenience stores to increase their retail footprint across India in a rapid manner. Despite the presence of the concept, brand and demand for round-the-clock-emergency, casual or impulse shopping, there is a need to boost awareness and footfalls. The audience could encompass double-income households, busy professionals with no time during the day or young adults seeking instant gratification.

The Technology Acceptance Model (Davis, 1985) comprises of core variables of user motivation, in terms of perceived ease of use (PEU), perceived usefulness (PU), and attitudes toward technology (ATU), in addition to the outcome variables, namely, behavioural intentions (BI) and actual technology use (U). Of these variables, perceived usefulness (PU) and perceived ease of use (PEU) are considered key variables that directly or indirectly explain the outcomes (Marangunić and Granić, 2015). Davis (1989) refers to perceived ease of use as the degree to which a person believes that using a particular system would be free of effort, while he defines perceived usefulness as the degree to which a person believes that using a particular system would enhance his or her job performance. An array of subsequent studies have extended the TAM to include subjective norm as an antecedent of technology adoption. Subjective norm has had a mixed and inconclusive role; it has been defined as a person's perception that most people who are important to him or her think he or she should or should not perform the behaviour in question (Fishbein and Ajzen, 1975).

The TAM is the backbone of the Product Acceptance Model (PAM) model developed in the current study. The proposed Product Acceptance Model (PAM) is a theory in the context of retail consumer behaviour that models how retail shoppers come to accept and shop from a new retail store format. The model puts forward that when shoppers are presented with a new retail store format such as a 24x7 convenience store, a host of factors influence their decision about how and when they will choose to visit and shop from it.

3. Formulation of Hypotheses

As mentioned earlier, the objective of the current study is to probe into the consumer acceptance and behaviour towards 24x7 convenience stores in Kolkata. The study analyses various factors, which could be beneficial in understanding the perception of the target audience towards this new concept. Based on the research gap identified in the study, the current study proposes the following hypotheses that are deliberated upon below.

Hypothesis 1: There exists a significant relationship between Gender and Searching for Necessity Products in 24x7 Convenience Stores.

It is an established fact that male and female respondents behave and respond differently to factors influencing their buying behaviour. Hence, it is relevant to determine whether gender plays any role on the search for necessity products in 24x7 convenience stores.

Hypothesis 2: There exists a significant relationship between Monthly Income of respondents and Intention to visit the 24x7 Convenience Stores, regardless of the price.

In a study by Yahn (2017), it has been observed that convenience has a value that several people are willing to pay extra for, and the trade-off exists between time and money. Furthermore, since India is a diverse country, it is significant to segment the target audience based on their willingness to visit the convenience stores even if the prices happen to be slightly higher than the other retail outlets.

Hypothesis 3: There exists a significant relationship between Family Structure and Intention to visit the 24x7 Convenience Stores on a weekly basis.

In India, the family is regarded as the most important institution that has survived through the ages (Net Industries, 2019). The family culture and values are of utmost standing and are known to influence the purchase decisions significantly. Therefore, it is essential to comprehend how different family structures would perceive the new-fangled concept of shopping in 24x7 convenience stores along with its usage on a weekly basis.

4. Methodology

The current research aims to ascertain the factors affecting the consumer behaviour towards 24x7 convenience stores in the metropolitan setting of Kolkata. To fulfil the objectives, 248 respondents residing in Kolkata, and belonging to diverse demographic backgrounds, have been contacted conveniently, using a 16-item structured questionnaire that required respondents to provide their responses towards the versatile dimensions of their shopping behaviour in the backdrop of 24x7 convenience stores. The other questions sought to determine the demographic profile as well as shopping behaviour, towards the daily-needs products of the respondents. The questionnaire was distributed online, and responses were gathered using convenience sampling. The rationale behind using convenience for the current study was that only those respondents have been surveyed who have made purchases from 24x7 convenience stores in the last six months. However, 12 responses have been rejected due to erroneous or incomplete responses, thereby resulting in an effective sample size of 236, with a valid response rate of 95.2 percent. An exploratory factor analysis has been conducted in order to determine the most impactful factors (out of 16) affecting the respondents' acceptance towards a new concept. An in-depth interview was also conducted to understand the factors, which will influence a consumer to visit 24x7 convenience stores over the other available retail options, i.e. supermarkets, departmental stores, online, kirana stores and street vendors. To this end, 15 interviewees were selected using convenience for this analysis.

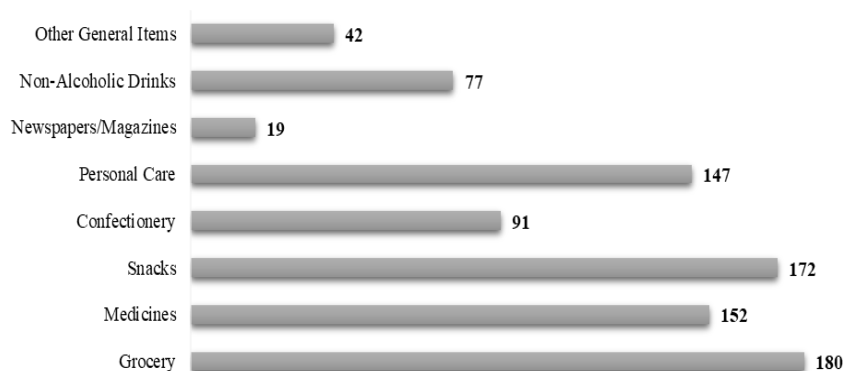
5. Data Analysis

As specified earlier, the current study has been conducted exclusively in the city of Kolkata, and the effective male-female ratio is 23:27.

Demographic Component	Classification	Frequency	Percentage (in %)
Gender	Male		46.2
	Female		53.8
	Total	236	100.0
Age	Below 18		11.0
	19-25		53.8
	26-40		23.3
	41-60		11.9
	Total	236	100.0
Occupation	Student		49.2
	Professional		9.3
	Business		12.3
	Homemaker		11.0
	Service		17.8

	Total	236	100.0
Monthly Income	Below INR 10,000		36.4
	INR 10,001 – INR 25,000		14.0
	INR 25,001 – INR 40,000		14.0
	INR 40,001 – INR 1,00,000		17.8
	Above INR 1,00,000		17.8
	Total	236	100.0
Family Structure	Joint Family		42.8
	Nuclear Family		53.8
	Extended Family		3.4
	Total	236	100.0
No. of family members	1-3		32.6
	4-6		32.6
	7-12		26.7
	13-20		5.5
	Above 20		2.5
	Total	236	100.0

The study of demographic profile of respondents indicated that respondents primarily visit 24x7 convenience stores for purchasing grocery items (n=180; 76.3%), in addition to buying snacks (n=172; 72.3%) and medicines (n=152; 64.4%).



Most Frequently Purchased Product from 24x7 convenience stores
(Source: Authors' own findings)

Based on the responses gathered from the respondents, it was observed that majority of the respondents (n=164; 69.5%) found 24x7 stores to be a beneficial concept available to meet their everyday purchase requirements. Further, respondents (n=108; 45.8%) also confirmed that they intend to visit such stores irrespective of the prices of the products, suggesting that they valued ease of access and convenience over the pricing aspects. Yet, another chunk of respondents (n=80; 33.9%) asserted that they were indifferent in terms of their intention to visit the convenience stores. Moreover, a majority of the respondents (n=181; 76.7%) agreed that a visit to 24x7 convenience stores would

significantly increase the efficiency and effectiveness of their daily errands. Yet, at present, respondents (n=191; 80.9%) agreed that they had intentions to visit and avail the benefits of the 24x7 stores only when they would be established in their locality.

Hypothesis Testing Results

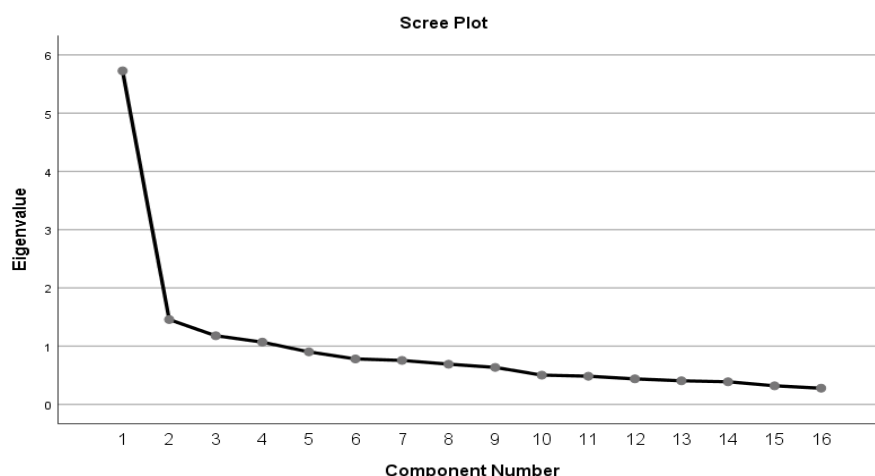
The first hypothesis that was developed by the authors sought to determine if there existed any significant relationship between the gender of respondents and the search behaviour for necessity products in 24x7 convenience stores. The descriptive results indicate that female respondents (n=105; 44.5%) were more likely to scout for necessity products in the context of 24x7 convenience stores, in contrast to their male counterparts (n=86; 36.4%). However, the chi-square test results (p-value: 0.305) indicated that there was no significant relationship between the gender of respondents and the search behaviour for necessity products in 24x7 convenience stores. Hence, the alternate hypothesis had to be rejected.

The second hypothesis was developed to determine if there exists any significant relationship between monthly income of respondents and intention to visit the 24x7 convenience stores, regardless of the price. In this context, respondents with monthly incomes between INR 40,000 and INR 1,00,000 (N=37; 15.7%) exhibited a strong intention to visit the 24x7 stores regardless of the price. The chi-square test results (p-value: 0.496) indicated that there was no significant relationship between the income patterns of respondents and their intention to visit the 24x7 convenience stores, regardless of the price. Again, the alternate hypothesis had to be rejected.

The final hypothesis sought to investigate if there exists any significant relationship between family structure of respondents and their corresponding intention to visit the 24x7 convenience stores on a weekly basis. The descriptive results indicated that respondents from nuclear families (n=68; 28.8%) as well as those belonging to joint families (n=53; 22.4%) were likely to frequent 24x7 convenience stores on a weekly basis. The chi-square test results (p-value: 0.172) indicated that there was no significant relationship between the family structure of respondents and their corresponding intention to visit the 24x7 convenience stores on a weekly basis. Like in the previous cases, the alternate hypothesis again had to be rejected.

Establishing the Product Acceptance Model

A factor analysis was also conducted to probe into the most consequential factors that affected the behavioural patterns of respondents to opt for and purchase from 24x7 convenience stores. These factors eventually constitute the development of the proposed Product Acceptance Model (PAM). To this end, the KMO and Bartlett's Test initially sought to measure the adequacy of the sample and the validity of the factor analysis. The threshold limit of KMO test is more than 0.6, which validates the adequacy of the samples, and the threshold limit of Bartlett's test is less than 0.5, which indicates that it is worthwhile to conduct a factor analysis in the context of the current study. Four factors have been extracted from the current study. They represent 58.94% of the total variance. The four factors obtained from the total variance extracted have been graphically represented in the scree plot diagram. Factors have been extracted on the consideration that Eigen values are greater than 1.



The principal factors obtained from the Rotated Component Matrix have been renamed *Convenience*, *Relative Benefits*, *Cost Efficiency* and *Awareness*. These four components constitute the elements of Product Acceptance Model for 24*7 Convenience Stores.

Convenience	Relative Benefits	Cost Efficiency	Awareness
<ul style="list-style-type: none"> Find necessary items User-Friendly Easy to shop Effective & Efficient Convenience of work Easy to plan 	<ul style="list-style-type: none"> Intend to visit Advantage over others Worthwhile Experience Beneficial Concept 	<ul style="list-style-type: none"> Reduce transportation cost Visit, regardless the price Visit on a weekly Basis 	<ul style="list-style-type: none"> Friends have visited I have visited

In-depth Interview Results

An in-depth interview was also conducted with 15 respondents (comprising of working professionals and homemakers) to understand the acceptance levels of such stores in the context of Kolkata.

Availability of goods	Extended hours of operation	Convenient locations	Grab and go food service	Cafe lounge	Fast transactions
2	4	3	3	1	2

The detailed responses indicated the need for having extended hours of operations given the occurrence of emergencies where such stores would help individuals get necessary medicines, prescription drugs or other necessary items with ease that may not be available at their homes at that specific point of time. It would also become very convenient for consumers to procure everyday products at any hour of the day, especially during the bleak hours when no other store might be open or accessible. In fact, it would offer a hassle-free shopping experience without having to wait to buy the product the following day. Respondents assert that the USP of the 24x7 store lies in the name itself. Moreover, the brisk pace of transactions would be beneficial, as it would save valuable time of respondents in terms of waiting in tedious queues at conventional convenience stores. The grab-and-go food service would save individuals from skipping breakfast especially when they are running late for work. Due to the extended hours, respondents would be able to shop without indulging in the stress of purchasing products from stores during any stipulated time. However, respondents opine that such unique format convenience stores should have a convenient location at the very least, and should be easily accessible for which it should ideally be located in every residential area.

6. Conclusion

The degree of awareness regarding the concept of 24x7 convenience stores is high among the respondents of this study. The current study has observed that people are moving from unorganized forms of retail (kirana stores) to the organized and online where everything is available at all times and at most of the hours. Among the target audience, Big Bazaar and Spencer's Retail are the most popular retail outlets for their daily needs. Almost 50 percent of the respondents buy their necessity products on a weekly basis, and around 28 percent purchase it on a monthly basis.

The study shows that the 24x7 convenience stores have various factors, which ensures acceptance from diverse groups of people. People find the concept of 24x7 convenience stores to be user-friendly, efficient, effective, timesaving and most importantly extremely convenient. The respondents are also convinced that these stores will help them find their necessary items and discover new and/or unique item(s). It is also observed that respondents agree that such convenience stores would provide flexibility to plan their daily errands and hence, enable them to work conveniently. The respondents are uncertain whether they would visit the convenience stores, once it has been established in their locality or whether they will visit these stores on a weekly basis. The target audience is not considering the price as a factor to influence their visits to these 24x7 convenience stores. The respondents are also uncertain whether such stores would proffer them with an advantage over the other retail outlets, whether it would be a worthwhile shopping experience and whether it would be a beneficial concept or not. Most of the respondents have

seen friends or relatives use 24x7 convenience stores in other states or countries and hence, they have visited such stores outside the city of Kolkata. Majority of the target population intended to use 24x7 convenience stores for grocery, followed by snacks, followed by medicines, followed by personal care, followed by confectionery, followed by non-alcoholic drinks, followed by others (alcohol and other general items) and lastly newspapers / magazines. In the in-depth interview, it was discovered that 'extended hours of operation' of these stores will be the primary factor influencing the target audience to visit the 24*7 Convenience Stores, followed by 'grab and go food service' and 'convenient locations', followed by 'fast transactions' and 'availability of goods', followed by their 'cafe lounge' facility.

Managerial Implications

The research observed the inclinations of consumer liking and acceptance towards the concept of 24x7 convenience stores in Kolkata. The findings of the research have a number of managerial implications for marketing and advertising strategies by retail companies diversifying to the 24x7-convenience sector. The marketers can make their market entry strategy based on results of the research as it highlights the significant factors, which influence consumer behaviour. Significantly, a number of managerial implications come from this research. For instance, marketers can utilize the separate 16 factors of the newly developed Product Acceptance Model (PAM) to comprehend the perception of the target audience towards 24x7 convenience stores. They can also use the most appropriate features, according to the factors selected by the respondents, in order to enter the niche market for 24x7 convenience stores. It facilitates a deep-rooted understanding of the shopping patterns of the target audience, as well as the trade-off between cost and convenience. The authors have investigated industry reports where it has been observed how young adults prefer to be awake quite late into the night. Thus, marketers could plan and design their promotional campaigns accordingly to address the latent needs of their potential customers.

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A study on career preferences of final-year undergraduate management students in Kolkata

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1. Introduction

Career is a regular occupation or profession in which one is making a living. Career preference is the occupation with the highest positive valence among alternative form of work value. Planning for career is very essential for the peaceful living and quality of life. It provides the basis of the individual's future life, his social recognition and finally contributes in the development of the country through proper utilization of human resources.

Choosing one's career path is one of the most stressful decisions a college student faces. It is a very important decision since it forms the basis of how one leads their lives. It is almost analogous to choosing a path in a multi-directional video game. Like in a video game, each path has its own challenges and outcomes which may lead one to either victory or failure, making the odds at stake very high, a bad career decision can have dire consequences. Having said that, choosing a career path is a complex layered web of possibilities rather than a zero sum game. Stuck in this complex web of possibilities, I was motivated to undertake this research project.

According to recent reports, India's unemployment numbers are at a record high. The Centre for Monitoring Indian Economy (CMIE) estimated that 11 million jobs were lost in 2018, pushing the unemployment rate to 7.38%. While the Indian economy is growing, it appears that those with college degrees are not benefiting in terms of suitable employment. There are several reports of hundreds of young people with master's degrees or even PhD settling for jobs they are overqualified for. According to a report prepared by the Centre for Sustainable Employment at Azim Premji University, unemployment among the well-educated is thrice the national average. There are approximately 55 million people in the labour market with at least a graduate degree – of which nine million are estimated to be unemployed.

Unemployment among new graduates is a phenomenon that is found not only in India but also in other countries of the world. Fast growing East Asian economies have rapidly increased the numbers of students attending university in recent years. Now the pool of unemployed graduates is rising to worrying levels in the region generally – and even in some high-growth economies. Of particular concern is whether high graduate unemployment is a temporary blip or reflects a chronic oversupply of graduates, even as many employers say they cannot find people with the right skills. In South Korea the number of 'economically inactive' graduates has passed three million for the first time, according to government. Even in Singapore, a booming economy which is importing highly skilled workers to stem a talent shortage, graduate unemployment rose from 3.3% to 3.6% in the first half of 2013, higher than the average unemployment rate in Singapore of around 2%. Among the other causes, one important cause of unemployment is the mismatch between market requirements and the skills of graduates that higher education institutions produce.

Through various studies it was found that the factors that affect the career decision of a graduate include family, passion, salary and past experiences among others. In addition to these factors, race and gender can also affect which field a student may choose. Some professions have greater percentages of a certain gender or race. Another thing that plays a big role in a student's decision of what field to choose is the people or role models in his/ her life. These role models can include a parent, teacher, or a recent employer. Many factors come into play in a college students' choice of career path. Students will typically take into account the quality of life they want when they are older. Factors such as interest in field, academic ability, familiarity, economic stability, and influential people can all play a role in the decision.

Thus, in the present context of unemployability, choosing career intelligently is of vital importance.

2. Objective of the research project

The objectives of the research project are:

- To test the relationship between demographic factors and the career preference of the respondents

- To derive the relative weight of each factor influencing career decisions and rank those factors according to their influence

3. Theory

Influence of Family on career preference of students

Influence is the power to have an important effect on someone or something. If someone influences someone else, they are changing a person or thing in an indirect but important way. In the present study influence of family on the career preference of the students was considered. This group contains following items viz., father, mother, siblings, relatives respectively. The responses to each item were scored as Very High Influence–5, High Influence–4, Moderate Influence–3, Low Influence–2, No Influence–1 respectively.

Influence of Reference Groups on career preference of students

Reference Groups consist of people who serve as an example of the values, attitude and behavior associated with a role. In the present study influence of reference groups on the career preference of the students was considered. This group contains following items viz., mentors, leaders, professors, friends. The responses to each item were scored as Very High Influence–5, High Influence–4, Moderate Influence–3, Low Influence–2, No Influence–1 respectively.

Influence of Career Benefit on career preference of student

Career benefit is defined as choosing a particular career either for profit purpose or due to the prestige given for that career in the society or due to other reasons. In the present study, influence of career benefit on each of the 6 career paths (further studies, temporary job, permanent job, family business, entrepreneurship, social service) of the students were considered. The responses to each item were scored as Very High Influence–5, High Influence–4, Moderate Influence–3, Low Influence–2, No Influence–1 respectively.

Statistical Technique used to Rank the different factors

Mean Value of different factors was calculated and then they were ranked according to their mean value, the higher the mean value the better the rank of the factor was indicating a high level of influence generated by that factor on the career preference decision. For example, a mean value of 4.3 for Father and 3.9 for mother indicated a greater influence exertion by fathers and hence a better rank as compared to Mother.

Keeping in view the objectives of the study the relevant variables for the study were selected on the basis of past researches and on the opinion of the advisory committee. The variables studied and the measurements employed in this study are given below.

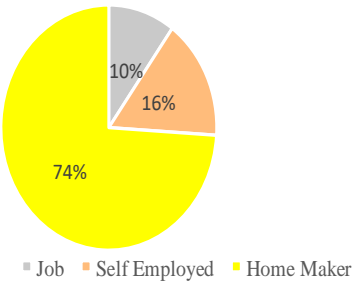
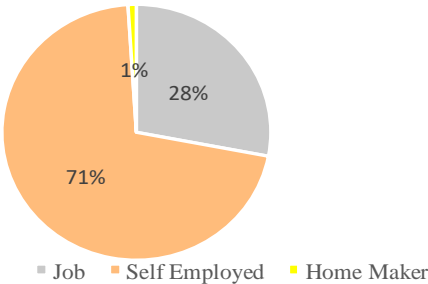
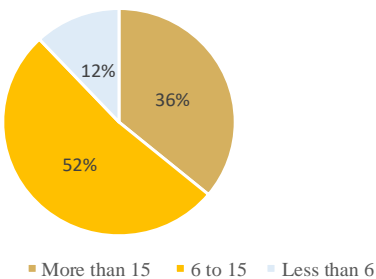
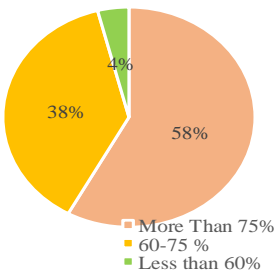
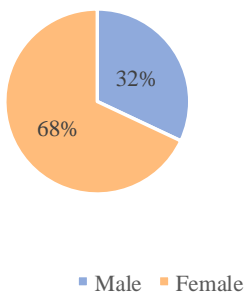
Dependent Variable: Career Preference

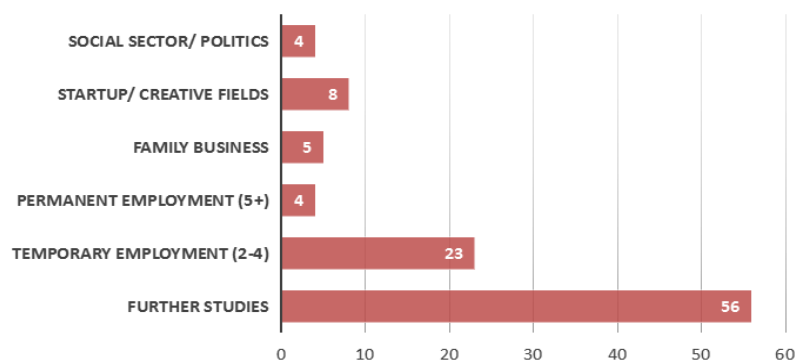
Independent Variables: Gender, Academic Scores, Family Annual Income, Occupation of Father, Occupation of Mother

4. Research Methodology

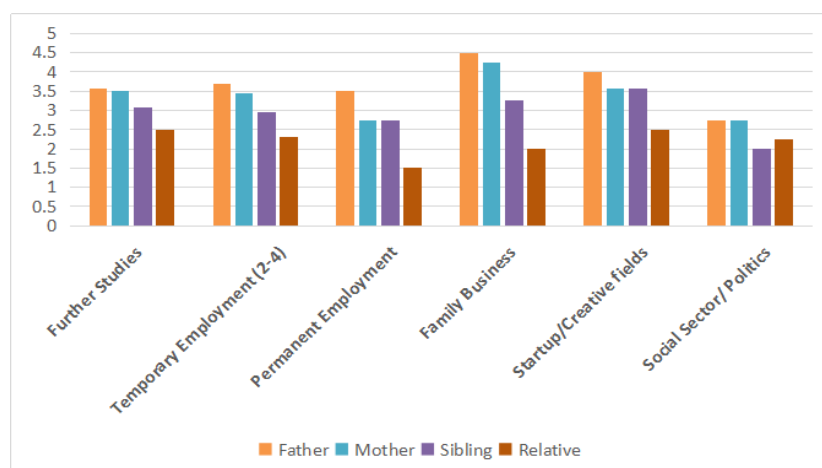
This study adopted an ex post facto research design. Robinson (1976) defined ex-post-facto research design as any systematic empirical into which the independent variable has not been directly manipulated because they have already occurred or they are inherently not manipulated. Since participants in the study could not be randomly assigned due to constraints of time, ex post facto research design was used instead of Experimental research design. The target population was final year students of different management colleges of Kolkata. Snowball sampling method was used to obtain primary data from primarily 5 management institutions of Kolkata. The research instrument for collection of primary data was a questionnaire prepared via Google Forms. The data was collected by online circulation. The questionnaire had two sections; the first section consisted of demographic questions and a question asking the respondents about their preferred career choice immediately after graduation. The second section aimed to find the motivating factors behind the career selection of the respondents. It had three categories: family, reference groups, career benefits. These questions were in likert scale form ranging from no influence to very high influence. A sample size of 100 respondents completed the questionnaire and the results were analyzed. The primary data was collected at one time, i.e., in this study cross- sectional approach was used to conduct the study. The data for this research work was collected for a period of 1 month, i.e., March,2019. After collection of data and compiling the same, it was tabulated and was analyzed by means of various statistical techniques using bar chart, pie chat, cross tabulation, measures of central tendencies and Chi Square Test. Data analysis was done using Microsoft Excel 2010.

5. Results

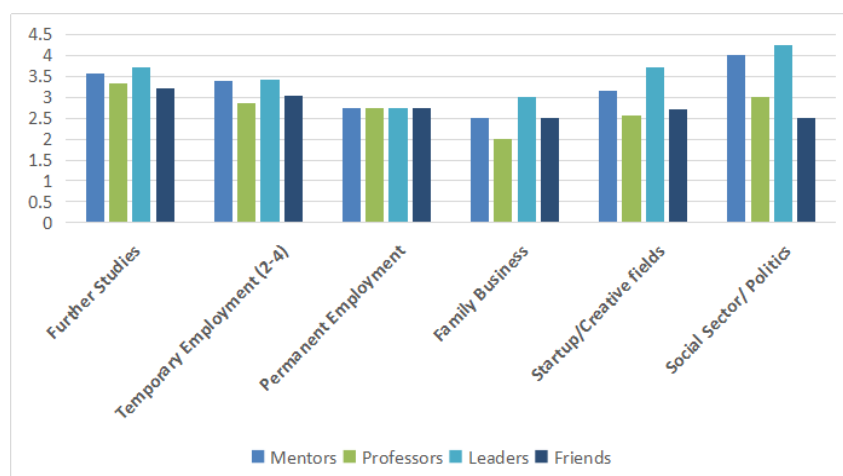




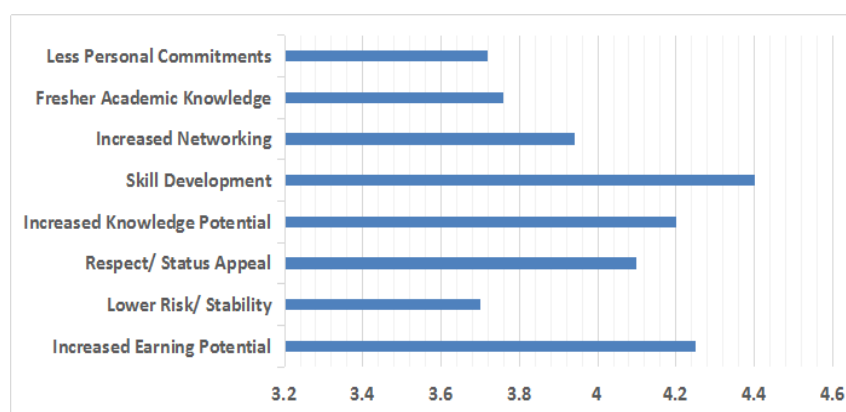
Career Preference immediately after graduation (Dependent Variable)



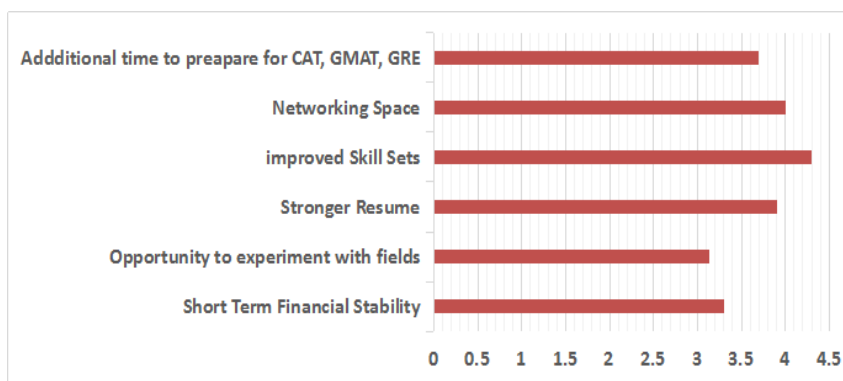
Influence of Family (Father, Mother, Sibling, Relative)



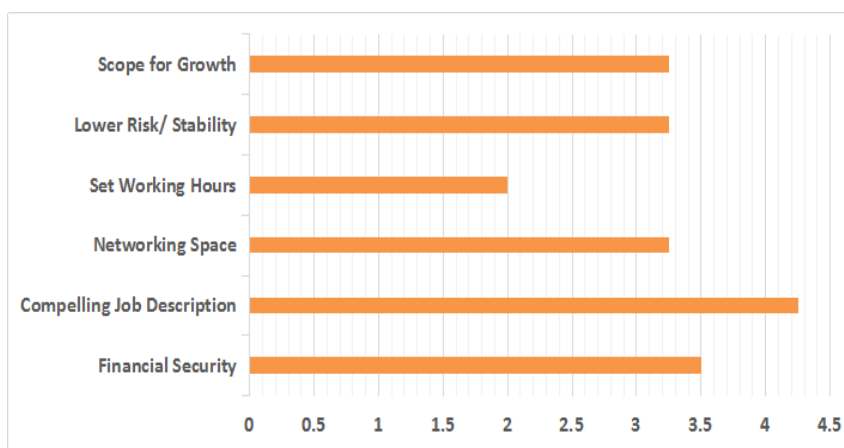
Influence of Reference Groups (Leaders, Mentors, Professors, Friends)



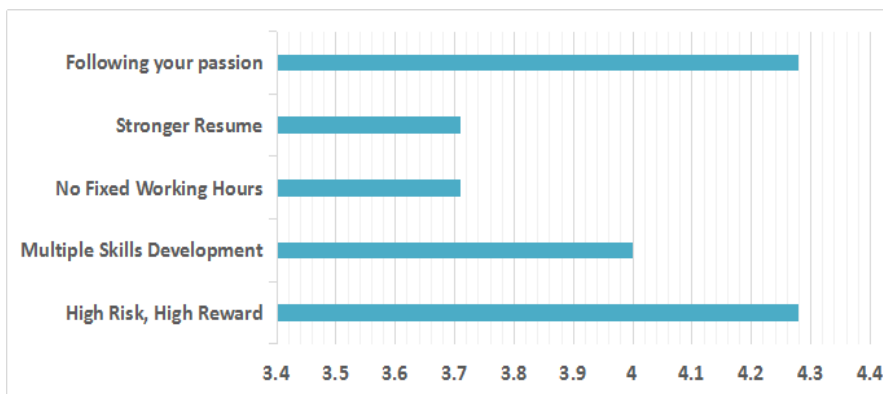
Influence of career benefits for further studies



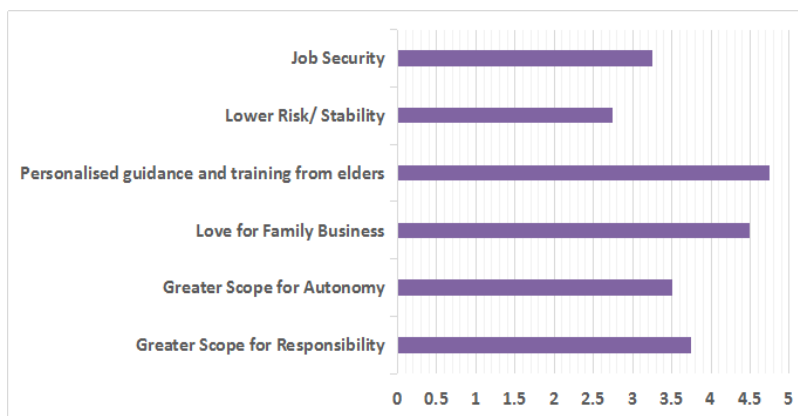
Influence of career benefits for temporary employment



Influence of career benefits for permanent employment



Influence of career benefits for entrepreneurship/ creative fields



Influence of career benefits for family business



Influence of career benefits for social sector/ politics

6. Analysis of Data

Testing Hypothesis

Career Preference is taken as the Dependent variable and Gender, Academic Scores, Family Annual Income, Occupation of Father, Occupation of Mother are taken as Independent variables.

The following Null Hypothesis were formulated for acceptance or rejection based of the study:

H₀₁: There is no relationship between Gender and career preferences of students

H₀₂: There is no relationship between Academic Scores and career preferences of students

H₀₃: There is no relationship between Family Annual Income and career preferences of students.

H₀₄: There is no relationship between Occupation of Father and career preferences of students

H₀₅: There is no relationship between Occupation of Mother and career preferences of students

On the basis of the respondents' data Cross Tables were made for each of the individual variables and dependent variable and the Chi Square Test Method was used to obtain their P-Values (calculated probability), with significance level equal to 0.05

The Alternate Hypotheses were formulated as follows:

H₁₁: There is a relationship between Gender and career preferences of students

H₁₂: There is a relationship between Academic Scores and career preferences of students

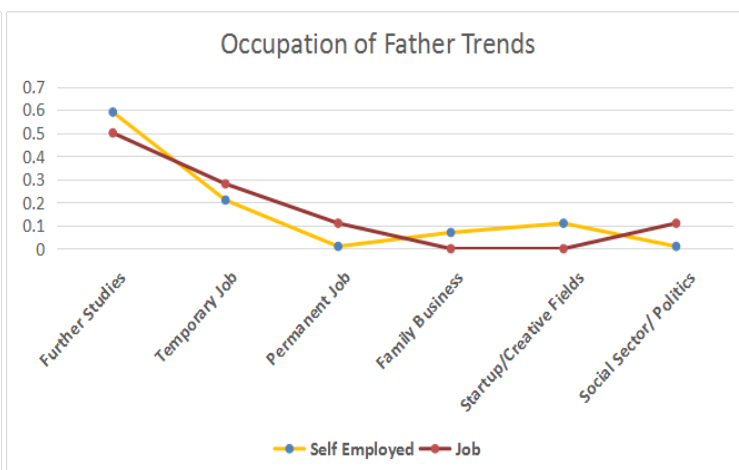
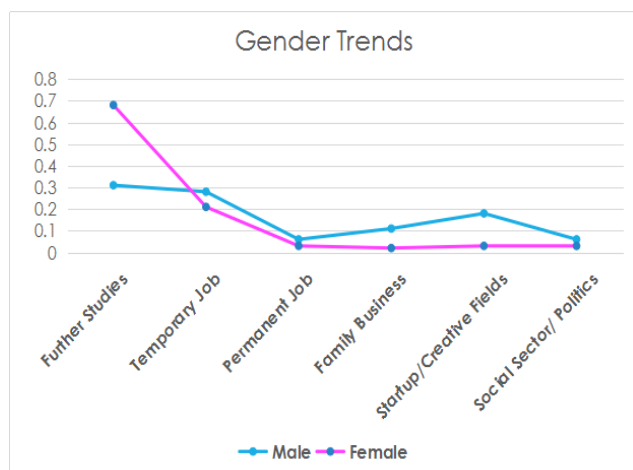
H₁₃: There is a relationship between Family Annual Income and career preferences of students

H₁₄: There is a relationship between Occupation of Father and career preferences of students

H₁₅: There is a relationship between Occupation of Mother and career preferences of students

It can be observed that among the 5 independent variables, two variables viz., occupation of father and gender shared positive and significant relationship at 0.05 level of probability with the career preference. While, the remaining 3 independent variables namely occupation of mother, annual family income, academic scores did not established any significant relationship with career preference of the students.

After establishing a statistically significant relationship between gender, occupation of father and career preferences, an attempt can be made to find a trend.



7. Discussion

A study by (Eremie, Maxwell. & MD Eremie. 2014) indicated that gender parity has significant influence on the career preference among male and female students. The results of this study concurs with those results as a significant and positive relationship was established between gender and the career preference of the student. The trend formulated suggested that 7 out of 10 girls would opt for further studies after graduation while only 3 out of 10 boys would do the same. The boys were more likely to adopt all other career paths as compared to girls, especially in the case of family business and entrepreneurship. This may be due to a largely patriarchal society in India that encourages boys more than girls to take up these ventures.

The study by (Ramona, M. Braza, S. 2015) revealed that socio- demographic characteristics of students such as sex, parent's educational attainment and family income show significant relationship with career choice of students. This study also found that the occupation level of father had positive and significant relationship with the career preference of students. The trend formulated suggested that students' whose fathers were self-employed were less likely to take up jobs in near future as compared with students' whose fathers had jobs. The former category were more likely to take up further studies, venture into creative fields or start their own business.

The research study is in line with (Koech et al., 2016) which showed that students tend to be influenced most by the role model's career, followed by the mentor's advice and the least influence being high school teachers. The results are in line with the current study which also revealed that among reference groups, the maximum influence on students' career decision was by leaders, mentors were a close second in this regard. Their influence was especially high for non-conventional fields like entrepreneurship and social service. Professors had the least influence in this regard.

Additionally, the study found out that there was a direct correlation between academic scores and selecting further studies as a career path, ie, a higher academic score indicated more likelihood of selecting further studies as a career path. The results of the study suggest that among family members, the maximum influence on the students' selection of a career path was by his/her Father. Mothers were the second most important influencers in this regard. The study suggests that a father plays a very important role in a career decision for a student, which was especially seen in case of career path- family business, which had the highest mean influence score among all career paths. Low risk and stability as a career benefit had a very low influence on a students' career decision, reflected by their low mean scores across career paths, while, high risk was a great influencer in choosing a career path if it was backed by high rewards, reflected by high mean scores. Skill Development was a more important factor influencing career decisions as compared to Knowledge Enhancement across various fields, which show that students primarily prefer practical learning as opposed to theoretical learning.

8. Conclusion

India has a large youth population with half of its 1.3 billion people below 25. With a growing economy, we also have growing unemployment rates indicative of a jobless growth. The high rate of unemployment among the educated is both due to the lack of sufficient jobs and poor schooling as well as the mediocre quality of education on offer at most colleges. This makes large numbers of graduates unsuitable for employment that is commensurate with their degrees. While the employability rates of college students have improved over the years, it remains under 50% and as low as 30% for graduates in arts and commerce. Nearly half of all undergraduate students – who make up for 80% of the total number of students – are enrolled in the least employable disciplines.

The result is that many college graduates end up enrolling for advanced and/or additional degrees, taking up lesser jobs or remaining unemployed while they wait for something worthwhile in terms of employment. This trend was backed by our study, where we found that 56% of the students want to pursue higher education immediately after their graduation.

This trend has deeper and far more grave implications than just unemployment. The length of the waiting period for proper jobs and what the young unemployed and underemployed do during that time is of great significance. Their mental makeup, their behaviour and their actions in their period of waiting are influenced by how they are supported by their influence groups (family, friends, mentors etc). A lack of support from these groups both mentally and financially can lead to major stress, depression and hidden frustration.

This brings us back to the negative effects of a poor college education. Because people believe that education opens doors that would otherwise remain closed, those with education and certainly those with college degrees have

relatively high expectations about their employment prospects. Instead, many of them find that the doors continue to remain closed.

In India, where the economy is growing but where it is not clear whether employment prospects have improved, young people with higher levels of education are even more likely to feel cheated, frustrated, resentful, or even angry than under conditions of economic stagnation. This creates a very dangerous situation because, it is unpredictable whether their frustration or anger will simply translate into votes against the government, anti-government protests or something else and more. What is clear is that the unemployed and underemployed become available as a 'resource' for political parties and other organisations which are looking to mobilise larger numbers of people for one reason or another, whether for anti- or pro-government protests, ethnic mobilisation or something else.

Millennials today are simply given one path, one option in life: go to school, get a degree, and then you can get a job. They spent all of this time, effort and money working towards this goal. The "promise" of succeeding in this path might have not been written out explicitly, but society gave them little choice. The education system encouraged them to do so and their parents likely followed along. Upon graduating they realized that this economic promise didn't come to fruition so easily. Again, they did nothing wrong. The problem is in the framework and in the way our economic model incentivizes people.

The economy is largely controlled by companies. They have money and jobs. They decide whether or not to hire you. If these companies don't need your skills, then you are out of luck. This previous sentence may seem so matter-of-fact that it might not warrant a second glance. But really, it's the way we choose to see reality. We are cycled through this education system with not much option and then are at the whim of profit-seeking companies to make a living.

9. Scope of further study

- A study could be made into the most important skill-sets that companies across industries require today and the major lessons that are taught at the higher secondary and graduation level. This study would be useful in finding out the gaps in the education system and how we can fill them by making our curriculum more suited to the current needs for better utilisation of India's human capital.
- A second branch of study could be made into the people who choose to study abroad rather than studying in India after their higher education and the factors motivating such a decision.

10. Limitations

The research paper had the following limitations and suggestions for further work:

- This study was confined to five colleges of Kolkata. Therefore, further research in this field may be carried out taking into account of other universities of the state so that the results can be generalized.
- Accurate estimation of the sample size required was not possible due to inadequate population size data
- A probe into the other variables apart from those that are studied in the present investigation may be identified and their influence on the career preference of the students may also be studied.
- The conclusions of the study are based on the data provided by the students. So the validity and reliability depends on how honestly the students have provided the information

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Homomorphic Encryption Method for Business Data Security in Cloud

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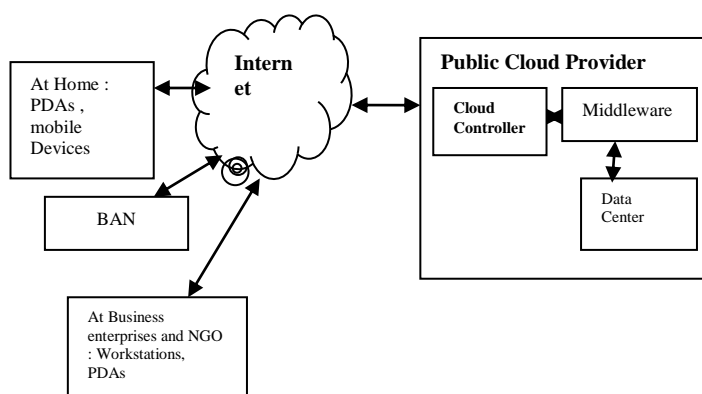
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1. Introduction

Cloud services are gaining importance due to cost-effective approaches with their remotely accessible large amount of shared resources. Homomorphic encryption scheme allows data analysis in the encrypted form itself. Different operations such as execution of queries, searching, sorting etc can be carried out on encrypted data to generate required results without compromising with data privacy. Partially Homomorphic Encryption schemes are popularly used. FHE scheme computes arbitrary functions over encrypted data without decryption key. A user can store its sensitive data on an untrusted server in encrypted form. Encrypted queries can be sent and results can be computed without decryption of data. FHE specific sorting and searching schemes gives better secured performance than that of age old sorting and searching schemes. Significant research work is going on partially and fully homomorphic encryption schemes to make the schemes more efficient.

2. Cloud Data Handling Mechanism

Internet is the basic backbone of the Cloud Architecture. The front-end users of Cloud use UI to log in and access the services by event-driven graphical buttons. Whereas the back-end server side layer uses network layers to connect mobile devices, PDAs, Workstations, Body sensors in BAN architecture with their data centres. Cloud provides Platform as a Service (PaaS), Infrastructure as a Service (IaaS), Software as a Service (SaaS) in a very fast, efficient and flexible manner. The size of Cloud service can be extended or minimized as per requirement of the front-end users. Back-end users include dedicated servers, virtual machines, computers and huge data storage facilities to form cloud technology.



The interface of the cloud varies with service provider. But they should ensure smooth uninterrupted traffic control mechanism, secured data computation, secured data storage & access.

3. Cloud Data Security Issues

Under-utilization of IT resources, continuously changing business requirements, diversified and prolonged lead time of information procurement had been the common phenomenon of any business organization till the introduction of cloud computing techniques. Cloud computing addressed all such issues by providing trust-worthy, integrated and enterprise-wide solution within the scarce resources. It facilitates shared pool of IT resources that are portable, interoperable on any computing platform and most significantly secured. National Institute of Standards and Technology (NIST, USA) defined cloud computing as a model enabling convenient, on-demand network access to a shared pool of resources (that includes networks, servers, storage, applications and services) in most scalable manner (Mel & Grace, 2011).

The most significant challenge of Cloud Computing is the risk attached with the movement of business data and applications from the safe environment of the organization to the service provider's server space. The basic principle of cloud computing is to outsource information technology requirements to the Cloud Service Provider (CSP) and hence the issues of data security and data privacy are of immense importance. The key issues of concern in this context can be stated as below:

- a. *Sensitivity analysis* on business data must be done thoroughly, so that data and applications of critical importance can be identified clearly. Accordingly the risk assessment can be done.
- b. The *credentials of CSP* must be checked and reviewed in detail. This will ensure that the policies and technical procedures implemented by CSP are capable of providing data protection.
- c. *Service Level Agreement (SLA)* needs to be evaluated meticulously to find if it is in-line with the organization's requirement of IT outsourcing. There should be clarity about data breach, data ownership, data protection technique used (encryption method) and data monitoring policy. Also, it should be a negotiable instrument so that deployment of cloud service can be re-chosen to ensure the attainment of organization's changing needs.
- d. *Absence of statutory legislation* for data sharing, storage and protection across borders poses significant challenge in cloud computing for organizations. Hence, each country must have clearly defined guidelines regarding data security and privacy issues in cloud. For instance, Australia has clearly defined legal framework and legislation in this regard (Abed & Chauvin, 2019).
- e. *Intermediary outsourcing* is another important concern for data privacy in cloud. Sometimes CSP outsource few of their internal operations to third party without taking the consent or even without informing data owner i.e. the client about it. Lack of clearly defined legislation leaves such clients without any shelter.
- f. *Complex SLA* usually contains large number of terms and conditions. Clients who are willing to subscribe for cloud services, generally, accept those without reading and understanding properly. Such client unknowingly allows CSP to have access to their data as well as right to store their data at any location across borders as per CSP's convenience (Sultan, 2010). This poses the threat of data leakage and misuse.

Thus, data security and privacy are critical in cloud computing. A solution is needed which allows clients to reap the benefits of cloud computing at minimum risk.

4. Homomorphic Encryption based Solution

Secure communication over Internet is impossible without various standard cryptography schemes. Applications of cryptography include E-commerce transaction, chip-based payment cards, digital currencies, bit coins, military communications and computer passwords. It ensures data confidentiality, data integrity, authentication, and non-repudiation. Modern cryptographic algorithms are heavily based on mathematical theory and computer science practice. They are designed around computational hardness assumptions and hard to crack.

In cryptography,¹ Plaintext is encrypted into ciphertext, which will in turn (usually) be decrypted back into usable plaintext. The encryption and decryption is based upon the type of cryptography scheme being employed and some form of key.

Homomorphic encryption can be used for secure outsourced computation. In Cloud Server where data are taken care of by third party, homomorphic encryption provides an additional evaluation capability for computing over encrypted data without access to the secret key. The result of such a computation remains encrypted. Homomorphic encryption can be viewed as an extension of either symmetric-key or public-key cryptography. It is the conversion of data into ciphertext that can be analyzed and worked with as if it were still in its original form.

Homomorphic encryption⁴ schemes are of two types: Partially Homomorphic encryption and Fully Homomorphic encryption. Examples of Partially Homomorphic Encryption are (i) *RSA cryptosystem* supports modular multiplications on unbounded number ; (ii) *ElGamal cryptosystem* that again supports modular multiplications; (iii) *Goldwasser-Micali cryptosystem* supports XOR operations on unbounded number; (iv) *Benaloh cryptosystem* supports modular additions on unbounded numbers ; (v) *Paillier cryptosystem* supports unbounded number of modular additions; These are standard popular crypto schemes.

Fully homomorphic encryption (FHE) supports arbitrary computation on ciphertexts without the need of leaking secret information and is far more powerful. In this scheme any desirable functionality like complex mathematical operations can be run on encrypted inputs to produce an encryption of the result. Such program can be executed by any third party (who may not be trusted) without hesitation because of the non-requirement of decryption of internal data and internal state. This Scheme is followed by Encrypt, Decrypt and also Recrypt method.

The FHE scheme

- An encryption scheme ϵ comprises of the following algorithms:
 - KeyGen_ϵ
 - Encrypt_ϵ
 - Decrypt_ϵ
- In addition to them, the FHE has the following algorithms:
 - Evaluate_ϵ
 - Recrypt_ϵ

Encryption Schemes (in general)	Fully Homomorphic Encryption Scheme
<p>Encrypt_ϵ :- Encrypt the data into cyphertext.</p> <p>$C = E_k(P)$</p> <p>where</p> <p>P = plaintext,</p> <p>C = ciphertext,</p> <p>E = the encryption method,</p> <p>D = the decryption method, and k = the key.</p> <p>Decrypt_ϵ :-</p> <p>$P = D_k(C)$</p>	<p>Encrypt_ϵ :- Encrypt the data into cyphertext.</p> <p>Evaluate_ϵ :- Arithmetic operation can be performed directly on the cyphertext.</p> <p>Decrypt_ϵ :- Encrypted bit can be recovered.</p> <p>Recrypt_ϵ :- It is simply the homomorphic decryption of the cyphertext.⁹</p>

5. Overview of FHE

KeyGen_ϵ consist of 2 steps

- One will be to generate a public-secret key pair for SWHE (Somewhat Homomorphic Encryption)¹⁰
- The second one is to processing the secret key to get new public keys for encryption. It can be executed offline since it is called once at the beginning of a session.

6. Application in Business

- Cloud computing has now major role on today's business and personal computing, FHE scheme brings lots of promises in cyber security. In order to perform queries on data in Cloud, an encrypted version queries to be sent to Cloud by the client. Cloud performs queries on encrypted data, gets results and returns them either to the owner of data or to the client. To obtain the result the returned data are to be decrypted. It is illustrated with a simple example.³
- X encrypts its important data set (10, 20) in cloud by multiplies each element in the set by 2, creating the cipher data (10,20).
- Another organization Y requests X for the sum of the data sets for their requirement.
- If X is busy, the cloud service provider is asked to do the operation. It finds the sum of 10, 20 and returns the answer 30 without decrypting the cipher data to the original data.

- X decrypts the response sent by the cloud provider and the decrypted answer is made available to client Y i.e. 15. Such transaction is possible through homomorphic schemes. In case of FHE, the operation 'sum' can be any arbitrary operation including searching text.

Another application is that when we do not want web browser to know what we are querying, encrypted queries can be sent to the browser like Opera, Google. When we receive encrypted results we get results after decrypting them. FHE scheme is effective for Private Web Search.⁸

In health care industries, BAN technologies are gaining more popularity. In BAN technology the body sensors are implanted or attached on human body for 24X7 observation on any medical issues or some medical test like ECG, EEG from remote location. This technology reduces the cost and provides better service. The only concern is the privacy of data. In this sector homomorphic encryption can be used. The possibility of executing predictive analysis operations on encrypted data instead of decrypting it into original data greatly addresses data privacy concerns. In this way the privacy of medical data of individuals can be retained.

7. Challenges

The challenges are there to implement it effectively.

- The high latency of encryption and decryption makes FHE implementation remains impractical. In 2010 Gentry Halevi presented first FHE on an IBMx3500 server. GH FHE primitives utilize multi-million-bit modular multiplications and additions which is a time consuming task for general purpose processors.²
- In distributed system heterogeneous resources are available. Parallel processing on distributed system cloud perform can enhance the speed and efficiency. Parallelization of homomorphic algorithm is a bigger challenge in the world of cryptography.

8. Conclusion and Recommendations:

Cloud Computing technology inclusion resulted in flexible, easy set-up, cost-effective and more efficient organization. The grey aspect of cloud computing is the data security and privacy issues. The lack of sufficient legislation and not clearly defined framework for CSP gives more flexibility to CSP in their operations. Hence a profit motive oriented business tends to operate as per its convenience and cost-effectiveness, rather than primarily focussing on maintaining data privacy for its clients. The absence of legal framework exaggerates such instances. In present scenario, individuals as well as business are depending on CSP for their server, storage, platform and IT infrastructure related requirements. Hence, use of cloud facilities is unavoidable for business in today's information age. Such context makes the issue of data security and privacy very critical.

Homomorphic encryption provides a way where data is stored in encrypted form and can be processed also in the encrypted form to generate desired results. Such technique can help to maintain data privacy even if the data is stored across borders and even if multiple intermediaries are involved.

The homomorphic encryption scheme can be excellently used in searching text and data. The present technology of searching data requires huge data repository. Searching against a keyword in the cloud causes network traffic for matching it with large number of documents. Such big data set requires huge index generation. With the help of efficient homomorphic algorithm the searching technique can be more adaptively secured. One such technique has been proposed where huge separate data base of keywords for searching is not required and thus that scheme produce more faster and secured search on encrypted database stored in the Cloud⁶

HE schemes can also be recommended for sorting encrypted data. Researches are working on that. Lazy sort⁷ technique which is FHE based two stage sorting technique gives better performance on FHE data in comparison to partition and comparison sort.

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Managing Indigenous Culture and livelihood Man and environment consanguinity -managing indigenous culture and livelihood - The untold story of Jungle Mahal Area, West Bengal, India

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1. Introduction

The various festivals and rituals of tribal people are considered to be the greatest epitomes of cultural acculturation and assimilation. The various social and cultural traits and rituals have always been the cynosure of interest of modern civilization. It is here, each and every move of the tribal do exhibits a separate meaning of its own. Their festivals have emerged out of various social taboos, beliefs and traditions. However, the complete folk lore process is the direct cause of various natural, ecological and geographical attributes, giving result to a ritual, being exceptional from other. However, the shift from the gradual environmental deterministic attitude to that of possibilistic attitude, and molding environmental requirements, from the *array of many* to that of *array of few* is the hardest task of the modern era.

2. Objectives Of The Study

- To study the nature of man environment relationship in Jungle Mahal, West Bengal.
- To identify and to make a detailed study of such culture and also to establish a relationship between such cultural attributes , local people and nature.
- To identify the paradigm shift of such festivals and rituals being moulded within the modern ethos of culturalisation.
- To identify the dichotomy between *deterministic* and *possibilistic* isms and to find a suitable approach of execution of such approach.
- To suggest suitable measures to ameliorate various impediments for better sustainability with the follow up of tribal ecological niche.

3. Methodology

A. Collection Of Informations:

The data and information are collected from various government and non-government sources. It includes Census office, Bureau of Applied Economics and Statistics, Indian Statistical Institute, different departments of West Bengal Government, few reports and articles. However, the main ideas are being collected through observation and then following up is continued through perceiving the observations.


B. Processing Of Data

The perceived idea is then computed, tabulated and analysed with the help of certain cartographical representations and matrixes such as Line graph, Bar graph etc. Certain thought provoking models are used for determining the facts.

4. Background of the study

Tribal culture has been always welcomed in different parts of the world. India is also not an exceptional and tribal culture and heritage is being provided with equal importance. The indigenous ways of tribal practise and worshipping of Mother Nature along with sustainable outlook is the prime objective of modern tribal people. The sustainable approach has been inherited and in scripted in their rituals and festivals. Their dances, songs, marriages, death, birth and all aspects of life are centred on Mother Nature.

It is often, the folk song festivals and tribal fairs are often being advertised as a part of tribal tourism. Indigenous tribal cultures are often being considered as important sources of narrating the geographical and ecological genesis of nature. Since tribal people are very close to nature, their rituals are mainly based on environmental sustainability and present societal valuation.

Name of festivals	Main cause	Indirect cause
TUSHU	To pacify the river's rage	Water conservation and sustainability
GAJAN	Worshipping of shapeless stones , terracotta's of animals	Conservation of animals
GRIHALAXMI PUJA,KARKATIYA,ITU, NABANNO, FOKIRA ,	Worshipping of natural resources	Conservation of natural resources
MA MONOSHA, SITOLA MA, OIRABOT PUJA etc	Worshipping of animals	Conservation of animals
KARAM PUJA, BARI PUJA, SALDEVI, MAKAR SANKRANTI, SACRED GROVES	Worshipping of crops , Particular plants and other cereals	Conservation of food crops
<div style="display: flex; align-items: center;"> <ul style="list-style-type: none"> - Indirectly the above rituals can be related with the academic subjects of - Agricultural Studies - Agricultural Geography - Ideas of Climatology - Plant Geography - Ayurveda - Botany - Bio technology - Ecological adaptations and sustainability <div style="margin-left: 20px;">  <div style="border: 1px solid black; padding: 10px; text-align: center; width: 150px;"> Subjects related to nature </div> </div> </div>		

4.1 Management Of Indigenous Culture And Livelihood

Indigenous culture and livelihood has always been deeply inherited within the minds of the people and thus their life has been totally embedded within it. From a sample size of 100% about 90% of the folk are mainly concentrated with nature and natural objects. The song depicts about the mountains, plain, plateau, river, sea etc. The tribal children do learns their first geography and history from such tales and description of nature.

- *AKASH PANE CHEYE AMI TOMAY NIYE ROI.....*
- *PARBATER DWARE AMI NIROB KATHA KOI*
- *I look at the sky to search for you*
- *I do prefer to remain silent at the foot of the mountain)*

4.2 Identification Of Festivals And Folk Lores

Tracing out the ideology of environmental fragrances within tribal dances – few case studies from West Bengal

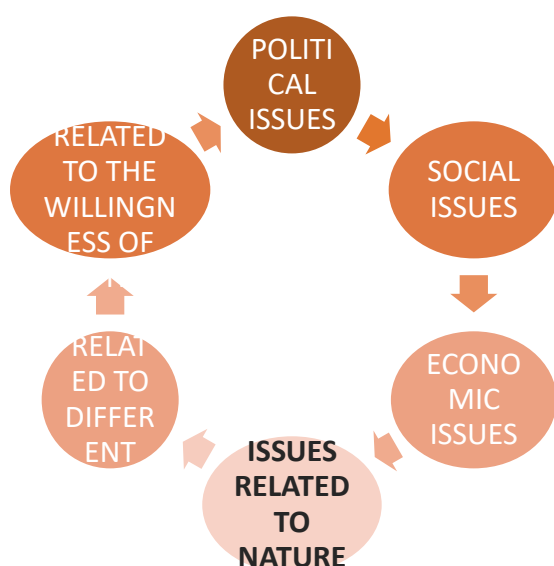
- Chau Dances (depicts news, stories, awareness etc.)

- Bhairavi Dance (female empowerment , female exploitation under male domain, also highlighting the concept of Homeostasis)
- Kirtaniya dance (geographical boundaries, ecological notes)
- Kushan Dance (tries to intimate about various pre disaster measurements)
- Putulbhuhari dance (traditionally the doll bearers discuss the social problems).
- Gambhira Dance (wears mask and teaches young children the importance of becoming a knowledgeable man)

Apart from the above mentioned festivals, even the marriages and dances are also being embedded with nature. Indigenous people of our county have been playing an important role in the conservation of nature since pre-Vedic times (Gargil & Vartak, 1975), knowingly or otherwise.

The festival of marriage is done under the sal tree, which itself strengthens the conservative belief of having a successful married life among the family members. Just like marriage, most of their rituals are based on the story of conserving nature.

4.3 Factors affecting Cultural Folk festivals and Tribal culture



But sometimes, being solely dependant on nature, their works often results in destruction of natural attributes. Thus, it is true that from the very concept of identifying Mother Nature as an alma mater (Environmental Determinism), modern tribal societies have moved to direct to Existentialism and Exploitation of Mother Nature. They have forgotten, to follow the path of Possibilism (uses of nature in a sustainable manner by making appropriate choices and methodologies) for extraction of resource. In this connection, in the recent era there do occur a lot of exploitation of water, forest, river deterioration in the recent era. The tendencies are quite visible in the overuse of the resources.

There is a tendency to abuse and over use of water resource. This has led to water scarcity, for which the reasons are as follows,



- Increasing demand for water due to rapid increase in population in the Jungle Mahal area.
- Poor ground water resource caused by deforestation and overgrazing which result in soil erosion and the inability of the soil to permit water infiltration.

- iii) Poor storage facility.
- iv) Over exploitation of ground water in water scarce areas often resulting in the intrusion of saline water in coastal areas of Jungle Mahal.
- v) Dumping of various types of pollutants in water bodies (specially in time of rituals) reducing the usability of the available water.
- vi) Silting in water bodies due to denudation of vegetation cover in the hills and catchment areas.

It is time that effective regulatory mechanism is to be established by which protection of water resources can take place. There is also a need for looking at the water laws in the other jurisdictions and rules and regulations mandating protection.

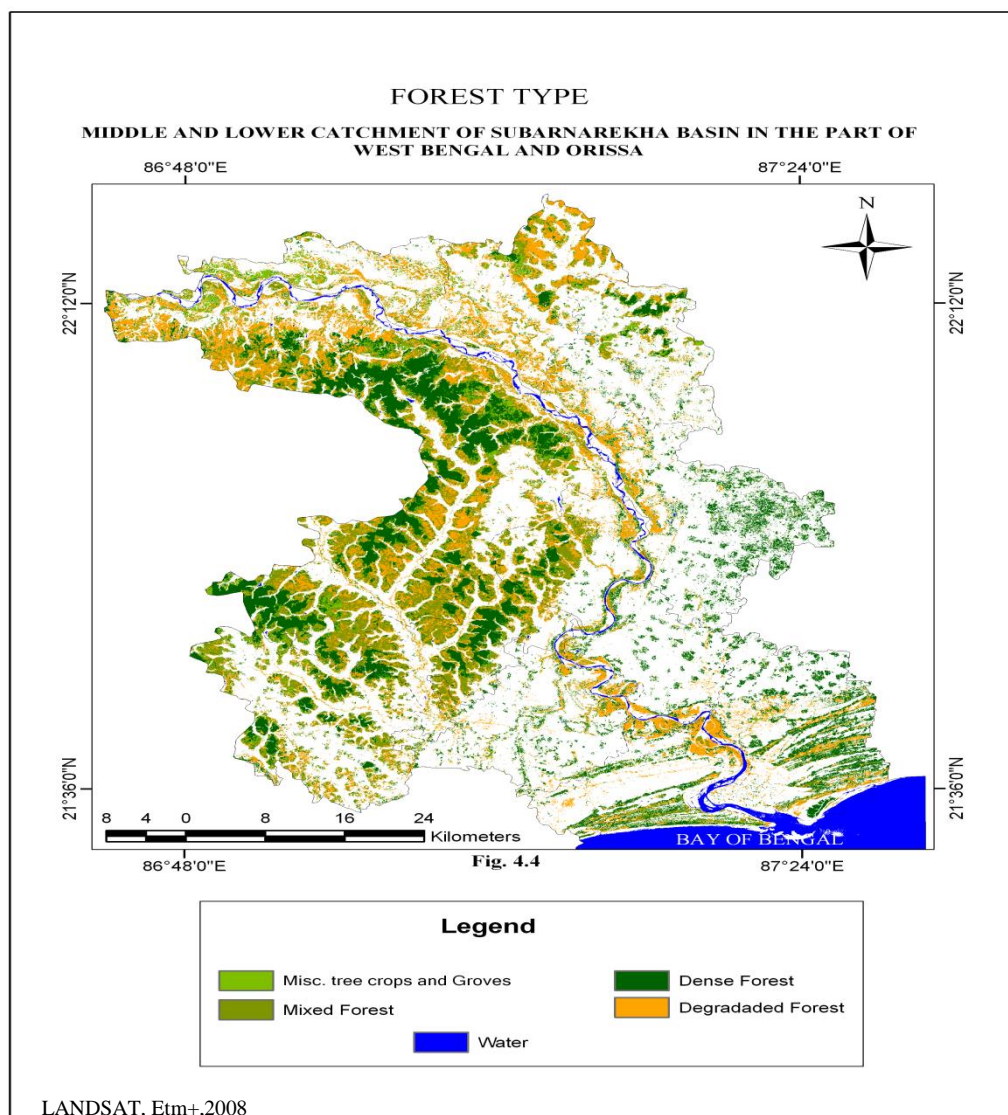
Much of indigenous vegetation in the study area has been cleared for human use since British period. The loss of these vegetations has been led to a decline in indigenous biodiversity and to degradation of water ways through increased sedimentation in Dantan-I, Bhograi and Baliapal blocks. In the recent flood of 2014 about 700 acres of agricultural land in the Dantan I and II) block was degraded due to river water silting. The Paschim Medinipur Zilla Parishad has sanctioned 1 Crore Rupees for the development of these areas. Further, vegetation removal created accelerated erosion in the deforested upland areas of Nayagram, Gopiballavpur-I and II, Betnoti, Rasgobindapur, Moroda with concomitant losses of soil and site productivity. Both flood control and re vegetation strategies is the need to deal with these problems began to be increasingly recognized from the 1950s and culminated in the soil conservation and Rivers Control act and Catchment Area Treatment act. This led to the establishment of catchment authority that has specific functions for soil conservation and river and flood control. Side by side the Departments of Agriculture, Rural development, Environment and Forest are taking necessary measures in controlling the land degradation through soil erosion and sediment deposition. In some of the festivals, there do occur destruction of forests, river and land.

In some cases, lack of active management over the last two to three decades has created a potential problem for many locations in the study area. In the sand dunes of the coastal tract the illegal cutting of casuarinas trees and queering of sand for local use lead to the damage of local biodiversity and land degradation. At the same time forest ecosystem has been depleted and soil erosion accelerated in the laterite upland due to deforestation.

Use of bioengineering techniques in the study area:

The seeding and planting is the most common bioengineering techniques adopted in the study area. The deforested lands are being covered up by different exotic species like Eucalyptus, Akashmoni etc. But these species though control the soil erosion but fail to return the previous local biodiversity. In the upland local species like Sal, Asan, Mahua etc. which are ideal for the local climate and soil are to be planted. The Ipomoea Biloba, Cyperus exalatus, Cynodon dactylon, Panicum repens plants protect the sand dunes(Paul,2002). Another one species Keya is very important plant for coastal protection and has attracted the attention of the scientists. The bioengineering treatment measures in the agricultural and wastelands of identified watersheds, are being executed by local villagers and Panchayets for soil conservation and parallaly to uplift socio-economic status of local villagers. In agro-forestry programmes Sal, Segun, Akashmoni, Eucalyptus etc. are being planted. Saplings of some fruit trees have been planted by local people on their own land under horticultural development like Guava, Banana, Mango, cashew nut, Jackfruit etc .

Small scale exploitation of forest goes on in every village. Peoples get their firewood, brush-wood, thatching grass and gather food from the forest. They also get logs and poles for ploughs and for constructions of houses. Coccon is entirely a forest produce. It gives employment for spinning and weaving of *tassar* cloths. Coccon used to be grown extensively, but now the area has dwindled. Similarly production of sabai grass rope made from sabai. Forests give employment to the people of forest margin tribal villages in one way or the other. has decreased recently for its less demand in the local market. The plastic and nylon rope has occupied the market of rope made from sabai. Forests give employment to the people of forest margin tribal villages in one way or the other.



Topography of the coastal sand dunes	Selection of plants to arrest wind blow sands and to reclaim the sand dunes	Type of formation of the selected plants	Criteria for the selection of plants
Unstable sand flat with drifting sands	Sesuvium portulacastrum Aeluropus lagopoides Cynodon dactylon Ipeomoea pes carpaes	Creeper plants with anchor roots and surface stolones	Sand binding and arresting capacity; both drought resistant and salt tolerant capacity.
Beach berms or beach ridge surface	Pandanus tectorius soland Lantana camara	Scurbaceous growth with intricate roots and stilt roots	Create fences or barriers against wind blown sands.
Sand banks	Pandanus tectorius soland	Common scrubs of the coastal dunes	Provide compact surface coves and organic

	Calotropis gigantea Cyperus exaltatus Saccharum spontaneum	Tussock forming grass	residues into the sandy soil and control surface instability; long rooted grasses are very useful sand binders.
Dune ridges	Ipomoea pes carpa Launaea sarmentosa Spinifex littoreus Opuntia dillenii Casuarina equisetifolia Anacardium occidentale	Creepers with rhizoms and surface stolones; Cactus, climex trees	Good surface cover; Drought tolerant; Good canopy cover of trees; Arresting sands and maintain growths; Ecosystem function is well maintained.
Dune surface with rolling flats	Cynodon dactylon Sida rhombifolia Spermacoce hispida Tephrosia purpurea	Grasses and herbs Long rooted grasses and scrubs	Good surface colonizers with less moisture potential capacity.
Blowout spots and mobile dunes	Cyperus exaltatus Opuntia dillenii Lantana camara		Wind barrier formation and erosion control capacity with rapid growth.

FOREST PROTECTION MEASURES

➤ Reforestation:

In the degraded land reforestation scheme is adopted. In the study area forest is mainly concentrated in the laterite upland and deltaic coastal area.

➤ Social forestry:

It is a form of afforestation, started in 1976, based on social needs as objectives. There are two main objectives in social forestry-i) use of public and common land to produce in a decentralized way firewood, fodder, and small timber etc. for the local poor men and also to manage soil and water conservation, and ii) to relieve pressure on conservation forests.

Six F's are symbolic of social forestry, namely fuel, fodder, fertilizer, fiber, fat & fruit. Fuel trees are grown for fire wood, fodder for feeding livestock, fertilizer for green manuring, fiber for farm ropes, fat for edible oils & fruit for meeting nutrition requirement. Simultaneously through this programme soil erosion is checked & soil moisture is retained. Acacia, subabul, albizia, species are recommended for fodder, karanja, glyricidia for fertilizer purposes, sisal, palmyra palm are good for fiber, while neem, sbabul karanja, sal, mahua coconut for fat. Tamarind, coconut, mango, cashew nut are the chosen trees for fruits. This program has been adopted in the study area for the last two decades but the response is not up to the expected level.

➤ Agro-forestry:

In marginal and sub-marginal lands agro-forestry consisting of silvi-pastoral system, agri-horticulture and horti-silvo pastoral systems will help increasing the net returns per unit area besides providing fuel and fodder. Appropriate agro-forestry systems have the potential to control soil erosion, maintain soil organic matter and physical properties, augment Nitrogen fixation, and promote efficient nutrient recycling. The suitable agro-forestry systems available from local farmer's experiences would check the soil degradation and increase the ability of soil plant system to transform efficiently into biomass.

➤ **Joint Forest Management:**

The idea of Joint Forest Management seeks to develop partnerships between local community institutions and state forest departments for sustainable management and joint benefit sharing of public forest. The primary objective of Joint Forest Management is to ensure sustainable use of forests to meet local needs equitably while ensuring environmental sustainability. This management strategy is to facilitate both the Forest Department and the people. The Forest Department does not have so much man power to protect the large forest area and poor people do not have enough land to meet their basic need of fuel and fodder for livelihood. So, under Joint Forest Management village communities are entrusted with the protection and management of nearby forests. The National Guideline for Joint Forest Management dated June 1, 1990, states the following salient features:

- Ownership of land remains with the Forest Department;
- Planning for afforestation is done involving local people;
- Development activities are to be undertaken by the community;
- Protection is to be the responsibility of the community;
- Benefits of protection and regulation are to be shared;

Legal arrangements are to be signed between the Forest Department and the village community with respect to the above;

No. of Forest Protection Committees and Beneficiaries of Gopiballavpur Range Jhargram Division

Beat	Name of F.P.C.	Beneficiaries							Area in Ha.			Total
		Total	Gen.	SC	ST	OBC	M	F	Sal	Plantation	Blank	
Gopiballavpur	Nayabasan East	149	---	98	---	98	142	7	---	40.00	20.00	60.00
	Sijua	63	---	11	---	52	63	---	---	35.00	10.00	45.00
	Nayabasan West	198		190		8	187	11	---	42.00	29.00	71.00
	Nayabasan South	188		91		97	179	9	---	5.00	85.53	90.53
	Pithapura	99		20		79	95	4	---	15.00	9.80	24.80
	Kuliyana	201		86		115	196	5	---	100.00	19.02	119.02
Kamalasol	Tarkidudhia	104		1	103		63	15	230.29	---	15.00	245.29
	Baratarki	95		--			---	---	97.00	---	30.71	127.71
	Asurgeria	175	59	--	116		169	6	147.65	---	25.00	172.65
	Gopalpur	224	70	38	116		215	4	89.34	80.00	80.00	249.34
	Telant	214	16	7	191		210	2	117.48	30.00	22.00	169.48
	Barsol	79		11	68		77	4	102.27	---	40.00	142.27
	Bara Jhauri	34			13	21	30	1	120.00	---	11.85	131.85
	Chhoto Jhauri	63			63		62	---	55.00	---	13.37	68.37
	Khandisol	17			17		17	---	74.00	---	10.41	84.41
Kendugari	Urabhanga	144	40	44	60		144	---	309.84	25.00	20.00	354.84
	Bholabelduar	133	75	45	13		128	5	143.47	35.00	10.00	188.41
	Bhila	96	24	29	43		96	---	126.82	52.00	12.00	190.82

	Sonarimara	82	1		81		82	---	72.30	26.23	85.71	184.30
	Jhatiara	68	8	15	45		68	---	88.48	60.00	87.00	235.48
	Total	2426	293	686	929	470	2223	73	1773.94	545.23	636.4	2955.57

Source: Gopiballavpur Forest Range office at Chhatinasole, 2014

Developmental work performed by the FPC and Forest department:

Afforestation(1991-2002): 517 Ha.

Afforestation in govt. land: 40.00 Ha.

Felling (forest cutting): 511Ha.

Number of earthen dam constructed: 16

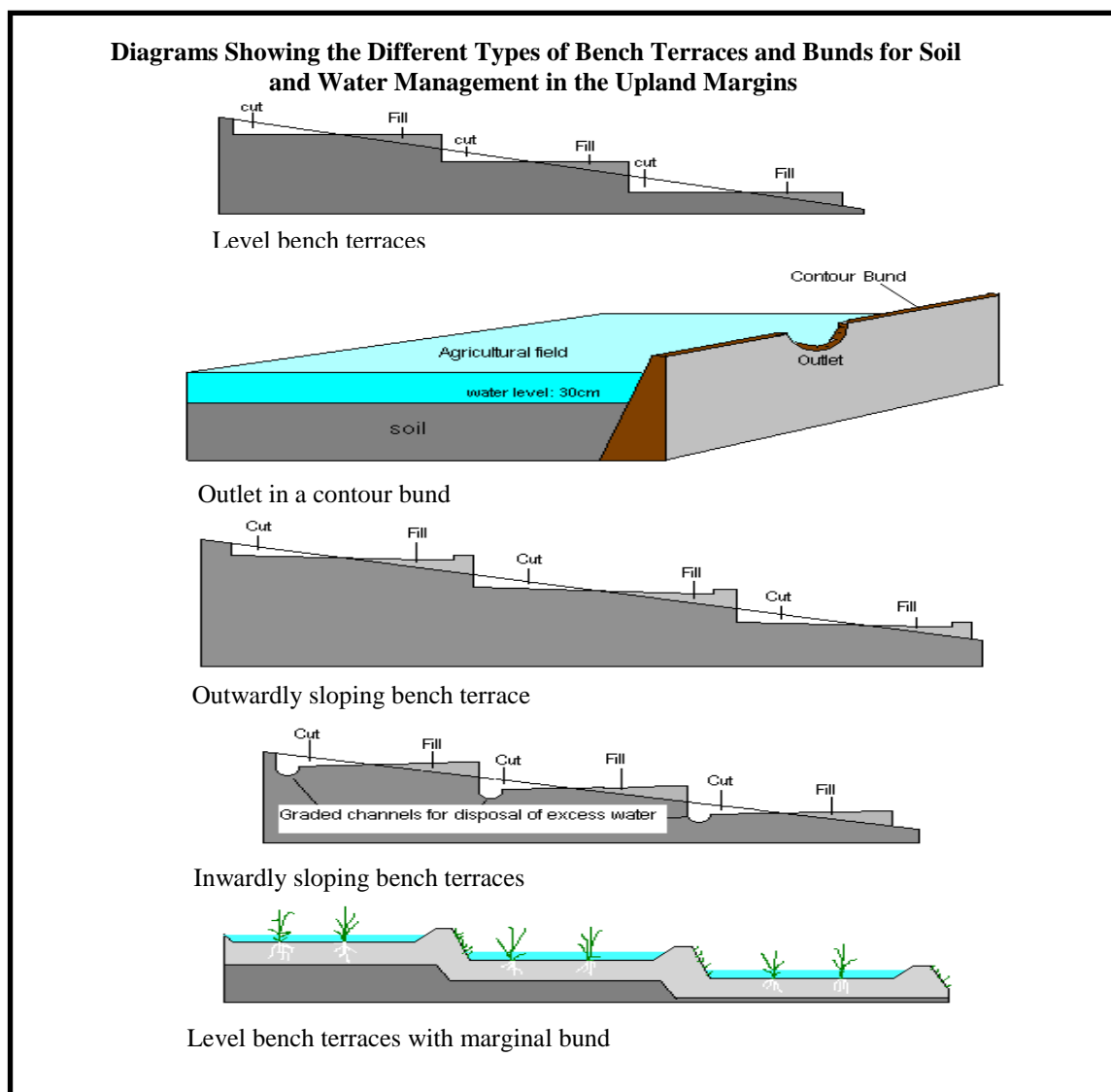
Number of pond excavated: 4

Number of drinking water well constructed: 24

Road repairing: 17 km.

Part time vocational training (surveying, tailoring, etc.) to the CPF members: 179.

Indigenous Soil and Water Conservation Techniques



Soil can hold water and helps in growth of plants, micro-organisms etc. Most plants get their nutrients from the soil for their sustenance. So, soils are considered very important elements in the environment. On the other hand the fertility status of the soil is a key to productive agriculture. So the quality of soil is expressed in terms of fertility status. But soils are subject to degradation due to over exploitation and unwise cultivation. Every year billions of tons of top soil are eroded & removed causing deep concern for sustainable agriculture. Farmers feel it from their practical experience and take up indigenous techniques of soil conservation.

Like soil, water is another most important resource for all living organisms. But it is noted that the source of fresh water on earth's surface is precariously low. Only 3% of water is available as fresh water and one tenth of it (i.e. 0.3%) is usable by man. In the study area the soil erosion rate is higher in the lateritic upland tract and simultaneously the water scarcity is noticed in summer season. Following indigenous techniques are adopted by the common people for soil and water conservation.

Forests are mainly concentrated in the lateritic uplands and coastal area of Subarnarekha Basin. Forests capture precipitation and store water. These accumulate organic matter and prevent soil erosion and maintain productivity of soil. Forest biota produce oxygen and maintain good air quality and a favourable climate. It reduces flood damage by storing and slowing water. It provides habitat for flora and fauna. Fire wood, timber logs, and thatching grasses are provided by the forest. Products from forest plants and animals provide materials for handicraft, jewelry, worship, decoration and souvenirs. It provides food (bush meat, flowers, fruits, honey, leaves, nuts, seeds, and spices). Grass lands/Range lands: The grasslands within the forests and in the coastal area are used for grazing. These lands help in soil formation.

Sl. No.	Category of land	Goods and services provided
1.	Forest Land:	Air quality, carbon sequestration, soil formation, waste treatment, storm water control, recreation raw material (timber) etc.
2.	Grass lands/range lands:	Water regulation, erosion control, biological control, soil formation, waste treatment, carbon sequestration, food production.
3.	Wetlands:	Water regulation, and treatment, food production and recreation.
4.	Rivers riparian areas:	Water supply and treatment, food supply, recreation.
5.	Crop land:	Food production, scenic.
6.	Land used for other purposes:	Land transformed for human needs.

Land degradation has seriously affected the social fabric of the study area. The out-migration of spouses for income supplementation has increased the livelihoods burden on women. In most of the degraded sites drinking water scarcity is acute. So on an average, a woman must carry more than 700 litres of water everyday, which creates an enormous burden on her time and physical capacities. This is a common picture in the upland areas of Muruda, Nayagram and Rasgobindapur block. Similar condition also exists in the upland areas of Betnoti block where women used to walk miles to bring fresh drinking water from natural streams as level of ground water is very deep in places and even water bearing layer at great depth is not available in places.

Soil salinity, water logging and drainage remain a hazard for the deltaic part of Subarnarekha Basin and threaten the livelihood of farmers, especially the small-scale ones. Crop failure has become a regular feature of the coastal tract due to sea water ingression and flooding. Farmers of Pratappur and Kankrapal village of Baliapal replied in quarries that they have been forced to adopt other occupations also along with the agriculture. Land degradation has reduced the production potential of major crops. Therefore, a section of farmers have adopted marine and brackish water fishing as alternative occupation.

5. Main Findings

- There do occurred a drastic change in the man environment relationship. With the advent of modernization and developmental initiative there do occurred a debate between environment and scientific innovations.
- It is true, that the nature of exploitation and conservation of resources mainly depends on the culture and beliefs of the tribal community residing in Junglemahal.
- The tribal people themselves must be aware of the nature of exploitation and should indulge themselves in adapting the various conservative techniques , which they can manage and function in a proper manner.

- The dichotomy between deterministic and possibilistic approach do continue and it is here, there do occurs a need to follow a middle approach and also to follow a sustainable approach.
- To follow conservative attitude and to analyse and boost those factors which will help in the protection of tribal ecological niche.

6. Initiatives from the part of the Government

In the present time, with advancement of the pace of modernisation, tribal festivals have achieved a great height in the recent era. Various programmes like Swalambhan, organisation of various tribal festivals in the form of Utsavs, local fairs etc. Initiatives have been taken from the part of local indigenous people, to popularize these kinds of festivals. Proper arrangements and encouraging infrastructural development have already been taken from the part of the local as well as governmental initiatives. Along with it various legislative measures for the sustainability of the environmental outlook should be kept in mind.

7. Conclusion

Therefore, it can be truly said, that the time has ripen for the rising up of the indigenous culture and to make this culture renowned throughout the world, so that the tribes themselves can come out from the confinement of their own taboos. Moreover, their aspirations and religious beliefs can also be the source of knowledge and entertainment, which will indirectly give rise to that of tribal tourism, with an approach of sustainability towards nature.

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Interest rate formation in informal credit markets in West Bengal: what matters?

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1. Introduction

Accessibility to credit on favourable terms and conditions plays an important role in the overall development of an economy and in poverty eradication. National Sample Survey Organisation (2005) reveals that in 2002 around 50 percent of borrowers were indebted to informal lending agencies, and that a considerable proportion of these loans were made at an interest rate 30 percent or above. However, that such high rate of interest does not exist uniformly across the informal market. There has been almost no effort to identify the factors that explain such differences.

To bridge this gap, the current paper focuses on the factors that determine the rate of interest in informal credit markets. The analysis is conducted by appropriately selecting districts to represent more urban orientation and around Kolkata agglomeration. More precisely, we have selected the districts of Kolkata, North 24 Parganas, Howrah and Hooghly. We have used primary data, which provides information on debt and investment related variables of 38 borrowers in West Bengal. The data include samples from urban areas. This source provides rich micro level information through a representative sample.

2. Background of the Paper

As a backdrop to this main analysis, the paper compares the overall borrowing situation of the households in the selected districts. This is done in order to have a basic understanding of the informal credit market of the districts, since such an understanding is a prerequisite to understanding the formation of interest rates. It is revealed that, in the urban areas of West Bengal a larger percentage of the households worse off economically. While considering the

figures according to the occupation, we find that there are more households are self-employed. In absolute sense, within a state, poorer households in urban areas possess high accessibility to credit vis-a-vis households of higher monthly per capita consumption expenditures (MPCE). But overall level of accessibility is low. Information about the incidence of borrowing according to lending agency shows that in West Bengal is characterized by very low formal lending and high informal lending for comparatively poorer people.

MPCE	Households	IOB	Formal Agency	Informal Agency
0-500	26.6	15.8	1.6	14.2
500-1000	45.7	14.1	3.5	10.6
Above 1000	27.6	9.4	5.6	3.8
All	100	13.2	3.6	9.7

Source: NSSO, 59th Round, AIDIS

Activities	Households
Self-employed	40.1
Regular wage/salaried	34.6
Casual labour	15.3
Others	10.0
Total	100.0

Source: NSSO, 59th Round, AIDIS

The descriptive statistics helped us to identify some of the major determinants in terms of accessibility to credit and in price of loans i.e. the rate of interest in informal credit markets in urban West Bengal.

Based on this background, the paper is organized as follows. The rationale for the selection of districts is elaborated in the next section. The subsequent section makes a comparison of the nature of indebtedness across households of different characteristics (subdivided according to their monthly consumption expenditures) and between the districts selected for the analysis. This is followed by the section focusing on econometric specification and variables selected for analysis. The penultimate section brings out the results of the regression analysis. This is followed by a concluding section.

3. Subdivision of households and criteria followed for selection of the districts

In this paper we have subdivided the households into three different classes, according to their monthly consumption expenditure (MCEs). This helped us to distinguish between comparatively richer households and the poorer ones. As mentioned above, four districts are selected in the state. These four districts are the best performing districts with respect to urbanisation, small trade and business activities, infrastructural facilities, and Human Development Index ranking (Ghosh, 2004). In particular, Kolkata is the most important business center of East and North-East India. A large section of the population of Kolkata depend on the informal businesses like small shops, roadside hawkers, furniture making, electrical wiring, leatherwork, shoe making, readymade garments, masonry and various kinds of activities such as services and order supply. North 24 Parganas was selected due to its rapid urbanisation, intense service and trading activities and for being a centre of small informal industries. Hooghly is a district with small industries and rich agriculture since remote past and Howrah has a large number of informal industries and vibrant trading activities (Census, 2011). All the three are neighbouring districts to Kolkata. It is seen that the distribution of households in the sample according to their monthly consumption expenditures. It reveals that, compared to North 24 Parganas, a larger percentage of the households of Howrah is comparatively better off economically. Primary Data also show that distribution of households with respect to MCE, Kolkata and Hooghly has

similar features. It also provides information about distribution of households according to their occupation. We find that there are more self-employed households in Kolkata, North 24 Parganas and Howrah, vis-à-vis Hooghly. On the other hand, in Hooghly more households are regular wage earners.

Distribution of households according to MCE	MCE	Kolkata	North 24 Parganas	Howrah	Hooghly
	0-5000	12.3	55.2	16.7	29.7
	5000-10000	86.2	27.6	33.3	66.2
	Above 10000	1.5	17.2	50.0	4.1
	Total	100	100	100	100

Distribution of households according to major economic activities in selected districts

Activities	Kolkata	North 24 Parganas	Howrah	Hooghly
Self-employed	43.4	44.8	40.1	36.2
Regular wage/salaried	30.4	17.2	34.6	41.9
Casual labour	26.2	38.0	25.3	21.9
Total	100.0	100.0	100.0	100.0

4. Nature of indebtedness of households across the selected districts

To understand the formation of interest rates in informal credit markets, one first needs to have a basic understanding of the nature of indebtedness faced by households in those districts. To look into the nature of indebtedness, we start with the issue of loan habit. Loan habit for a particular class of households is defined as the percentage of loan taken during last five years.

Loan habit by monthly consumption expenditures (MCEs) of households during last five years of each districts (percentage of total loans availed by each districts)

MCE (Rupees)	Kolkata	North 24 Parganas	Howrah	Hooghly
0-5000	20.4	58.1	13.8	13.9
5000-10000	31.5	28.4	41.4	31.9
Above 10000	48.1	13.5	44.8	54.2
Total	100	100	100	100

If we interpret loan habit as accessibility, then in the absolute sense, within a district, poorer households (MCE below Rs.5000) possess low accessibility to credit vis-à-vis households of higher monthly consumption expenditures. For instance, while loan habit in poorer households of Howrah is 13.8 percent, the figure for richest households (MCE above Rs. 10000) is 44.8 percent. In North 24 Parganas, a much larger proportion of total households are having larger section of households falls into the poorest class, compared to Howrah. For instance, while in Howrah, 16.7 percent of households incur monthly consumption expenditure of below Rs. 5000, the figure for North 24 Parganas is 55.2. Therefore, a high value of loan habit for the poorest class of households access to credit. The question that arises is why accessibility to credit (captured by loan habit) is high somewhere is low somewhere. Is it due to inadequate presence of formal lending agencies, leading to higher demand for credit in informal credit markets, or is it due to a lack of sufficient informal lending agencies? It also provides information about the number of households according to borrowing agencies. It shows that in North 24 Parganas poorer households completely depend upon informal sources compared to richer classes. Thus, based on what has been observed empirically, one can argue that in poorer classes of households depend mainly on informal lending. Collected data provides cross-tabulation on interest rates in

informal credit market, and percentage of households availed that rate in different MCE classes for each district. Since interest rate formation may differ between moneylenders whose principal activity is money lending (professional moneylenders) and others (non-professional moneylenders), we have carried out separate analysis.

Loan habit by lending agency (Percentage of households)

Note: 1=formal source, 2= informal source

MCE (Rupees)	Kolkata		North 24 Parganas		Howrah		Hooghly	
	1	2	1	2	1	2	1	2
0-5000	16.5	83.5	0	100	0	100	57.4	42.6
5000-10000	0	100	12.5	87.5	50	50	100	0
Above 10000	65.5	34.5	60.0	40.0	0	100	70.0	30.0

Prevalence of rate of interest (Percentage of households) by district

MCE less than Rs. 5,000

Interest rate range	Professional				Non-professional				Both			
	Kolkata	North 24 Parganas	Howrah	Hooghly	Kolkata	North 24 Parganas	Howrah	Hooghly	Kolkata	North 24 Parganas	Howrah	Hooghly
0-3		25	100	0	0	12.5	0	0	0	50	0	0
3-6		50	0	0	0	0	0	0	0	25	0	0
6-10		25	0	0	0	87.5	0	0	0	0	0	0
Above 10		0	0	0	0	0	0	0	0	25	0	0

MCE less than Rs. 10,000

Interest rate range	Professional				Non-professional				Both			
	Kolkata	North 24 Parganas	Howrah	Hooghly	Kolkata	North 24 Parganas	Howrah	Hooghly	Kolkata	North 24 Parganas	Howrah	Hooghly
0-3	0	100	0	0	0	100	0	0	0	0	0	0
3-6	0	0	0	0	0	0	0	0	0	100	100	0
6-10	0	0	0	0	0	0	0	0	0	0	0	0
Above 10	0	0	0	0	0	0	0	0	0	0	0	0

We find that interest rate charged by professional moneylenders to households below MCE of Rs.5000 in North 24 Parganas mostly move in the band of 3 to 6 percent, while in Howrah, interest rates mostly lie below 3 percent. Thus, the rate of interest varies between districts for professional moneylenders.

The figures for non-professional moneylenders are different. In each district, non-professional moneylenders charge relatively more compared to professional moneylenders. Due to market segmentation, possibly they have less information regarding borrowers, which increase their risk premium.

Another important feature is that in each district, interest on most of the households with MCE above Rs. 10000 is mainly below 6 percent. In other words, households of higher income groups get loans on comparatively better terms and conditions. Due to better accessibility of credit, it is possible that informal moneylenders face competition when they advance loans to households in higher income groups. It may also possible that raising rates of interest above a standard rate for households who possess accessibility to credit from other sources would lead to a reduction in repayment (Karlan and Zinman,2008) .

The descriptive nature of this study on indebtedness helped us to identify some of the major characteristics of accessibility to credit and interest rates among four districts of West Bengal. We next proceed to identify the factors that influence the rate of interest in informal credit markets in different districts of West Bengal.

5. Determinants of interest rate in informal credit markets

In order to gain insights into the issue of interest rate determination, a regression analysis was carried out by incorporating interest rate as the dependent variable.

5.1. Econometric specification

Rate of interest in informal credit market of the districts of West Bengal considered here is a continuous variable. Since the dependent variable continuous, an OLS regression is the most appropriate method for identifying the determinants of the interest rate.

In the present analysis, therefore, rates of interest have been ranked in ascending order. Accordingly, the different orders are 0-3, 3-6, 6-10 and above 10. Based on the borrowers' characteristics, it is assumed that a moneylender chooses a particular band of interest rate.

Given these specifications, the model under consideration is as follows:

$$Y_i = X_i b + u_i \text{-----} (1)$$

In this, Y_i is assumed to be the dependent variable (the estimated rate of interest on the basis of explanatory variables or desired interest rate). Here, b is the vector of unknown parameters, X_i s are the set of explanatory variables and u_i is the disturbance term that captures random error and effects of the left out factors. In this model, the disturbance term is assumed to be normally distributed.

The estimation of b is done here by using ordinary least squares method. Here if b is positive, it implies that the probability of charging a higher rate of interest increases with an increase in the explanatory variable.

In OLS model, the significance of the variables is tested by t test. Our objective is to see how the explanatory variables would have some impact on interest rates.

Having decided the type of econometric model to be used, the next question that arises is whether one should go for a pooled regression (which includes all the districts) or district –specific regressions.

Based on the descriptive statistics of the previous section, we found that features of credit market do not vary from one district to the other. Therefore, a pooled regression (with interest rate as the dependent variable) has been done for all the districts.

5.2. Selection of explanatory variables

One can subdivide the factors that influence the rate of interest into the following categories: cost of providing credit, factors leading to monopoly power, asymmetry in information, and institutional factors.

5.2.1. Cost of providing credit

Ghatak (1975) lists three main components that constitute the cost of providing credit: opportunity cost, administrative cost and the risk premium. The deposit rate in banks and post offices is generally considered the opportunity cost of lending money. Since this does not show much variability across observations, it cannot be utilized for our analysis. The administrative cost is generally a function of the size of the loan (Iqbal 1988) and the period of the loan. The larger the loan size or loan period, the lower are the unit costs of the administration. The economic status of households (captured through their MCE) can be used as a proxy for capturing the extent of risks. A low value of MCE is expected to increase risk for moneylenders. Extent of default risk leads to rise in interest rate.

5.2.2. Monopoly power

A lender, while fixing the rate of interest, may charge a mark-up above the cost of lending. This would depend on the type of market in which he/she is operating (either competitive or monopoly market). Thus rate of interest depends on the extent of competition.

Several factors may influence extent of competition. These are: presence of more lending agencies, borrowers' accessibility to credit, total supply of loan vis-à-vis demand (Hattalebakk, 2000) and elasticity of demand.

To capture each of these factors, a few variables are conceived. We have considered households availing loan from formal sector as one of the explanatory variables. In our analysis therefore formal loan taking households were given the value 1, other households were given the value 0. The habit of formal loan taking is expected to increase

competition within the informal credit market. A borrower's accessibility to credit is captured using two variables. A household's MCE, already a variable used to capture risk, may provide an indication about the household's accessibility to credit. A household with a higher MCE is likely to possess higher accessibility to credit, since it can provide better security. Occupation of the borrower, may also determine accessibility. For example, self-employed households, who may require credit on a regular basis, are expected to have better accessibility to credit. This is because to obtain permanent/ credit-worthy borrowers, moneylenders may compete with each other. In our analysis, self-employed households were given the value 1; other households were given the value zero.

The fourth aspect, (elasticity of demand) to some extent reflected by the purpose of loan taken by the households. Households availing loan for urgent needs are expected to be inelastic in demand. We have assigned a value of one to loans taken for urgent needs, such as current expenses and a zero value for others.

5.2.3. Information asymmetry

The presence of information asymmetry may also influence the rate of interest. In a credit market both the borrower and lender may face the problem of imperfect information.

The extent of information a borrower would possess primarily depends on their level of education. An educated borrower, with better knowledge about his/her options, could avail loan on comparatively better terms and conditions. In our analysis, the education level of the borrowers captured by using a dummy variable. If the education level of the borrower is above secondary level, he/she has been assigned the value one; zero value was assigned otherwise. (Secondary level) educated borrowers are expected to avail credit on better terms and conditions.

In case of lenders, informational problem is expected to solve by the presence of security. If a lender advances loans mostly to unknown borrowers, the presence of security would imply a reduction in the risk of moneylender, since he/she is assured of some return even if the borrower defaults. Therefore, it would lead to a low rate of interest. On the other hand, if a lender were deals with mostly known borrowers, he would demand security for only risky borrowers, thereby leading to higher interest rates. Moneylender s do not demand security from borrowers whose repayment is certain (Sarap, 1990, 1991).

5.2.4. Institutional factors

Institutional factors can influence rate of interest, by influencing all the above mentioned factors. According to, Bardhan (1989) institutions refer to social rules as well as conventions. In the analysis to follow, district-specific, gender-specific, caste-specific and religion-specific variables are included to identify the differences in interest rates due to such institutional factors. Keeping these in view, we have assigned a dummy variable for Muslim households, kaiotho and female borrowers.

Variables	Notations
Loan size	Loan size
Dummy variable for purpose(1=current expenses,0=others)	Purpose
Dummy variable of borrowing from formal sources(1=yes,0=no)	Formal
Dummy variable for self-employed households(1=self-employed,0=others)	Self-employed
Dummy variable for Muslim households(1=Muslim household,0=others)	Religion
Dummy variable for presence of security(1=absence of security,0=others)	Collateral
Monthly consumption expenditure of the household	MCE
Period of loan(1=short-term loans,0=others)	Loan period
Education(secondary education=1, below secondary=0)	Education
District dummy(North 24	District dummy

Parganas=1,Howrah=0),(Kolkata=1,Hooghly=0)	
Dummy variable for caste(1=kaiostho,0=others)	Caste
Dummy variable for gender(1=female,0=male)	Gender

6. Results

The objective of this analysis is to explain the formation of interest rates in the informal credit markets of the selected districts of West Bengal. As mentioned earlier, regression analysis was carried out for all of the moneylenders.

Regression result with rate of interest as the dependent variable (done for all moneylenders of all the selected districts)

Observations	38			
R squared	0.720373			
Standard Error	20.40609			
Explanatory variables	Coefficients	t values	S.E.	P value
Loan size*	0.003524	6.5012034	0.000541995	8.26588E-07
Purpose*	11.53282	1.435731851	8.032708814	0.163473748
Formal	4.342712	0.355862827	12.20333104	0.72492869
Self-employed	1.573865	0.193740356	8.123580854	0.847944757
Religion	12.66782	0.903183719	14.02574	0.375049142
Caste	-7.25426	-0.858573611	8.449194742	0.398733178
Gender*	8.219158	1.053898057	7.798816924	0.302009305
Collateral	-2.15708	-0.280568934	7.68823375	0.781349823
MCE	0.00017	0.608353758	0.00027896	0.548440763
Loan period	-5.88918	-0.717830507	8.204140419	0.479516517
Education	2.308685	0.293332037	7.870550177	0.7716896
District dummy	-0.85466	-0.074017989	11.54671049	0.941585143
Intercept	-48.5164	-3.062931159	15.83985161	0.005188242

: * implies significance at the five percent levels.

Our analysis indicates the following implications in the formation of interest rates across the districts of West Bengal.

The results show that in the districts of West Bengal, bigger the loan size of borrowers implies a higher probability of borrowing at a higher rate of interest vis-à-vis small size of loan taking borrowers.

Secondly, we have found that in the districts of West Bengal, reason for loan taking to meet current expenses increases the probability of charging a high rate of interest by all type of moneylenders.

The possible explanation behind such a phenomenon may be following. As far as the relation between purpose of loan and rate of interest is concerned, it appears that in the districts of West Bengal number of moneylenders relatively scant. Therefore by charging high rate of interest they enjoy their monopoly power. In this context, one should note meeting current expenses borrowers require loans on an urgent basis.

In addition, we found a positive coefficient for the dummy variable 'gender' in the districts of West Bengal. It may be due to the following reasons. For female borrowers the probability of paying high interest rates might be more due to the social obligations i.e. taking advantage of their bargaining power, charge a higher interest rate by the moneylenders. A higher interest rate could also rely on the theory of confiscation of collateral (Bhaduri, 1977).

7. Conclusion

The paper has looked into the issue of interest rate determination in the informal credit market across selected districts of West Bengal. In order to assess this aspect, the paper first uses descriptive statistics to draw inferences regarding the nature of indebtedness faced by the borrowers in different districts. Subsequently, regression analysis has been used to identify the various causative factors.

Our analysis suggests that informal lending markets of selected districts consist of fewer lenders having perfect information about borrowers. This in turn has put greater monopoly power in the hands of the moneylenders to raise interest rates.

From the results of our analysis, it has been inferred that larger the loan size, loan for meeting current expenses and female borrowers are the three most important variables that lead to high interest rates in informal credit markets. Thus, male borrowers avail informal loans on better terms and conditions.

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“Bring Earth Back to Life”

Abhirup Mitra

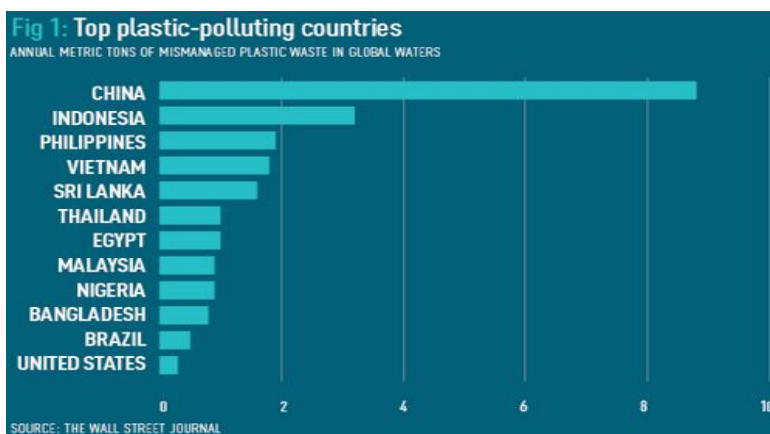
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St. Xavier's College (Autonomous) Kolkata

1. Background Of The Project

Every kind of pollution has some detrimental effect to the economy, plastic being one of the major sources of concern. Plastic pollution affects multiple industries and, in turn, our global economy, and it could well be affecting our health too. Aside from such direct costs, there are, of course, also those to marine life – causing animals to suffer and die as a result of our reckless use and disposal of plastics. The existing problem is frightening, but the first thing we all should do is to stop it from becoming worse. Fortunately, individuals, businesses and governments are on the cusp of the epiphany needed: new regulations are being introduced, reduced packaging is becoming more common, and there is far greater consumer awareness than ever before.



The existing problem is frightening, but the first port of call is to stop it from becoming worse. “We need to look at our usage of plastics and find ways to use them more wisely,” said Hudson. This is an important point, for plastic itself is not necessarily the enemy – it’s our relationship with it that is causing so many problems for the natural environment. Hudson shared some suggestions for ways forward with this controversial, yet essential, material to human life: “We can design ways that plastic can be reused, remodelled or remade so that it doesn’t become a waste product, some of which will be lost and some of which will end up in our natural systems.”

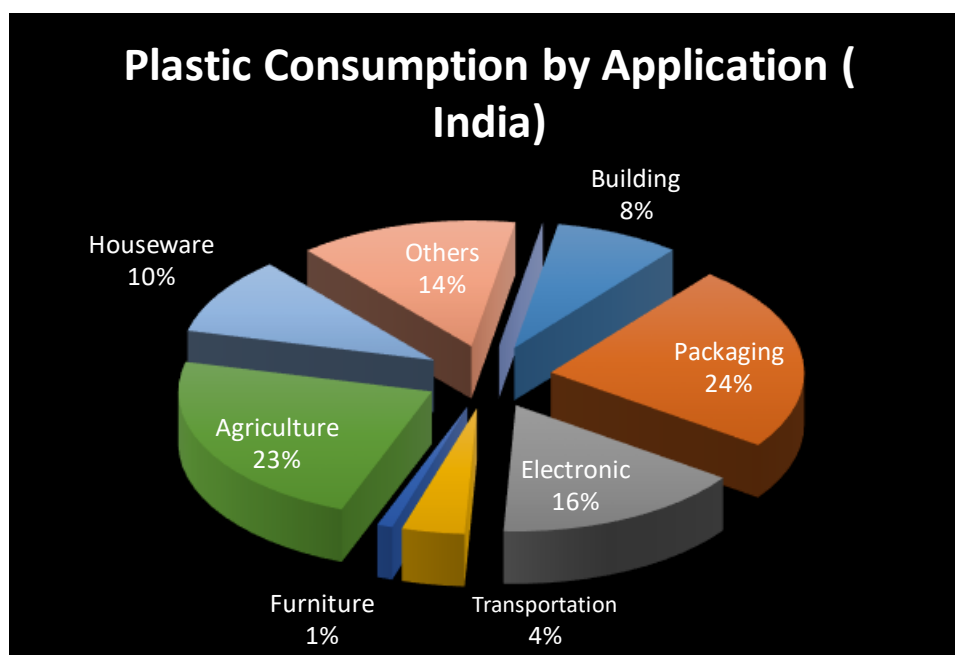


2. Objective of the Study

To provide an overview of Plastic Industry

To evaluate the awareness programmes on reduction of use of plastic

To analyse whether there is any relation between ban of plastic and economy.



Plastics Replacing The Traditionally Used Materials

Product	Previous typical packaging material	Current typical packaging material
Milk, edible oil	Glass, metal	3 or 5 layer film pouches
Toiletries (soap/shampoos)	Paper, glass	Plastic pouches or films
Cement, fertiliser	Jute	PP/HDPE woven sack
Toothpaste	Metal	Plastic lamitube

3. Overview

The Indian plastic market consists of around 25,000 companies and provides employment opportunity to around 3 million people. The State of Gujarat accounts for the largest number of plastics manufacturers, with over 5,000 plastics firms.

Indian plastics industry is increasing rapidly, with plastics consumption growing at a rate of 16% per year as compared to 10% p.a. in China and 2.5% p.a. in the UK.

Despite India having a population of 1.15 billion and a work force of 467 million, plastics companies have reported problems with labour shortages.

The plastics industry is also facing the problem of a nationwide power deficit along with shortage of labour. The electricity demand deficit is 12-13 per cent. This provides excellent opportunities for firms offering energy saving solutions, power saving machines and ancillary equipment.

Raw Material Demand And Supply

Reliance Industries, stated in January that India's polyolefins market is expected to grow 12 percent to about 7.5 million metric tons in 2011 along with double-digit growth in consumption of both polypropylene and polyethylene. It is estimated that between 75-80% of Polypropylene demand in India is met by Reliance Industries with around 20% coming from four Government run companies Indian Oil Corporation Ltd (IOCL), Haldia Petrochemicals, Bharat Petroleum Corporation LTD (BPCL) and the Gas Authority of India Ltd (GAIL).

EVA is also in high demand, with barely 10% of the demand being met by domestic supply, in this case by Relene (a division of Reliance).

Automotive Market

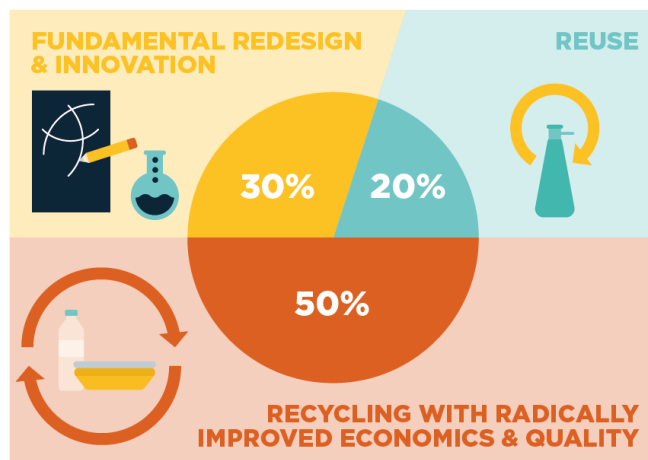
India being the second fastest growing consumer market for automobiles industry in the world after China and the seventh largest producer of motor vehicle.

Packaging Industry

Packaging industry accounts for upto 24% of India's plastic consumption. Government Initiative for avoiding plastic Consumption "We make a solemn pledge that we will eliminate all single-use plastics from our country," said Union environment minister Harsh Vardhan while referring to PM Modi's idea of 'New India by 2022'. "This India of our dreams (New India) will be single-use plastic free," said Vardhan amid applause from the gathering here at Vigyan Bhawan where the PM later emphasised on India's commitment towards protecting environment. Being the global host of this year's World Environment Day.



Three strategies to transform the global plastic packaging market



World Economic Forum and Ellen MacArthur Foundation, with analytical support from SYSTEMIQ *The New Plastics Economy - Catalysing action* (2017, www.newplasticseconomy.org).



Rise Of Plastic Consumption In India (Per Year)



Source: Central Pollution Control Board

NDTV.com

4. Need For The Project

Fortunately, individuals, businesses and governments are on the cusp of the epiphany needed: new regulations are being introduced, reduced packaging is becoming more common, and there is far greater consumer awareness than ever before. But it is not enough. We have to act fast – not for future generations, but for the present, as this is the time frame that we're dealing with.

On the one hand, there is the damage to the environment and subsequent marine fatalities, which should be enough to convince many of this issue's pertinence. For those less concerned with such issues, there is the inarguable cost to numerous industries, thousands of businesses, national economies, as well as the global economy. Fortunately, the story is not all doom and gloom: awareness is the first step.

Means Of Reducing Plastic Pollution

• 1.USE OF RECYCLEABLE IN GOVERNMENT OFFICES IN KERELA

Most of the government offices in Kerala are contributing in their own way towards the Beat Plastic Pollution initiative of the government to make India plastic free. The employees have shifted from using plastic-made items like plastic water bottles and disposable teacups to steel cutlery, and from pens made of plastic to pens made of steel.

- **EXTRACTING OF PLASTIC WASTE FROM WATER BODIES IN KERELA**

Kerala's Suchitwa Mission has launched an excellent project in which 28 fishermen have been employed from the Neendakara harbor in not just finding the fishes but also extracting the plastic from the water bodies that either gets stuck in the fishing nets or float on the sea. The Mission has been able to retrieve 25 tonnes of plastic waste in last 10 months of the project launch.

- **TACKLING PLASTIC USE IN SIKKIM**

Sikkim has always been at the forefront when it comes to tackling the plastic pollution. Its success in restricting usage and sale of plastic bags is an example for the other states to learn from. This success is not achieved by Sikkim by just imposing random fines on the plastic use, but by making people aware of the dangers caused by plastics. In 1998, it became the first Indian state to ban disposable plastic bags and single-use plastic bottles.

- **UTILISING PLASTIC FOR ROAD SURFACING**

The plastic which is banned and considered a waste can now be utilized in flagging off development projects across the country. Many states in India are planning to implement this pioneering technique to manage their plastic waste. The states of Kerala, Maharashtra, and Tamil Nadu have already started to work on this unique technique.

- **RECYCLING PLASTIC FOR BETTER PURPOSES**

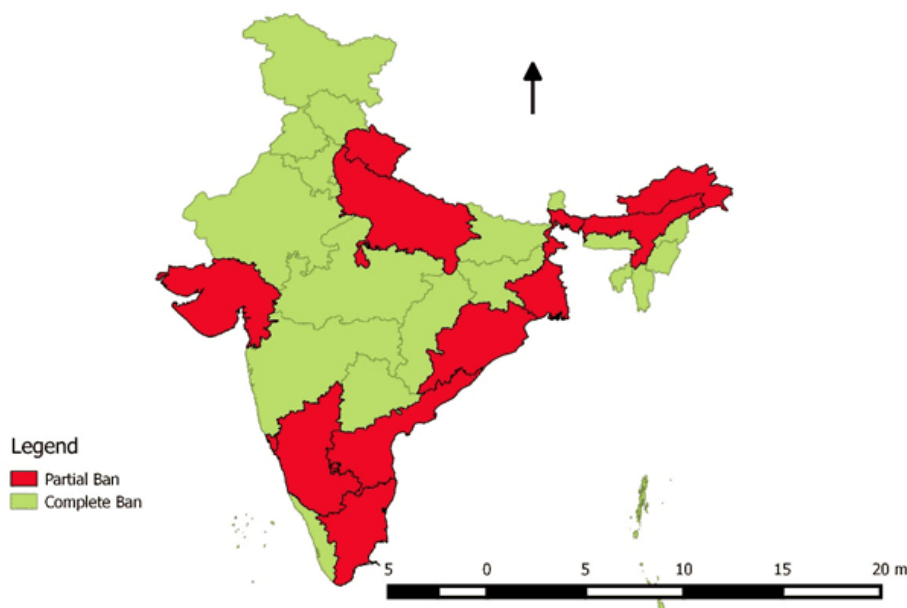
It is an impossible task to dispose of such huge amounts of plastic waste generated in India at one go. The only option available is to use this plastic waste in an eco-friendly manner that the burden on the country's dumping grounds gets reduced. Many organizations in India have been recycling plastic in an efficient manner to avoid any harmful effects caused by it. The plastic is being utilized and recycled in construction materials, making of threads and fabrics for the textile industry, and many other better purposes. The government's recent proposal to introduce plastic currency notes is a major step in reusing plastic waste.

- **INTRODUCTION OF "BEAT PLASTIC POLLUTION" DRIVE BY SUSTAINABLE ENVIRONMENT AND ECOLOGICAL DEVELOPMENT SOCIETY (SEEDS) IN EAST DELHI SCHOOLS**

The SEEDS implemented a drive in view of beating plastic pollution in six Schools in East Delhi to encourage safe environmental practices among students, children, teachers, parents, and communities in Delhi.

Plastic Ban In Indian States

On January 1, 2019, Tamil Nadu became the fourth state in India to ban single-use plastics. Maharashtra being the first do it on March 23, 2018, Telangana did it in June and Himachal Pradesh in July. Now most Indian states have banned plastic bags. Single use plastics are those plastics which are used for packaging and are intended to be used only once before they are thrown away.



TAMIL NADU

After the Tamil Nadu government bans the single use plastic from 1st January 2019, the hotel industry in the state were still looking for alternatives.

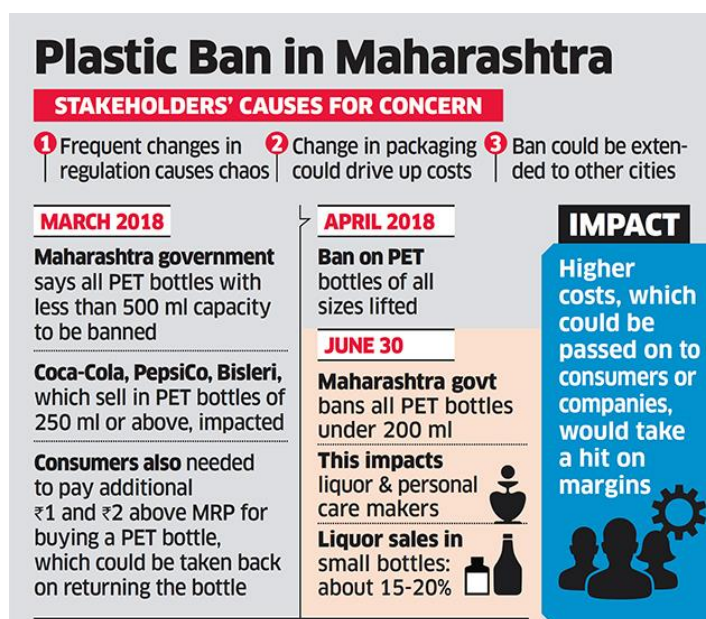
“We understand that single-use plastic is harmful for the environment and so, in principle, support this ban. However, we have no alternatives. Till the government comes up with alternatives, it could have given some relaxation,” secretary of Tamil Nadu Hotels Association R Srinivasan told Down To Earth. “I hear some research is going on for cardboard-based packaging for food. But it is in nascent stages. The governments must support such initiatives if they are really serious about solutions,” he added. Similarly, plastic manufacturers of the state are also up in arms.

The advisory added that awareness programmes about the ban and alternatives to the banned plastics should be conducted for employees and people living in 10 km radius of the industry. Also, the TNPCB advised to not use banned plastic items in canteens, offices, official meetings, etc. The corporate social responsibility funds can be used to raise money for all this, said the government advisory.

This ban was implemented after plastic waste began causing blockage of sewers and drains apart from resulting into pollution of water bodies.

MAHARASHTRA

Maharashtra, was the first state to ban use of all kinds of single-use plastics. On March 23, 2018, it implemented the ban on manufacture, usage, transport, distribution, wholesale and retail sale and storage and import of plastic bags with handle and without handle, and the disposable products manufactured from plastic and thermocol such as single-use disposable plastic products used for packaging food in hotels, non-woven polypropylene bags used to store liquid, plastic packaging of fresh food items and food grain material etc.



Source: The Economic Time

HIMACHAL PRADESH

The state government on 6th July, 2018 banned the use of plastic carry bags irrespective of their thickness and sizes and all plastic items that have one-time use and are made of non-biodegradable materials. “The ban is being implemented properly, at least in Shimla. Plastic cups or plates are not in use and even polybags are also not being used. Tourists at times do carry polybags or thermocol cutlery to Shimla either due to ignorance about the ban or otherwise. So they are either left with a warning by the police or health officials or are fined,” said a source in the state.

TELANGANA

The Telangana government also announced ban on single use plastics in June 2018.

According to the notification issued on June 14, 2018, the ban covers drinking water plastic and tetra bottles, single-use straws, plastic/styrofoam tea cups/containers, plastic below 50 micron plastic or plastic coated items and any other forms of single use/banned plastic. The notification stresses on the fact that all the offices of urban local bodies must strictly not use these products whatsoever at all. For general public, the use of polybags was strictly banned while it was advised that the single-use plastic use be contained.

Ramanjaneyulu GV, an activist in the state, said, "The usage has definitely come down but all the plastic stuff is still there. But people themselves are now reluctant to use them because of environmental concerns."

OTHER STATES

Uttar Pradesh and Karnataka have also banned products which qualify as single-use plastics but haven't used the term in their notifications. While Karnataka's notification came in 2016, Uttar Pradesh announced the ban on August 15, 2018.

Sikkim was way ahead of all these states, but only when it comes to plastic bags, which the state banned in 1998. In 2016, it announced a ban on use of plastic bottles and Styrofoam and thermocol disposable plates and cutlery, not a blanket single-use plastic ban.

The Bihar government also imposed a similar ban from October 25, 2018. Bihar's ban was confined to use of plastic carry bags. The manufacture, import, store, distribution, selling and transport was banned. The only exemption granted to this ban was use of plastic carry bags less than 50 microns for storage of bio-medical waste.

Andhra Pradesh made a similar announcement in October 2018, as did Assam and Meghalaya in August 2018. With this, there's almost no Indian state that has not banned the use of plastic carry bags, at least. Also, Odisha, on September 8, 2018, banned polythene bags of all thickness and sizes, PET bottles of less than 500ml capacity, single-use plastic cutlery and thermocol decorative items.

"All these initiatives sound good as India has announced to phase out single-use plastics by 2022. However, are these bans implemented in entirety? Many reports suggest they are not. Therefore, the issue is not just about announcing bans of one kind or another. It is about creating a citizen's movement against all single-use plastics," Global Alliance for Incinerator Alternatives (GAIA)'s Pratibha Sharma told DTE.

Plastic has been completely banned in all other 17 states and UTs except the following 11 states where it had been partially banned in aug, 2017: Andhra Pradesh, Arunachal Pradesh, Assam, Goa, Gujarat, Karnataka, Odisha, Tamil Nadu, West Bengal, Uttar Pradesh and Uttarakhand.

5. BUDGET ALLOCATION FOR "NAMAMI GANGE" PROJECT

The Narendra Modi government's flagship "NamamiGange" project aims at comprehensive cleaning and protection of the river. The announcement signals a major shift from previous efforts as the Centre will now be entirely responsible for the funding of various projects and activities that fall under the programme. The programme will be implemented by the National Mission for Clean Ganga (NMCG) in conjunction with its state counterparts—the State Programme Management Groups (SPMGs).



Source:
pmindia.gov.in

The focus of the programme is on the abatement of polluting activities in and around the river through “interception, diversion and treatment of waste water flowing through open drains through bio-remediation/appropriate in-situ treatment/use of innovative technologies/sewage treatment plants (STPs)/effluent treatment plant (ETPs)”, says the release.

6. TRIPLE BOTTOM LINE FRAMEWORK

The triple bottom line has changed the way companies measure their performance in the area of Environment, Social and Financial fronts. It is not only the performance in the area of finance which counts now which was the norm in the yester years. Triple Bottom Line is the new accounting framework which has become the buzzword since 1990s, when John Elkington first introduced the concept to the business world. TBL reporting has become tool to measure sustainability goals. TBL has been incorporated by not only the private enterprises but also it has been implemented in the government and not for profit organizations. The challenge is to measure the environmental and social impact in terms of money. According to Andrew Savitz. The TBL "captures the essence of sustainability by measuring the impact of an organization's activities on the world ... including both its profitability and shareholder values and its social, human and environmental capital.



7. A CASE STUDY OF ITC LIMITED

Let us examine in detail the initiatives taken by ITC in the Triple Bottom Line framework.

Environmental Quality

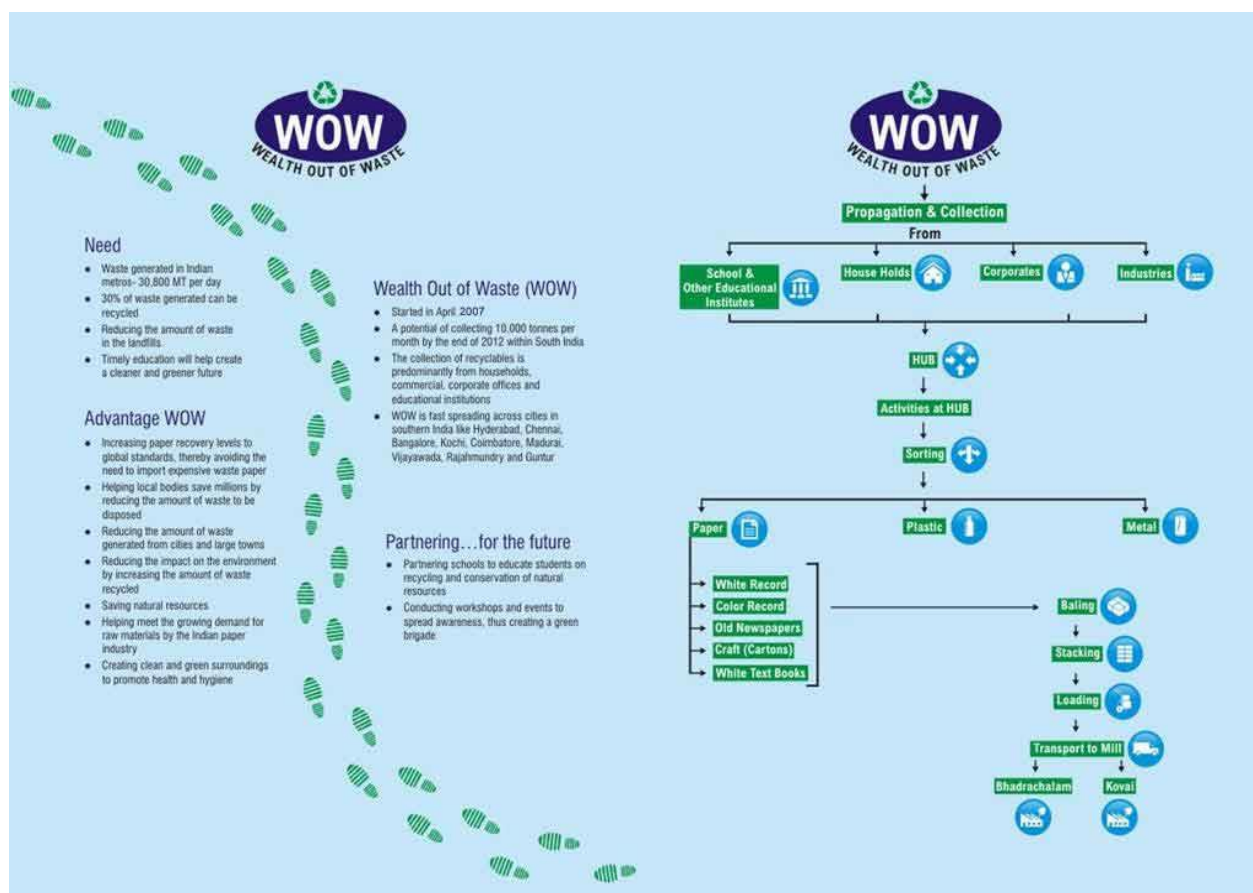
Waste: trends in recycling, reuse and yard waste

ITC has been “solid waste recycling positive” for 11 years now.

INITIATIVES		IMPACT
Wealth out of Waste (WoW) programme	Recycling to provide sustainable raw material for ITC’s paper board business Supported by 3 million citizens, 500,000 school children, 350 corporates and over 1,000 commercial establishments	<ul style="list-style-type: none"> • Augment Green cover • Conserve energy • Clean surroundings • Livelihood opportunities

At Cigarette Factories of ITC	Located at Bengaluru, Saharanpur, Munger and Kolkata, , Surya Nepal's Cigarette factory at Simra	
Paperboards & Specialty Paper Units	Located at Tribeni	
Leaf Threshing Units	Located at Chirala & Anaparti	
• ITC Hotels	Located at - Maurya, Maratha, Grand Central, Sonar, Windsor, Mughal, Kakatiya & Sheraton Hotels New Delhi & Rajputana	Reused/ recycled almost the entire waste generated (more than 99%) out of their operations.

Waste management, in India, is an area of serious concern, with significant proportions of waste being disposed through land filling and dumping.



Energy: energy consumption, natural gas consumption and alternative fuel usage

INITIATIVES		IMPACT
Low Carbon Growth Strategy with accordance to National Action Plan on Climate Change		Today, more than 43% of ITC's total energy requirements are met from renewable sources.
Green Building- the ITC Green Centre in Gurgaon		World's highest rated Platinum certified green building by the US Green Building Council
ITC's several factories		Received the Platinum Green Factory Building Rating
ITC Hotels		Platinum LEED certification for all the premium luxury hotels of your Company, making ITC Hotels the greenest hotel chain in the world.
Climate change mitigation and Creation of natural capital		Over 38% of total energy consumed in ITC is now from renewable sources.
Wind Power Projects in Tamil Nadu 14 megawatt Clean Energy Initiative	Supports the premium luxury hotels and factories in several locations as well as the ITC Infotech Park and the ITC R & D Centre in Bengaluru 30.9 % of ITC's energy consumption is met from renewable sources.	<ul style="list-style-type: none"> • More than a dozen ITC facilities now run more or less completely with renewable energy. • Reduces ITC's demand for fossil fuels but also contributes to cost efficiency in the long-term. • Positive environmental Footprint • Eligible for Carbon Credits under the Kyoto protocol. • Cost Savings

CDM-EB Projects-Total Projects (8) under UNFCCC(United Nations Framework Convention on Climate Change	One project on Social Forestry and ITC Sonar the only hotel in the world to earn carbon credits	Reduction in environmental footprint
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Water: water consumption

India faces a turbulent water future. Home to over 17% of the global population and having access to less than 4% of its fresh water resources, India's water scarcity is likely to worsen over the years.

INITIATIVES		IMPACT
Watershed Development Programme		<ul style="list-style-type: none"> • Irrigation of 90,000 hectares of water stressed areas • Raising rural incomes by harvesting of additional crops
Lowest water use per unit of production	Through conservation, audit and benchmarking	
Zero water discharge	Treating and recycling all waste water	Reduction of fresh water intake
Positive Footprint	Through rain water harvesting	Total rainwater harvesting potential so far developed by the Company is more than 2 times the total water consumed by its operations

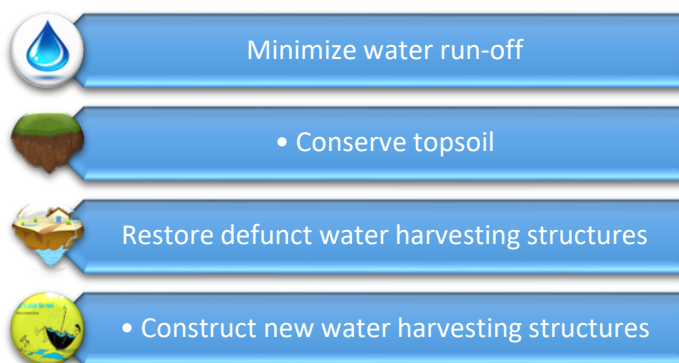
Air Quality: toxic release inventory and number of air pollution ozone action days

INITIATIVES		IMPACT
Afforestation	Planting 54 million saplings	<ul style="list-style-type: none"> • 56.64 million person-days of employment • Reduction of Air Pollution

Agricultural Impact

INITIATIVES		IMPACT
Social and Farm forestry	1. Clonal saplings disease resistant 2. Conversion of wastelands into forest 3. Raw material for ITC's Paperboard business	<ul style="list-style-type: none"> • Green Cover of 125,000 hectares • Carbon Positive for 13 years in a row.
Group Irrigation Wells		863
Sprinkler units		4267
Demonstration plots		44492
Vermicompost & NADEP units		37530

The strategies are adopted to make agriculture more sustainable and to:-



Economic Prosperity

INITIATIVES		IMPACT
Tax Payer	ITC is one of the top taxpayers amongst the listed private sector companies in India	Responsible Organization
Non-cigarette revenue	19 times growth from about Rs.	• 59% of net segment revenue of

	1,360 crores in 1996 to Rs. 26063 crores in 2018	ITC is now from businesses other than cigarettes • Diversification
		ITC was conferred themWorld Business and Development Award 2012 at the historic Rio+20 United Nations Summit ITC ranked as the most admired company in India in 2014 (Fortune-Hay Group survey)
'e-Choupal' launched in 2000	<ul style="list-style-type: none"> • Largest initiatives among all internet based rural initiatives in India • Bargaining as virtual buyers. • Better Price. • Matching crops to food norms 	<ul style="list-style-type: none"> • 4 million farmers • 35000 villages • 6,100 kiosks • 10 states- Madhya Pradesh, Haryana, Uttarakhand, Karnataka, Andhra Pradesh, Uttar Pradesh, Rajasthan, Maharashtra, Kerala and Tamil Nadu • Crops covered- soya bean, coffee, wheat, rice, pulses, shrimp, maize, spices, coffee, aquaproducts. • Transformational impact on rural lives as cited in Government Of India's Economic Survey of 2006-2007.

		Example-1 million tons of wheat sourced over e12 choupal
	Multidimensional delivery channel by linking digital infrastructure to rural business hubs	<ul style="list-style-type: none"> • Efficient carrying of goods and services out of and into rural India. • Reverse flow of FMCG, durables, automobiles and banking services. • Reduction in unemployment
Choupal Saagar-total opened 23 to grow rapidly in the coming years.(Hub and Spoke Model)	<ul style="list-style-type: none"> • Enhancing production and consumption in Rural Economies • Made to design agri business hub • Functioning as ITC's agri sourcing and shopping centers 	<p>Services Provided</p> <ul style="list-style-type: none"> • Training • Soil Testing • Product Quality Certification • Medical and Clinical Services • Cafeteria • Fuel Station
Choupal Pradarshan Khet(2006-2007) brings agricultural best practices benefits to farmers	<ul style="list-style-type: none"> • Handholding and training to farmers. • Customized Services provided also include credit. 	<ul style="list-style-type: none"> • Development of indigenous knowledge • Area covered 70,000 hectares • Lives impacted 1.6 million farmers

Social Capital and Equity

INITIATIVES		IMPACT
Improving infrastructure in government Schools		Government Schools assisted 1173




Supplementary learning centres		Students covered 4,21,829 Supplementary learning centres total 371
Community and Parental involvement		Reduction in dropout rates so that more children go to and finish school
Health Care Initiatives	652 health care camps	Patients healed 53,600.
Hygiene		Supported Construction of sanitary units for 3,600 families in 8 years.
Women's empowerment		Micro-credit groups: 2,155 Livelihoods Created : 45,183
Livestock Development	High yield livestock for land less famers	Animal Husbandry Services(Artificial Insemination) : 15,95,363 Farmers Benefitted : 4,55,818 Cattle Development Centers:256
Employment for Persons With Disabilities (PWD) ITC Hotels	1.Equal Opportunities Provider 2.Sensitizing other employees to the needs of differently enabled	<ul style="list-style-type: none"> • Over 100 PWDs have employed in housekeeping, teleworking, bakery and as musicians. • Creation of positive work environment • Special badges for visually impaired, whistles for hearing

		<p>impaired employees, sign language</p> <p>classes for the staff to communicate with PWDs.</p> <ul style="list-style-type: none"> • For its substantial contribution to the cause of 14 promoting employment opportunities for differently abled people over an extended period of time, ITC-Hotels has received the N C P E D P - Shell Helen Keller Award for three years consecutively since 2006.
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8. Findings

ITC has been "*carbon positive*" for 13 consecutive years, sequestering twice its emissions. It has been "*water positive*" for 16 years, having created freshwater potential that is more than twice its consumption. For over 11 years now, ITC has been "*solid waste recycling positive*". These achievements remain unparalleled globally, with *ITC being the only enterprise in the world* of its dimensions to have accomplished and sustained these environmental distinctions.

	The Triple Bottom Line Assessment of ITC Limited			
Criteria	Statistics	Low	Medium	High
People	<ul style="list-style-type: none"> • 125 million person - days of employment generated in social and farm forestry • e-choupal 4 million farmers empowered • 45,183 women empowerment • 4,21,829 children provided education • Over 100 PWDs employed in ITC hotels • Sustainable livelihood opportunities for more than 5 million people • Direct employment to more than 32000 people 			
Profit	<ul style="list-style-type: none"> • Turnover of over Rs.40627.54 Crore • Market Capitalization of nearly Rs.3,12,308 Crore • Non-cigarette revenues accounted for 59% • Total shareholder returns grew at 22.4% per annum over the last 22 years (Measured in terms of market capitalization and dividends) 			
Planet	<ul style="list-style-type: none"> • Carbon positive 13 years in a row, sequestering / twice the amount of CO2 that the company emits • Water positive for 16 consecutive years (creating over two times more rainwater harvesting potential than ITC's net consumption) 			

	<ul style="list-style-type: none"> • Solid waste recycling positive for the last 11 years • All ITC's Environment, Health and Safety Management systems conform to International standards • Greening 683,000 hectares in social and farm forestry • 136,190 acres of dry lands irrigated under ITC's watershed development 			
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The Triple Bottom Line Advantage



9. Conclusion & Recommendation

ITC Limited has done a phenomenal job in recent years to emerge as an example of 'Green Organization' which has not only in the best possible way implemented the Triple Bottom Line framework. In that it has proved to be a futuristic organization which offsets the unbalanced past which it has created in the course of its operations to produce various goods and services for its customers. ITC has thus behaved in a responsible manner towards the stakeholders and exemplified success by winning numerous awards at both national and global level. ITC Limited has wonderfully addressed and solved national issues related to deforestation, unemployment both urban and rural, women empowerment, recycling and reuse of solid waste, rural irrigation, employment for PWDs, education for children, efficient energy, and alternatives sources of income for landless labourers, hygiene issues in villages, etc in a holistic manner. ITC is calling all the organizations to re-examine their priorities to do business in a balanced way, because if the world exists can they exist and I think ITC realized this long time ago. So in the end we can emphasize the win-win initiatives of ITC Limited and what a success story it has crafted! The problems caused due to plastic bags have often been overlooked and underestimated. This is because people do not look at the long term effect of these small, easy to carry bags they use in their everyday life. They keep using these bags owing to the convenience they offer completely ignoring the fact that these bags have adverse effect on the environment and are a threat to life on earth.

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Factors Affecting Buying Behaviour of Rural Consumers in Southern part of West Bengal for FMCG Products

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1. Introduction

Fast Moving Consumer Goods (FMCG) forms a major component of purchase for consumers at large. The sector has been growing at a CAGR of 11% over the last decade, (Report: The Indian FMCG Industry, 2012). A well driven distribution network and competent value chain, as well as intense competition between the organized and unorganized sector (Report, FMCG Industry in India) are the hallmarks of this sector.

2. Consumer behaviour

Consumer behaviour is defined as activities people undertake when obtaining, consuming, and disposing of products and services (et al Blackwell, 2001). The study of consumer behaviour does not only include reasons for buying but also the consumption process of the consumer at large. In the entire process of buying, consumers get driven by influences such as feelings, motivation, income, lifestyle, opinions, culture, personality etc.

3. Research Methodology

The study was conducted to understand the factors that affect the buying behaviour of FMCG products for lower income group as such category of products touches everyone's life beyond income groups. The residents belong to lower income group and are primarily engaged in services as electricians, sweepers, cools, maids, gardeners, plumbers, security guards, masons etc.

The sampling unit of 102 respondents was chosen on the basis of convenience sapling as if it is sufficient to have the findings "representative" of the population, then a non-probability sample can be selected (Schiffman and Kanuk, 2004). In order to arrive at better understanding of factors, a mixed method approach was used with explanatory design and sequential timing. The quantitative strand consisted of close ended questions and was analyzed using descriptive statistics. The qualitative strand consisted of open ended questions, designed to help explain the quantitative results, and analyzed by a coding system.

4. Findings

In order to understand the effect of factors on the buying behaviour, twenty one such variables were placed under five broad categories. At the same time there was an attempt to understand the economic factors (in terms of income and expenditure) along with product preferences in order to develop a comprehensive understanding as well to complement the quantitative and qualitative strands.

5. Income – Expenditure

The maximum portion of monthly earning i.e. about 56% is spend on purchasing grocery items followed by monthly bills including electricity bills, cable and mobile bills which forms 12% of the expenses. Informal credit (ROSCA) system of saving (and expenditure) is very popular with this segment as it constitutes about 15% of the monthly expenses. Tobacco and alcohol constitute 10.23% of the expenses and Clothing forming the least spend constituent. As major portion is spend on grocery items, hence expenditure on FMCG products hold much significance with reference to consumer buying behaviour in this region.

6. Product Preferences

Branded products are preferred in all sub product categories. Biscuits, tea and ice – cream, cold drink form the largest component of Food and Beverages category. While respondents use branded products for toothpaste, there are mixed choices for toothbrush under dental care category. Personal care and personal wash product categories again shows a mixed choice but hair care products are heavily drawn towards branded products.

7. Factors

A total twenty one factors were divided into five broad categories.

Reliability: There were six variables under this factor. Brand loyalty was the most important variable, followed by reliance on private companies, reliance on government companies, known one's recommendations, word of mouth and shopkeeper's recommendation as least reliable factor. The respondents have deep brand loyalty for various product categories and hardly switch brand choices except in cases of irresistible sales offers. Interestingly they have more reliance on private companies for product offerings than government companies.

Promotion: Free offers constituted the major factor for buying, whereas advertising played an important role in announcing and creating impact for offers and discounts. Product display, at times, leads to impulsive buying. Celebrity endorsements had more impact on teenagers and young adult of households and product awareness was least relevant factor.

Product: While quality formed the most significant variable, packaging also attracted consumers especially under food and beverages, personal and hair care products. Size was relevant particularly in context of consumption of the household and discounts and offers. Product features and varieties were mainly relevant for food and beverages category.

Social: While social prestige was significantly important, lifestyle due to metropolitan effect had a prime consideration.

Economic: Undoubtedly price was the predominant factor for this price conscious set of respondents, followed by need and affordability.

8. Product Choice Insights

Based on interviews, it was found that generic products are cheap hence forms the prime reason to buy them; aligned with it is lack of money and aspiration value for branded products in the same category. For branded products, quality and trust forms the main reasons. The need for such products forms the most important reason to buy FMCG products.

9. Conclusion

The findings suggest that variables under factors like reliability and product attributes play a very important role for this low income and price conscious set of respondents. The consumers largely remain brand loyal. A considerable portion of monthly income is spent on buying grocery (including FMCG products). Promotions and offers have considerable impact on larger household and young adults. At the same time where they are buying generic products, they nourish aspiration value for branded products which remains restricted due to lack of money.

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Gender Equality and Women Empowerment in India

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1. Introduction

Promoting decent and productive employment and income opportunities equally for women and men is one of the key priorities of the International Labour Organisation (ILO). Integrating gender concerns into employment promotion can contribute to more effective boosting of productivity and economic growth; human resources development; sustainable development; and reducing poverty. Women Empowerment is a global issue and discussion on political right of women are at the fore front of many formal and informal campaigns worldwide. The concept of women empowerment was introduced at the international women conference at NAIROBI in 1985. Education is milestone of women empowerment because it enables them to respond to the challenges, to confront their traditional role and change their life. India is poised to becoming superpower, a developed country by 2020. This can become reality only when the women of this nation become empowered. Despite the importance of women education unfortunately only 39% of women are literate among 64% of the men. Within the framework of a democratic polity, our laws, development policies, plan and programs have aimed at women's advancement in different spheres.

Many United Nations (UN) conferences have advocated that women's empowerment is related to sustainable development. The Copenhagen Declaration of the World Summit on Social Development (WSSD) is a case in point. WSSD called for the recognition that empowering people, particularly women, to strengthen their own capacities is a main objective of development, and that empowerment requires the full participation of people in the formulation, implementation and evaluation of decisions determining the functioning and well-being of societies. The report of the United Nations Fourth World Conference on Women is another good example to mention. It called its platform for action on agenda for women's empowerment (Baden and Oxaal, 1997). How can the global community achieve the goal of gender equality and the empowerment of women? This question is the focus of Goal 5 of the Sustainable Development Goals the 2030 Agenda for Sustainable Development, adopted by all United Nations Member States in 2015. To ensure that Goal 5 is met by 2030, nine strategic priorities have been identified. These nine interdependent priorities are the minimum necessity to empower women and they are -**1)** To end all forms of discrimination against all women and girls everywhere, **2)** Eliminate all forms of violence against all women and girls in the public and private spheres, including trafficking and sexual and other types of exploitation, **3)** Eliminate all harmful practices, such as child, early and forced marriage and female genital mutilation, **4)** Recognize and value unpaid care and domestic work through the provision of public services, infrastructure and social protection policies and the promotion of shared responsibility within the household and the family as nationally appropriate, **5)** Ensure women's full and effective participation and equal opportunities for leadership at all levels of decision-making in political, economic and public life, **6)** Ensure universal access to sexual and reproductive health and reproductive rights as agreed in accordance with the Programme of Action of the International Conference on Population and Development and the Beijing Platform for Action and the outcome documents of their review conferences, **7)** Undertake reforms to give women equal rights to economic resources, as well as access to ownership and control over land and other forms of property, financial services, inheritance and natural resources, in accordance with national laws, **8)** Enhance the use of enabling technology, in particular information and communications technology, to promote the empowerment of women, **9)** Adopt and strengthen sound policies and enforceable legislation for the promotion of gender equality and the empowerment of all women and girls at all levels.

2. Literature Review

Sen (1997) stressed the importance of empowerment of women. This change has two components; the first is control over resources (financial, physical and human) and the second is control over ideology, belief, values and attitudes. Women's development in recent years emphasizes on providing equal opportunities for women by removing gender bias, empowering women and creating self-reliance among them. Sunita Roy (1999) reported that empowerment of women should focus on aspects like (a) direct involvement of women in programming and management, (b) effective collaboration with community organizations, (c) organizing and strengthening of women's self-help groups, (d) sensitization and advocacy for gender justice in society, (e) identifying women's need and

priorities while generating employment, (f) organizing women in different groups to undertake certain productive activities to earn their livelihood and (g) elimination of violence and discrimination against women at physical, mental, domestic or societal level. **Malhotra, Schuler and Boender's** (2002) have measured women empowerment in two dimensions: 1) Economic participation and decision-making (measured by the percentage of female administrators and managers, and professional and technical employees, and 2) Political participation and decision-making (measured by the percentage of seats in parliament held by women). Moreover, **Dejene** (2003) affirms that the emergency and establishment of local and community organizations and reducing the work burden of women in key tasks and improving their decision-making ability in natural resources management and overall status in rural society are the two critical preconditions for true women's empowerment. **Kabeer** (2005) contends that closing the gender gap in education at all levels, increasing women's share of wage employment in the non-agricultural sector, and increasing the proportion of seats held by women in national parliaments are the three main indicators towards achieving the goal of gender equality and women's empowerment. According to **Kishor** (2008), empowerment has come to denote women's increased control over their own lives, and environment. In discussions of women's empowerment, emphasis is often placed on women's decision-making roles, their economic self-reliance; and their legal rights to equal treatment, inheritance and protection against all forms of discrimination, in addition to the elimination of barriers to access such resources as education and information.

3. Results And Discussions

Evidence of Low Empowerment of Women in India.

Empowerment of women has become one of the most important concerns of 21st century not only at national level but also at the International level. Women constitute half of humanity, even contributing two-thirds of world's work-hours. She earns only one-third of the total income and owns less than one-tenth of the world's resources. This shows that the economic status of women is in pathetic condition and this is more so in a country like India. Women are regarded as the 'better half' of the society and at par with the men. But in reality, our society is still male dominated. The Indian development model has yet to fully incorporate the important role played by women for propelling the socio-economic growth of the country. Current governments at state and central level must understand that no nation can progress unless its women are given equal access to opportunities and adequate safety and security. A member of the so-called "BRICS" countries, India is noted for its rapidly expanding economy. Though India has certainly grown more prosperous in the recent decades, some groups have benefited from this boom more than others. In particular, women have faced a range of structural and social barriers in fully participating in the Indian economy, which not only hinders their individual agency but also limits India's ability to continue to modernize.

Gender discrimination begins at a young age. Girls face a range of structural barriers that contribute to unequal educational and economic performance: for example, only 53% of schools have sanitary facilities for girls. Further, the threat of gender-based violence discourages girls and women from leaving their homes and is used by some parents to justify marrying off daughters before the legal age of 18; however, marriage provides girls little protection from violence—over 50% of both male and female adolescents justify wife beating, and 6 in 10 men admit physically abusing their wives. Ancient India was a centre of learning and noted women scholars during that time contributed to the advancement of society. Women icons in India's rural areas are few and far in between. While most are aware of the high-profile lady entrepreneurs and corporate heads in urban India, women in rural areas continue to face exploitation. If women are allowed to gain access to education, they can make a huge impact in enhancing the productivity of the economy.

In 2012, only 27 percent of adult Indian women had a job, or were actively looking for one, compared to 79 percent of men. In fact, almost 20 million women had dropped out of the workforce between 2005 and 2012. Worryingly, India's rapid urbanization has not yet encouraged more women to join the labour force. Rural jobs have been decreasing and not enough rural women have been able to make the transition to working in urban areas. This makes the need for greater public safety and safe transport more significant. By any measure, the gap is particularly large and has been widening. India ranks 120 among 131 countries in female labour force participation rates and rates of gender-based violence remain unacceptably high. It's hard to develop in an inclusive and sustainable way when half of the population is not fully participating in the economy. At 17% of GDP, the economic contribution of Indian women is less than half the global average, and compares unfavourably to the 40% in China, for instance. India could boost its growth by 1.5 percentage points to 9 percent per year if around 50% of women could join the work force. This is not to say that India has not had some success. Some young women are staying in school longer, and others are

choosing to leave work as circumstances change and incomes rise, but India must turn the tide to realize its development potential. What will it take to reverse this trend and embark on the next chapter of India's success story? Women's economic empowerment is highly connected with poverty reduction as women also tend to invest more of their earnings in their children and communities.

According to the pilot Time Use Survey conducted in 18,620 households spread over six selected states, namely Haryana, Madhya Pradesh, Gujarat, Orissa, Tamil Nadu and Meghalaya during the period June 1998 to July 1999, women spent about 2.1 hours per day on cooking food and about 1.1 hours on cleaning the households and utensils. Men's participation in these activities was nominal. Taking care of children was one of the major responsibilities of women, as they spent about 3.16 hours per week on these activities as compared to only 0.32 hours by males. Stringent pressure on household activities is the major hindrance for women to actively participate in outside economic activities.

According to National Family Health Survey -IV (2015-16) less than two-thirds (63%) of currently married women participate in making decisions about their own health care, major household purchases, and visits to their own family or relatives alone or jointly with their husband, while 16 percent do not participate in any of the three. Thirty-one percent of currently married women and 98 percent of currently married men are employed. Among employed women, 80 percent earn cash and 16 percent are not paid at all. By comparison, 91 percent of employed men earn cash, and 7 percent do not receive any payment for their work. Among employed women, the percentage not paid at all for the work they do is highest, at 30 percent, among women age 15-19, but declines to 15-16 percent among women age 25 and above.

Establishing own identity is regarded as a strong factor for women empowerment as well as in reducing poverty, creating a fair and secure society. However, in 2017 the labour force participation rate for women was 28.5% (compared to 82% of men). If we look at Census data, Work Participation Rate has been lower for female consistently compared to male. We can see that for all the States, the workforce participation rate for female is lower than that of male, both in rural and urban areas. Female workforce participation rate in Rural India is highest in Nagaland and lowest in Delhi. On the other hand, female workforce participation rate in Urban India is highest in Manipur and lowest in Bihar and Jharkhand. Also, low empowerment of women is clearly reflected if we give a glance to the participation percentage of male and female in both public and private sectors of the economy. The tables show that female always lags behind male with reference to employment in both public and private sectors. No exception has been found out during the period of study.

From the collected secondary data, it is clear that women are less empowered than men in political participation either for their states or for the country. Women in Parliament as per 2017 data is 11.8% (compared to 88.2% of men) which shows an insignificant representation of women in taking major decisions for their country. More voices of women should be represented. By working politically, women can bring about progressive changes in women's rights, gender relations and policy agendas.

Educational Status of Women in India.

Education is one of the most important means of empowering women with the knowledge, skills and self-confidence necessary to participate fully in the development process. Educational achievements of women can have ripple effect within the family and across generations. In Kenya, it was found that women with at least four years of schooling were able to correctly understand instructions for administering oral rehydration salts; but only those with at least secondary education, were able to explain the environmental causes of diarrhea. In rural Bangladesh, educated women in rural areas participate in a wider range of decisions than uneducated ones. A study from Tamil Nadu found that better- educated women scored higher than less educated women on a composite index measuring their access to, and control over, resources, as well as their role in economic decision-making. Educated women also appear likely to suffer from domestic violence. A study by Sen in West Bengal noted that educated women were better able to deal with violent husbands. Eight different studies have found that there is a minimum threshold of education (at least 5-6 years) that must be achieved before there are significant improvements in female autonomy, particularly in a highly gender- stratified society such as India. Closing the gender gap in education is a development priority. The 1994 Cairo Consensus recognized education, especially for women as a force for social and economic development. The Fourth World Conference on women, held in Beijing in 1995, recognized that women's literacy is key to empowering women's participation in decision making in society and to improving families' well-being. According to Roudi - Fahimi and Valentine M. Moghadam increase

in girl's secondary school enrollment is associated with increases in women's participation in the labor force and their contributions to household and national income. Moreover, educated women are more politically active and better informed about their legal rights and how to exercise them.

Gender inequality in education is clearly reflected in the literacy figures. We can see from Census of India, that the female literacy always lags behind male literacy. The Pre-Independence period exhibits a dismal performance in female literacy field. During the post-independence period literacy rates have shown a substantial increase in general.

Literacy rate of male has almost tripled over the period e.g. 25% in 1951 and 76% in 2001. Surprisingly the female literacy rate has increased at a faster pace than the male literacy during the decade 1981-2001. The growth is almost 6 times e.g. 7.3% in 1951 and 54% in 2001. From this analysis one can infer that still the female literacy rate (only half of the female population are literates) is lagging behind male literacy rate (three fourth of the male population are literates).

The male domination in literacy field remains true for rural and urban India.

Over time the number of literates is increasing continuously all over India. The rural- urban gap in literacy rate is also shrinking. We conclude the trend of male domination in literacy rate holds true for every states of India.

From the data collected from the office of Registrar, India, we get a lot of observations. We know that literacy rate is one of the keys to measure socio-economic progress. For calculating effective literacy rate, population aged 7 years and above is taken into account. In 2001 Kerala, Mizoram and Lakshadweep experienced highest female literacy rate (around 80%) whereas Jharkhand and Bihar experienced lowest female literacy rates (around 30%). India had a literacy rate of around 12% at the time of independence, and through multi-tier efforts, has now attained a literacy rate of 72.99% as per 2011 census. However, the current literacy rate of India is still way below the world average of 84%. The top three states in female literacy are Kerala, Mizoram and Lakshadweep. The states (Mizoram, Kerala, Delhi) that rank the highest in male literacy (91-94 %) also rank at the top in female literacy (78-90%). The states with the lowest gender differential in literacy include Kerala, Mizoram, and Meghalaya where the female literacy rate constitutes at least 90% of male literacy rate, and Tripura, Delhi, Nagaland and Goa where this proportion is at 85%. In Rajasthan by contrast, the female literacy rate is only about half the rate for males. In Bihar and Rajasthan about two out of three women are illiterate. The above analysis suggests that women are indeed very limited in their access to not only the cumulative benefits of education, but also to a fundamental source of empowerment, namely literacy. Now moving on to decadal difference in literacy, at the National Level, the male-female gap for Census 2001 stood at 21.59 whereas for Census 2011 it is only 16.68. The decadal difference in literacy rates for males and females stand at 6.88 and 11.79 percentage points respectively, indicating a substantial improvement in respect of females. Mizoram has the lowest gender gap and Haryana has the highest gender gap in 2001. In 2011, Meghalaya has the lowest gender gap and Rajasthan has the highest gender gap. In terms of percentage decline in gender gap, Mizoram experienced lowest decline whereas Meghalaya experienced the highest decline out of all the States in India.

Next, we move on to our analysis on the level wise enrolment of students, Gross Enrolment Ratio and dropout rates.

From the collected data, we can say that 2011-12 experienced highest enrolment of both Male and Female at Primary level. From Upper Primary to Higher Education, 2014-15 experienced highest enrolment of both Male and Female. Enrolment of girls has improved over the years but there is gender difference and girls have significantly less schooling than boys. Over the time more young females are getting into higher education. The enrolment of girls in higher education increased from 39% to 46% from 2007-08 to 2014-15. This growth reflects a change in the mindset of people towards the girl child; however it is clear that dropout percentage is also better for females.

Gender Gap in Level wise Enrolment is represented graphically. For the most part there is a declining trend in the Gender Gap in later years.

Gross Enrolment Ratio (GER) for female is lower than male till 2009-10. From 2010-11 to 2014-15 there has been a change in the trend i.e. GER is higher for female.

We can say that while girls attending primary school is roughly equal numbers to boys, but the gap is widening as they get older and more are forced to drop out to help with work at home, get married, lack of safety in schools and low aspirations related to girl's education. The rate of school dropouts is also found to be comparatively

higher in case of women. However, one impressive picture is obtained from the table. The drop out gap between boys and girls reveals of downward trend overtime and for the last two periods of study the trend is actually reversed.

The fact that women are lacking behind men in educational field becomes more obvious from the secondary data. Additional problems arise when the girl reaches secondary education. As the recent Annual Survey of Education Report (ASER) 2017 findings suggest, while on average the difference between enrolment levels of boys and girls at age 14 are declining, by 18, when the state doesn't enforce compulsory education through the RTE Act, 32% girls are not enrolled—compared to 28% boys. Bridging mechanisms for out-of-school children exist at the elementary stage, but are absent for secondary education. Hence girls find it difficult to re-enter education once they have dropped out. The number of schools also decreases sharply beyond upper primary. This higher rate of illiteracy of women is undoubtedly attributing for women dependence on men and to play a subordinate role.

It is observed that the 1951 census to the 1981 census the literacy rates for the male-female literacy rate in West Bengal has increased, whereas the gap between the male-female literacy rate was 21.40% in 1951 and the gap was 23.37% in 1981. The highest gap between male-female literacy was found in 1961. After 1981 to 2011, the male-female literacy gap has been decreasing. In 2011 the gap was 11.51%.

There is a consistently gradual increasing trend in female literacy rate in both India and West Bengal. In regarding female literacy, position of West Bengal is far better than India. The growth rate of female literacy since 1981 in West Bengal as well as India has progressed satisfactory. But it has decreased in 2011 in both West Bengal and India compared to 2001.

Literacy rate in West Bengal has seen upward trend. Even though, there is still a clear gap between women equality in education in West Bengal. Government of has announced Kanyasree Prakalpa, a conditional cash transfer scheme. The aim of the project is to improve the status of all teenage girls and delaying their marriage up to the legal age of marriage.

Gender Gap Report: India.

India made no improvement in the overall gender gap ranking by the World Economic Forum (WEF) in 2018, compared to 2017. It stood at a low 108 out of the 149 countries in 2018, the same as in 2017. India ranked lower on all segments - economic participation and opportunity, educational attainment, health and survival ranking, and political empowerment. "It (India) needs to make improvements across the board, from women's participation to getting more women into senior and professional roles," the World Economic Forum said.

4. Conclusion

Policy Prescriptions.

Constitutional Measures: India's Constitution makers and our founding fathers were very determined to provide equal rights to both women and men. The Constitution of India is one of the finest equality documents in the world. It provides provisions to secure equality in general and gender equality in particular. The policy of women empowerment is well entrenched in the Fundamental Rights enshrined in our Constitution. For instance: **1)** Article 14 ensures to women the right to equality, **2)** Article 15(1) specifically prohibits discrimination on the basis of sex, **3)** Article 15(3) empowers the State to take affirmative actions in favour of women, **4)** Article 16 provides for equality of opportunity for all citizens in matters relating to employment or appointment to any office. Directive principles of State Policy also contains important provisions regarding women empowerment, **1)** Article 39 (a) provides that the State to direct its policy towards securing for men and women equally the right to an adequate means of livelihood, **2)** Article 39 (d) mandates equal pay for equal work for both men and women, **3)** Article 42 provides that the State to make provision for securing just and humane conditions of work and for maternity relief.

Self-Help Groups and role of NGO's in Women Empowerment: Different self-help groups in various states all over the country have focused on skill development and awareness generation, promoting economic development through income generating activities, inculcating thrift and credit management activities among poor women. NGO's organize seminars, conferences and workshops on women's rights and elimination of discrimination for the awakening of the masses. They prepare urban and rural uneducated women for self-employment, which is vital for the economic empowerment of the women.

Recognition of Women: Shree Shakti Puraskar: In order to recognize their role and to encourage them to empower in all aspects, the GOI has announced a reward called, 'Stree Shakti Puraskar'. It creates a sort of

encouragement for the success achieved in the face of adversity and difficulties and with the strength of courage, initiative and determination makes them special.

SWAYAMSIDHA: The scheme was launched in February 2001. The long-term objective of the programme is holistic empowerment of women through a sustained process of mobilization and convergence of all the on-going sectoral programs by improving the access of women to micro credit, economic resources etc

SWADHAR SCHEME - Swadhar scheme was launched by Ministry during the year 2001-02 with the objectives to provide primary need of shelter, food, clothing and care to the marginalized women and to rehabilitate them socially and economically through education, awareness, skill up gradation and personality development through behavioral training etc

SUPPORT TO TRAINING & EMPLOYMENT PROGRAMME FOR WOMEN (STEP) - A Central Sector Scheme launched in 1986-87, seeks to upgrade skill of poor and asset less women and provide employment on sustainable basis.

WOMEN EMPOWERMENT AND LIVELIHOOD PROGRAMME IN MID-GANGETIC PLAINS - 'PRIYADARSHINI' - The Programme aims at holistic empowerment (economic & social) of vulnerable groups of women and adolescent girls in the project area through the formation of women's Self-Help Groups (SHGs) and promotion and improved livelihood opportunities.

RAJIV GANDHI SCHEME FOR EMPOWERMENT OF ADOLESCENT GIRLS (RGSEAG)- Sabla now operational in 205 selected districts aims at all-round development of adolescent girls in the age group 11-18 years and making them self-reliant with a special focus on out-of-school girls.

NATIONAL MISSION FOR EMPOWERMENT OF WOMEN (NMEW)

The initiative for holistic empowerment of Women through better convergence and engendering of policies, programs, and schemes of different ministries were operationalized in 2010-11.

Suggestions and Concluding Remarks.

Promoting education among women is of great importance in empowering them to accomplish their goals in par with men in different spheres of life. Without empowerment certain social roles cannot be performed. Women play a distinct role in the economic development. She is the chief architect of family, the first teacher; supplier of labour power and by playing main role in the development of agriculture, industry, service sector, socio-culture etc. creates a civilized society. In the visible and invisible form women contribute for economic development. The nature has given the biological power of reproduction especially to the women. She can create social, cultural and economic wonders. Even then the socio-economic status of women is so poor. Often the women are victimized in the cases like rape, dowry harassments, sexual harassments, kidnapping, female infanticides and sex selective abortions, domestic violence, trafficking, etc. The verdicts of many of such cases go against women because of the non-availability of witness, discontinuation of suits, difficulty of proving the incidents etc. Hence, she should be strengthened and her status should be improved; she should be physically, mentally, economically, socially, politically and culturally strengthened so that the country can make use of hidden potential power for the economic development. The lack of education is the root cause for women's exploitation and negligence. Only literacy can help women to understand the Indian's constitutional and legislative provisions that are made to strengthen them. Education can help them to establish their own identity and give them the confidence to take major decisions. Closing the gender gap in education is essential for significant improvement in female autonomy, particularly in a gender-stratified society such as India which is a lifeline to sustainable human development.

Though India could well become one of the largest economies in the world, it is being hindered due to a lack of women's participation. Gender equality and empowerment are human rights that lie at the heart of development. Access to education may have an important contributory role in enhancing women's capacity to exercise control in their lives. However, these projects and interventions alone are insufficient. Research shows that even women that have completed skills programs and get jobs tend to drop out in response to family pressures. There are a lot of things which a daughter-in-law is expected to do and not a son-in-law. Crimes like Female Foeticide still exist in India because of discriminatory social system associated with Indian marriage. Dowry, even though dowry is illegal but it still exist especially in rural areas in the form of indirect gifts and fulfilment of other demands, again marriage migration under patrilocal system of residence adds to male domination and because of all these girls are widely regarded as a burden, they are not thought to be equal to their sons because most of the Indian families can never think

of asking a man after his marriage to move out of his family and adjust with a new lifestyle in his in-laws and do household work there, sacrificing your education, without having your own identity etc. but in case of women all these social system is very much acceptable. I want to say is this entire system is totally biased, it should not be biased to any of them, neither male nor female, it should be a 50-50 system. So firstly, we should change our social norms and attitude towards women as well because it is very much biased towards men especially in developing countries like India, Bangladesh or Pakistan and then only we can have a successful implementation of our policies and reach our targets to close the gender gap in education. Changing social norms around marriage, work and household duties will have to be part of the agenda. In the home, we need families to see their girls as capable future professionals. Household responsibilities can be equitably divided between men and women. We can accelerate progress by working together. Gender-focused planning is more effective for a sustainable human development.

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A Study on the Impact of Business Process Outsourcing on Information Technology Sector – An Empirical Study based on Kolkata City Area

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1. Introduction

In India, Business Process Outsourcing is one of the fastest expanding segments of the IT industry. Economic scale, business risk mitigation, cost advantage; utilization improvement and superior competency are some of the factors that have all lead to the growth of Indian BPO Industry.

Information Technology Enabled Service (ITes) is defined as the outsourcing of processes that can be enabled with information technology and covers areas like finance, human resource, administration, health care, telecommunication etc. As per NASSCOM study, cost effectiveness, cross value chain, multiple location options, quality performance, resource pool and time zone help India to attain a global leadership position.

The term Business Process Outsourcing refers to the outsourcing in all the fields. In order to improve a particular business process, BPO either use new technology or apply an existing one in a modified way. Most of the companies in the US and UK outsource IT-related business processes to Indian service provider now-a-days.

However, this study throws light on the impact of Business Process Outsourcing on Information Technology Sector based on Kolkata city area.

2. Literature Review

Wambui, K.E. (2012) has found the factors that fairly influence turnover were unmet expectations about the job, lack of satisfaction with the job, lack of recognition for work done, lack of flexibility in the job, poor working environment, job stress, lack of a clear job description, workload, work life balance, poor managerial style, lack of equal pay for equal work done, pay and benefits in the organization, training and development opportunities, level of education, macroeconomic environment and globalization.

Kraemer, T. and Gouthier, M. (2012) have investigated the causes of high rates of voluntary turnover in call centers, but empirical studies on work emotions are scarce. Some exploratory studies indicate emotions could help to explain turnover intentions.

Gupta, V. (2013) has concluded that employees need manageable workloads, support and recognition from their co-workers and management. The study identified that approximately 30% of the staff are leaving the organization due to the further studies and existing educational commitments, within next 1 year. Next prime important factor is Organizational culture. Author suggests that if culture or working environment would be good then it is easy to control attrition in organization.

Kaur, S. (2013) has concluded that there is no universal attrition management solution for every company. Each organization has to build its own motivation system based on compatibility between organizational and individual goals. The author suggests that the companies should adopt remedial measures like giving job description at the recruitment stage, offer skill testing facility, hold exit interviews and regular review sessions etc., to retain their efficient employees. Along with the subordinates, the supervisors also need to be trained to control and retain their junior employees.

Janani (2014) has concluded that most of the IT companies even the top most companies are facing turnover problem due to many factors. The most important of all is compensation, because plenty of opportunities are there in the market for experienced, well qualified employees if they switch over to other companies they will pay more.

Kadam, V.S. and Thakar (2014) has identified that those having average age of 24-28 years and experience between 2 to 4 years are having higher percentage of attrition. The author also concluded that attrition rate has increased because of dissatisfaction with pay, lack of career advancement and compensation.

3. Segments Of India's It-ITeS Sector

India's IT & ITeS sector can be classified into four segments-

- **IT services** – Here market size has reached up to US\$ 80.80 billion during FY17, of them 81% of revenue comes from the export market.
- **Business Process Management** – Here the market size during FY17 was US\$ 29.26 billion and it is expected to reach US\$ 54 billion by FY25.
- **Software Products and Engineering Services** – Under this the market size during the FY17 was US\$ 29.26 billion with a growth of 10.5% in FY17. Here 83.9% of revenue comes from exports.
- **Hardware** – In FY17 it has a market size of US\$14 billion with 9% share in revenue in 2017.

4. Recent Trends In IT And ITeS In India

By 2025, Indian software product industry is expected to reach the market of US\$ 100 billion. In 2017, India's global delivery centres in the IT-BPM sector reached 670, spreading across 78 countries. India is a prominent sourcing destination across the world, accounting for approximately 56% market share in the global services sourcing business. India acquired a share of around 38% in the overall Business Process Management (BPM) sourcing market. Not only this, but the sector ranks 3rd in India's total FDI share and accounts for approximately 37 per cent of total Private Equity and Venture investments in the country. Also, the computer software and hardware sector in India attracted cumulative Foreign Direct Investment (FDI) inflows worth US\$ 27.72 billion between April 2000 and September 2017.

India's IT sector is gradually moving from linear models to non-linear ones. IT companies in India are focusing on new models such as platform-based BPM services and creation of intellectual property. Large players with a wide range of capabilities are gaining ground as they move from beginning simple maintenance provides to full service

players, offering infrastructure, system integration and consulting services. Of the total revenue, about 80% is contributed by 20 large and medium players.

IT-BPM industry revenues were estimated around US\$ 154 billion in FY 2016-2017. The contribution of IT sector in India's GDP stood at 7.7% in 2016. Top 5 IT firms contribute over 25% of the total industry revenue of Rs. 8.4 lakh crore on 2017. Domestic revenue of the IT industry is estimated at US\$ 38 billion and export revenue is estimated at US\$ 117 billion in FY17. The market size of India's IT-BPM sector is expected to grow to US\$ 350 billion by 2025 and BPM is expected to account for US\$ 509-55 billion out of the total revenue.

5. Objectives Of The Study

The aim of this research study is to focus on the following areas:

- To study the overall economic growth of India.
- To ascertain the impact of IT Services and ITES-BPO on India's growth.
- The key advantage of the Indian ITES-BPO Industry.
- The main direct impact of Indian ITES-BPO industry on the economic scenario.
- The main indirect impact of Indian IT/ITES Industry on the economic scenario.

6. Research Methodology

In this research, a sample of 204 professionals was generated from Kolkata city area, with the purpose of conducting an exploratory study of their perceptions and is based on a sample collected through an online questionnaire.

Research Design: Preparing the research design involves taking into consideration the objectives of the research study while determining the sample design and choosing the appropriate tool.

Sample Design: The sample design comprises of the three following important steps:

- Determine what type of information is needed and who is most likely to have it, in order to know who will be surveyed (sample);
- Define how many people will be surveyed (sample size) and
- Decide how the sample should be chosen (sampling).

Clearly, the most likely population is IT services and ITES-BPO professionals of Kolkata city area.

7. Research Tool

The Attributes Of Online Survey have been widely described in the literature. According to the literature, there is evidence to suggest that if conducted properly, online surveys have significant advantages over other formats.

The survey was created with the help of Survey Monkey (an online survey software and questionnaire tool). The questionnaire was circulated among respondents of Kolkata city area by creating a google form which was sent through e-mail to the respondents. Respondents were invited to fill the questionnaire within a particular time and along with that they were also asked to forward the invitation to others, however creating a snowball sampling. The survey was conducted between the months of February to April, 2019.

8. Data Analysis And Findings

The analysis of the data interpretation involves analysis of the collected data through online questionnaire and interpreting it with the help of diagrammatic representation using pie-charts and bar graphs.

Age - In terms of age, young respondents predominate as 72.5% belong to the age group 20-30 years. The older ones (50 years) represent 3.9% of the total responses.

Gender - About 204 people have collaborated in this study, of which 80.4% assigned to males while females for the remaining 19.6%.

Segments - According to the segment the respondents are working for, 65.3% work in IT services and 34.8% in ITES-BPO.

Work Experience - Regarding work experience, the majority are between 3-6 years of experience (36%). The less experienced (2 or less years) represents 34% while the more experienced ones (more than 6 years) represents 29%.

Bases of the Indian economy - More than half of respondents (57.8%) believes that India should focus on both expanding the services and the industry sector. It is emphasized that approximately one quarter of respondents (24.5%) consider that India should focus only on the enlargement of the economy by broaden its base to the industry sector.

Demographic Profile of the Respondents

Gender	Male	Female		
No.	164	40		
%	80.4	19.6		
Age	20 - 30 Yrs	31- 40 Yrs	41 - 50 Yrs	above 50
No.	148	37	11	8
%	72.54901961	18.1372549	5.392156863	3.921569
Segment	IT services	ITes-BPO		
No.	133	71		
%	65.19607843	34.80392157		
Work Experience	above 6 Yrs	3 - 6 Yrs	less than 2 Yrs	
No.	60	74	70	
%	29.41176471	36.2745098	34.31372549	
Service Expansion	Broaden the economy	Continue to expand	Both	
No.	50	36	118	
%	24.50980392	17.64705882	57.84313725	

9. Key Advantage Of The Indian ITes-BPO Industry

The perception of the respondents about India's key advantage on IT/ITES-BPO industry is that cost effectiveness (38%) is the best asset that the country has. Resource pool and quality performance appear, respectively, in the 2nd (31%) and 3rd place (14%). It is important to refer that almost 5% of the respondent consider that India offers a combination of multiple advantages and not a single one (4%).

Key Advantages			
	Frequency	Percentage	
Cost Effectiveness	78	38.235294	
Cross Value Chain	10	4.9019608	
Multiple Location options	8	3.9215686	
Others	10	4.9019608	
Quality Performance	22	10.784314	
Resource pool	65	31.862745	
Time Zone	11	5.3921569	

Indirect Impact Of Indian ITes-BPO Industry

Boosting India's image in global market was the main indirect impact of the industry. Other indirect impacts mentioned are job creation and improvement of products/services. Apart from contributing to the growing income of its direct stakeholders, IT-ITES industry has had a multiplier effect on other sectors of the economy. The current study points out the driving growth of other sectors and indirect employment generation as main indirect impact of Indian IT/ITES industry on the economic scenario. About 12.7% of the respondents cited that indirect employment generation is main indirect impact while 24.5% consider driving growth of other sectors.

Indirect Impact

	Frequency	Percentage
Balanced Regional Growth	11	5.39216
Boosting India's image in global market	45	22.0588
Driving growth of other sectors	39	19.1176
Fuelling growth of Private Equity/Venture Capital funding activity	15	7.35294
Improving product /service quality	23	11.2745
Indirect employment generation	30	14.7059
Other	22	10.7843
Spurring growth of first generation entrepreneurs	19	9.31373
Total	204	100

Direct Economic Impact Of Indian ITeS-BPO Industry

As the survey considered, the main direct impact of Indian ITeS-BPO industry on the economic scenario is employment generation (43%), followed by foreign exchange earnings (23%) and national GDP (26%). This study refers foreign exchange earnings (29.4%) and national GDP share (23.5%) as important direct impacts. It also highlights the relevance of employment generation with 47.1% of the participants mentioning this factor as the main direct economic impact of Indian IT/ITeS industry.

Direct Impact

	Frequency	Percentage
Employment generation	97	47.549
Foreign exchange earnings	60	29.412
National GDP share	47	23.039
Total	204	100

10. Multivariate Statistical Analysis And Hypothesis Testing

Research Question 1: Do IT Services and ITeS-BPO professionals have different perceptions about the main direct impact of Indian IT/ITeS industry on the economic scenario?

H0: IT Services and ITeS-BPO professionals have no different perceptions about the main direct impact of Indian IT/ITeS industry on the economic scenario.

H1: IT Services and ITeS-BPO professionals have different perceptions about the main direct impact of Indian IT/ITeS industry on the economic scenario.

The first hypothesis in this study refers to the analysis on the relation of dependence between the perceptions about the main direct impact of Indian IT/ITeS industry on the economic scenario and the segments the professionals work for (IT Services and ITeS-BPO). To investigate this relationship, Pearson Chi-Square (χ^2) test has been used, since the aim of the analysis is to test the independence of qualitative variables. The result was as follows: $\chi^2 (2) = 8.7$, p – value = 0.013.

Being p -value = 0.013 < α = 0.05 the null hypothesis (H0) that IT Services and ITeS-BPO professionals have no different perceptions about the main direct impact of Indian IT/ITeS industry on the economic scenario is rejected.

		IT	ITeS / BPO	Total
Employment generation	Count	30	13	43
	% within direct impact	69.73%	30.13%	100%
	% within Segment	51%	39.23%	47.12%

	% of Total	32.70%	14%	46.68%
Foreign Exchange	Count	20	6	26
Earnings	% within direct impact	77%	23.14%	100%
	% within Segment	34.16%	17.89%	28.28%
	% of Total	22.63%	6.45%	27.96%
National GDP share	Count	9	14	23
	% within direct impact	38.99%	60.67%	100%
	% within Segment	15.28%	42.42%	25%
	% of Total	9.67%	15.26%	25%
Total	Count	59	33	92
	% within direct impact	64.07%	35.89%	100%
	% within Segment	100%	100%	100%
	% of Total	64.07%	35.67%	100%

Source: Compiled from the field survey data.

Research Question 2: Do IT Services and ITeS-BPO professionals have different perceptions about the main indirect impact of Indian IT/ITeS industry on the economic scenario?

H0: IT Services and ITeS-BPO professionals have no different perceptions about the main indirect impact of Indian IT/ITeS industry on the economic scenario.

H1: IT Services and ITeS-BPO professionals have different perceptions about the main indirect impact of Indian IT/ITeS industry on the economic scenario.

The formulation of the second hypothesis refers to the analysis of the relation of dependence between the perceptions about the main indirect impact of Indian IT/ITeS industry on the economic scenario and the segments the professionals work for (IT Services and ITeS-BPO). To investigate this relationship Pearson Chi-Square (χ^2) test has been used, since the aim of the analysis is to test the independence of qualitative variables. The result was as follows: $\chi^2 (7) = 9.338$, $p - value = 0.229$. Being $p - value = 0.229 > \alpha = 0.05$ the null hypothesis (H0) that IT Services and ITeS-BPO professionals have no different perceptions about the main indirect impact of Indian IT/ITeS industry on the economic scenario is not rejected.

		IT	ITeS / BPO	Total
Balanced Regional Growth	Count	2	1	3
	% within indirect impact	66.47%	33.77%	100%
	% within Segment	3.38%	3.02%	3.49%
	% of Total	2.09%	1.17%	3.67%
Boosting India's image in global markets	Count	18	13	31
	% within in direct impact	58.03%	41.54%	100%
	% within Segment	30.01%	39.08%	33.33%
	% of Total	19.66%	14.03%	33.87%
Driving growth of other sectors	Count	12	12	24
	% within indirect impact	50%	50.01%	100%
	% within Segment	20.37%	36.78%	26.07%
	% of Total	13.07%	13%	26.03%
Fuelling growth of Private Equity/Venture	Count	4	1	5
	% within	80%	20%	100.00%

	indirect impact			
Capital funding activity	% within Segment	6.76%	3%	5.45%
	% of Total	4.09%	1.04%	5.25%
Improving product/	Count	4	2	6
service Quality	% within indirect impact	66.28%	33.32%	100%
	% within Segment	6.96%	6.05%	6.04%
	% of Total	4.04%	2.20%	6.50%
Indirect employment generation	Count	8	4	12
	% within indirect impact	66.17%	33.33%	100.00%
	% within Segment	13.36%	12.01%	13.20%
	% of Total	8.70%	4.53%	13.40%
Other	Count	4	0	4
	% within indirect impact	100.00%	0.00%	100.00%
	% within Segment	6.38%	0.00%	4.30%
	% of Total	4.23%	0.00%	4.13%
Spurring growth of first generation	Count	7	0	7
	% within indirect impact	100.00%	0.00%	100.00%
Entrepreneurs	% within Segment	11.39%	0.00%	7.26%
	% of Total	7.60%	0.00%	7.36%
Total	Count	59	33	92
	% within indirect impact	64.01%	35.09%	100.00%
	% within Segment	100.00%	100.00%	100.00%
	% of Total	64.01%	35.90%	100.00%
Source: Compiled from the field survey data.				

Research Question 3: Do IT Services and ITeS-BPO professionals attribute different factors responsible for the key advantage of the Indian IT/ITeS industry?

H0: IT Services and ITeS-BPO professionals don't attribute different factors responsible for the key advantage of the Indian IT/ITeS industry.

H1: IT Services and ITeS-BPO professionals attribute different factors responsible for the key advantage of the Indian IT/ITeS industry.

The third hypothesis refers to the analysis of the relation of dependence between the different factors responsible for the key advantage of the Indian IT/ITeS industry and the segments the professionals work for. To investigate this relationship Pearson Chi-Square (χ^2) test has been used, since the aim of the analysis is to test the independence of qualitative variables.

The different factors responsible for the key advantage of the Indian IT/ITeS industry vary according to the segment they work for. When the relationship between the segments the individuals work for and their perception about the factor that best describes the key advantage of the Indian IT/ITeS industry is analysed, it is noted that the surveyed individuals working in ITeS-BPO considered with greater relevance the time zone factor than the surveyed individuals working in IT Services (18.2% vs. 0.05%), being the difference in proportions statistically significant, $\chi^2(6) = 16.253$, $p - value = 0.012$ (Table 7).

Being $p - value = 0.012 < \alpha = 0.05$ the null hypothesis (H0) that IT Services and ITeS-BPO professionals don't attribute different factors responsible for the key advantage of the Indian IT/ITeS industry is rejected.

		IT	ITeS / BPO	Total
Cost effectiveness	Count	27	9	36
	% within factors	75.00%	25.00%	100.00%
	% within Segment	43.25%	27.43%	37.79%
	% of Total	28.14%	9.65%	37.90%
Cross value chain	Count	4	1	5
	% within factors	80.00%	20.00%	100.00%
	% within Segment	6.45%	3.10%	5.23%
	% of Total	4.62%	1.71%	5.33%
Multiple location options	Count	1	2	3
	% within factors	33.43%	66.37%	100.00%
	% within Segment	1.46%	6.21%	3.32%
	% of Total	1.31%	2.51%	3.12%
Other	Count	2	0	2
	% within factors	100.00%	0.00%	100.00%
	% within Segment	3.20%	0.00%	2.91%
	% of Total	2.10%	0.00%	2.61%
Quality performance	Count	8	6	14
	% within factors	57.91%	42.79%	100.70%
	% within Segment	12.79%	18.82%	14.46%
	% of Total	8.34%	6.53%	14.47%
Resource pool	Count	20	9	29
	% within factors	69.30%	31.30%	100.30%
	% within Segment	32.63%	27.53%	30.65%
	% of Total	21.71%	9.75%	30.65%
Time Zone	Count	0	6	6
	% within factors	0.00%	100.00%	100.60%
	% within Segment	0.00%	18.42%	6.73%
	% of Total	0.00%	6.53%	6.53%
	Count	62	33	95
	% within factors	65.33%	34.47%	100.60%
	% within Segment	100.50%	100.40%	100.60%
	% of Total	65.63%	34.47%	100.50%

Source: Compiled from the field survey data.

Research Question 4: Is there a consensus among IT Services and ITeS-BPO professionals about India's ability to sustain its competitive advantage in the long run?

H0: There is no consensus among IT Services and ITeS-BPO professionals about India's ability to sustain its competitive advantage in the long run.

H1: There is a consensus among IT Services and ITeS-BPO professionals about India's ability to sustain its competitive advantage in the long run.

The formulation of the fourth hypothesis refers to the analysis of the relation of dependence between India's ability to sustain its competitive advantage in the long run and the segments the professionals work for (IT Services and ITeS-BPO). To investigate this relationship Pearson Chi-Square (χ^2) test has been used, since the aim of the analysis is to test the independence of qualitative variables.

The proportion of individuals who believes that the Indian IT/ITeS industry is in a position to sustain its competitive advantage in the long run is independent of the segment they work for, $\chi^2(2) = 1.928$, $p\text{-value} = 0.381$ (Table 8). Being $p\text{-value} = 0.381 > \alpha = 0.05$ the null hypothesis (H_0) that there is no consensus among IT Services and ITeS-BPO professionals about India's ability to sustain its competitive advantage in the long run is not rejected.

		IT	ITeS BPO	/ Total
No	Count	15	4	19
	% within growing	78.89%	21.01%	100.00%
	% within Segment	24.62%	12.31%	20.00%
	% of Total	15.58%	4.62%	20.00%
Yes	Count	47	29	76
	% within growing	61.38%	38.32%	100.00%
	% within Segment	75.78%	87.79%	80.00%
	% of Total	49.55%	30.65%	80.00%
Total	Count	62	33	95
	% within growing	65.33%	34.70%	100.00%
	% within Segment	100.00%	100.00%	100.00%
	% of Total	65.30%	34.70%	100.00%
Source: Compiled from the field survey data.				

11. Limitations

Every research study has some limitations. While making this research, we have also faced some problems. Some of the limitations are as follows:

- Lack of data and of reliable data is the significant obstacle in this research; and
- During survey lots of people denied to fill the online questionnaire.

12. Managerial Implications

- The management of BPO should make use of the specialized trainers for conducting programmes on “Personality Development”;
- The organization should conduct various activities for Building leadership qualities among women employees;
- Indian BPOs offer attractive salary as compared to other sectors. But as one grows with experience, it was found that the salary hikes were not satisfactory. The average salary hike in the BPO industry is low. Taking this into consideration organizations need to take certain corrective measures;
- It is suggested to BPO companies to provide attractive fringe benefits, medical reimbursement facility etc.; and
- BPO organizations should make policies regarding “Study-Leave” to those employees who seek for higher studies.

13. Conclusion

Business Process Outsourcing is being recognized as a specialized sector in India. BPO is a buzzword among the corporate world. It has become one of the most significant growth catalysts for Indian economy. Role played by BPO in boosting India's economy shows that IT and ITES sector have been contributing largely to the economic growth of India. Thus, the result of this research study is further highlighted and authenticated that there is positive impact of BPO on IT sector based on Kolkata city area.

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An Empirical Investigation About The Nature Of Causality Between Foreign Direct Investment & Carbon Dioxide Emissions In India

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1. Introduction

There are a number of hypotheses as regards the relationship between foreign capital influx into an economy and its environmental quality. The stated relationship can be studied from two perspectives, i.e. bi-directionally as follows:

- a) the impact of capital influx on environmental quality and
- b) the impact of environmental policy on capital influx.

The area of study has gained prominence since the advent of globalization, and the swiping changes brought about by it in the economic structures of the nations.

The significant hypotheses in this context are:

- Environmental Kuznets Curve (EKC) hypothesis,
- Pollution Haven hypothesis and
- Pollution Halos hypothesis

The EKC hypothesis conceptualized by Grossman & Krueger (1995) promulgated that as an economy prospers -- the filthiness of the atmosphere, though initially increases up to a certain point, gradually comes down as people become more environment-conscious and eventually can afford and access more clean technologies. According to them, a reduction in trade barrier is expected to affect the environment by expanding the scale and by altering the composition of economic activity, and by bringing about a change in the techniques of production (Grossman & Krueger, 1991). Stern (2004) argued that there could be two proximate causes of the EKC relationship:

- a) changes in scale, i.e. economic structure or product mix or technology, and
- b) changes in input mix namely, environmental regulation, awareness, and education.

Coming to the Pollution Haven hypothesis, it suggested that polluting industries would relocate to locations with lenient environmental regulations, as stricter regulations caused the cost of inputs to increase and subsequently the profitability to decrease. Alternatively, Pollution Halos hypothesis argued that foreign multinational companies with their enormous corpuses coupled with good intentions, would follow the environmental best practices which subsequently would trickle down to their host economies causing improved emissions management.

Shahbaz, Nasreen & Afza (2011) undertook a panel data study of 110 developed and developing countries over a study period of 1985-2006. The results indicated the existence of EKC. It also suggested that FDI increases environmental degradation, i.e. it supported the Pollution Haven hypothesis. The study of Khan & Khan (2018) conducted on income-FDI-environmental degradation nexus for the countries of the American continent on the other hand, could not find the existence of either the EKC hypothesis or the Pollution Haven hypothesis during the study period of 1990-2014. Similarly the study of Antonakakis, Chatziantoniou & Filis (2015) on dynamic interrelationship between output, energy and environment for 106 countries over the period of 1971-2011 also, could not find substantive evidence of the existence of the EKC for the developing countries. Paziienza (2015) chose the agriculture and fishing sectors of 30 OECD countries to study for the period of 1981-2005. It was found that an increase in FDI led to the reduction of CO₂ emissions for the stated sectors of those countries. Contrarily, in the Indian situation, Acharyya (2009) observed strong evidence of positive relationship between FDI inflows and CO₂ emissions during 1980-2003 through the upsurge in production in various polluting industries. But the study of Banerjee (2019), could find no long run cointegrating relationship between FDI and CO₂ emissions of India. Rather unidirectional causality was found to run from CO₂ to FDI inflows.

Aydemir & Zeren (2017) conducted a study on the impact of FDI on CO₂ emissions in selected G-20, i.e. developed countries for the period of 1970-2010. The study used panel data analysis technique only to find mixed results. Pollution Halo hypothesis was found to be applicable to countries like USA, France and Argentina, whereas

Pollution Haven hypothesis was valid to UK, Canada, Australia, South Africa, Italy, Mexico and Saudi Arabia. But for the 23 emerging economies, the results of the study of Gok (2019) supported only Pollution Haven hypothesis and refuted the Pollution Halo hypothesis. For such countries, FDI contributed both to economic growth as well as environmental degradation. However, Guvercin (2019) found bidirectional causal relationship between FDI and carbon emissions for 18 emerging markets for the period of 1990-2014. Asghari (2013) examined the validity of Pollution Haven hypothesis and Pollution Halo hypothesis in MENA region during 1980-2011 and found the Pollution Halo hypothesis to be stronger in the region. A case study on industrial sulphur dioxide (SO₂) emission in 29 Chinese provinces confirmed the existence of Pollution Haven hypothesis there (He, 2006). The findings of Yanchun was also in the same line for China during the period of 1978-2003. But in a unique study Dean, Lovely & Wang (2004) estimated the 'pollution-haven' behaviour by examining the location-choices of 2886 manufacturing equity joint-ventures in China for the period of 1993-1996. The findings substantiated that environmental policy strictness actually attracted investments from industrialized countries namely, USA, UK and Japan, regardless the degree of pollution intensity of the industries. However, investors from Hong Kong, Taiwan, Macao and South-East Asian developing countries found lenient environmental levies more attractive. In another study Zhou, et al. (2018) commented that FDI inflows in China increased the CO₂ emissions of the Chinese cities to due to 'implicit trade carbon'. Moreover, they found that Chinese urban CO₂ emissions did not follow the EKC hypothesis, instead it portrayed an inverted N-shape.

FDI as a source of capital is expected to cause changes in scale via upgradation to greener technologies. On the other hand, FDI inflow itself is supposed to depend on environmental regulations. On the basis of the studies conducted till date, it could be observed that depending on the time frame, economic structures and regions selected, diverse opinions could be obtained regarding the relationship between FDI inflows and CO₂ emissions of an economy. In such a situation, the present study seeks to recognize whether there exist any long run cointegration between FDI inflows and CO₂ emissions of India and find out the nature and direction of causality running between them in accordance to any of the hypotheses mentioned earlier.

2. Methodology

Data & Variables

The study has been conducted for the period of 1978 to 2017, i.e. for 40 years depending on the availability of relevant comparable data. The source of the annual data on CO₂ emissions of India, as a dependent variable, is the European Commission – Joint Research Centre – Emissions Database for Global Atmospheric Research (EC JRC EDGAR). The data for the independent variables have been extracted from the World Development Indicators (WDI) 2019 for the same period. The description of the variables according to WDI could be presented as under:

- a) CO₂ Emissions (% of GDP) (CO₂): It refers to the emissions arising from the consumption of fossil fuels whether in solid, liquid or gaseous state, gas flaring and the manufacture of cement. It has been expressed in terms of Mt CO₂ per year, adjusted against gross domestic product (GDP).
- b) Industry Value Added (% of GDP) (IVA): It is the net output of mining, manufacturing, construction, electricity, water, and gas sectors after adding up all outputs and subtracting intermediate inputs of these sectors as a whole, adjusted against GDP. It is calculated without making deductions for depreciation of fabricated assets or depletion and degradation of natural resources. Unlike most studies, the present work has considered IVA adjusted against GDP as a dependent variable, instead of gross value added or GDP itself (Antonakakis, Chatziantoniou, & Filis, 2015; Kasperowicz, 2015; Nain, Ahmad, & Kamaiah, 2015; Cederborg & Snobohm, 2016; Banerjee, 2019) to verify the fact whether industry is the primary source of anthropogenic CO₂ emissions and thus, can have a causal relation with CO₂ emissions or not.
- c) Gross Capital Formation (% of GDP) (GCF): Gross capital formation (formerly gross domestic investment) consists of outlays on additions to the fixed assets of the economy plus net changes in the level of inventories. Fixed assets include land improvements (fences, ditches, drains, and so on); plant, machinery, and equipment purchases; and the construction of roads, railways, and the like, including schools, offices, hospitals, private residential dwellings, and commercial and industrial buildings. Inventories are stocks of goods held by firms to meet temporary or unexpected fluctuations in production or sales, and work in progress. Net acquisitions of valuables are also considered as capital formation. This variable has also been adjusted against GDP.
- d) Foreign Direct Investment net inflows (% of GDP) (FDI): As defined by the World Bank, FDI is direct investment by way of equity flows in the reporting economy. It is the sum of equity capital, reinvestment of earnings, and other capital. Direct investment is a category of cross-border investment associated with a resident

in one economy having control or a significant degree of influence on the management of an enterprise that is resident in another economy. Ownership of 10 per cent or more of the ordinary shares of voting stock is the criterion for determining the existence of a direct investment relationship. FDI too has been adjusted against GDP (Acharyya, 2009; Pazienza, 2015; Zhou, Fu, Kong, & Wu, 2018).

- e) Trade openness (TRD): The variable has been chosen to quantify the economy's exposure to global economy. It is measured as the difference between export and import of goods and services adjusted against GDP (Pazienza, 2015; Banerjee, 2019) (The World Bank, 2019).

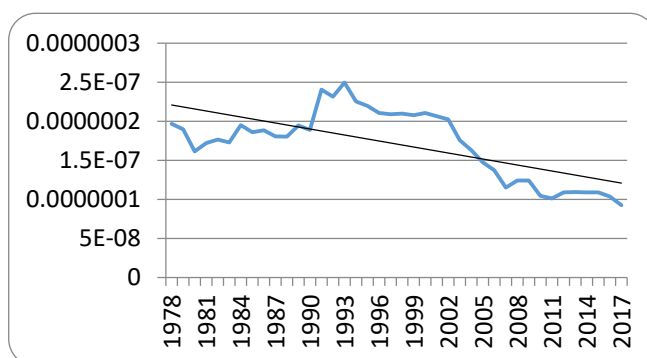
By adjusting all the selected variables against the same denominator, GDP (in current US\$), their comparability have been ensured. Moreover, their proportion to GDP in itself is an important observation.

Econometric Tools Applied

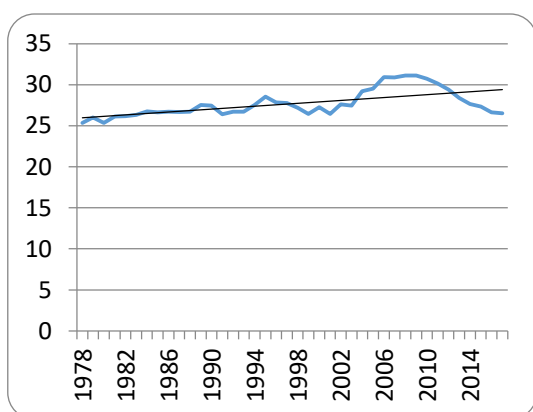
After initial graphical analysis, descriptive statistics and Pearson's Correlation Coefficient of the variables have been calculated to get an idea about the nature of the data and the degree of association among the variables. Then, after conducting the regular stationarity tests, the study has applied the Auto Regressive Distributed Lag (ARDL) model (Pesaran & Shin, 1997; Pesaran, Shin, & Smith, 1999, 2001) instead of the regular cointegration studies like Engle-Granger (1987) or Johansen-Juselius (1988, 1990) test to study the cointegrating relationship between the selected variables. And finally, the Toda and Yamamoto (1995) Granger non-causality test has been undertaken to infer about the nature and direction of causality among the variables, if at all there is any.

3. Findings & Analysis

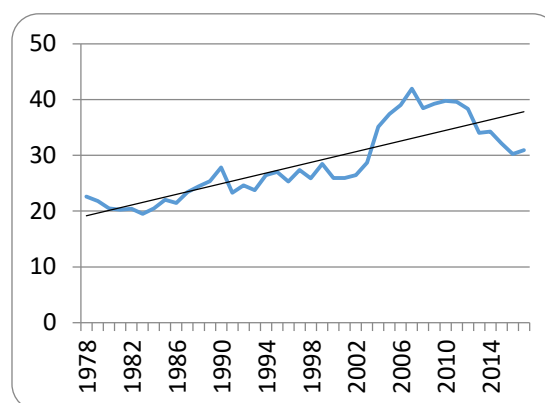
Graphical Analysis



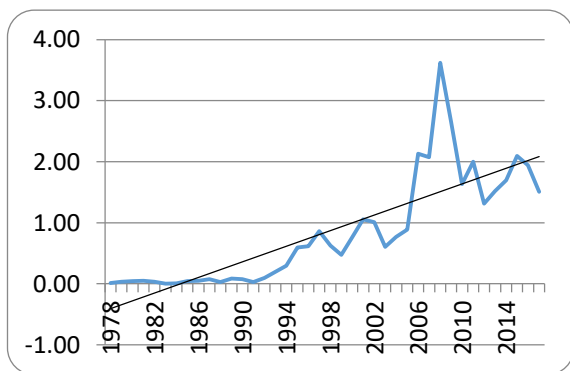
Mt CO₂/yr (% of GDP)



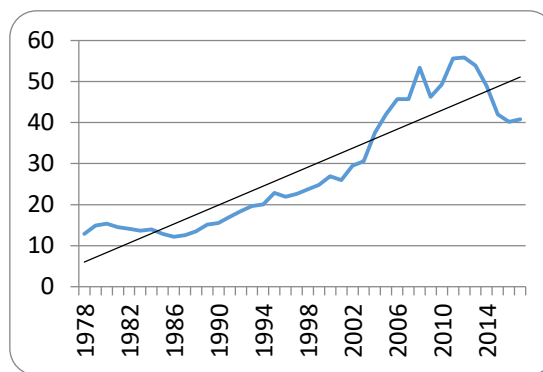
Industry Value Added (% of GDP)



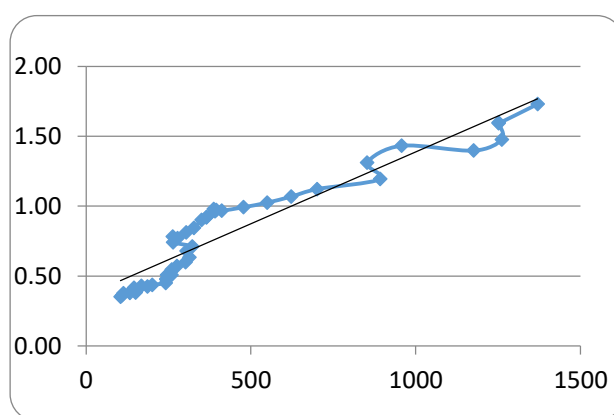
Gross Capital Formation (% of GDP)



Foreign Direct Investment (% of GDP)



Trade (% of GDP)



Scatter Diagram of CO₂ Emissions per capita with respect to Adjusted Net National Income per capita

It is visible from the above graphs that all the independent variables follow fairly an upward rising trend. The linear trend line of IVA is the most flat one, while the one of the TRD is the steepest. It signifies that, all IVA, GCF, FDI and TRD, each adjusted against GDP, has maintained an increasing trend over the years. But IVA has increased at quite a slow pace, while TRD, almost unswervingly, has grown larger. However, a decreasing propensity of all these four variables could be observed since 2012-13. The slope of the dependent variable, CO₂ emissions shows a downward slope. Its emission took a leap from 1991 onwards till 2002. But of late, CO₂ emission is again showing a decreasing trend which is actually, a good sign for the health of the environment. However, the visible monotonic upward rise of CO₂ emissions in metric tons per capita, corresponding to the adjusted net national income per capita (in current US\$) of India is not in congruity with the standard EKC diagram. According to Panayotou (1997), such a situation demands stringent environmental regulations and controlled economic activities to foster sustainable development.

	CO ₂	IVA	GCF	FDI	TRD
Mean	1.71E-07	27.68653	28.49317	0.839968	28.55827
Median	1.80E-07	27.31121	26.45670	0.611685	23.28346
Std. Dev.	4.46E-08	1.638943	6.669818	0.898318	14.79382
Skewness	-0.296874	0.899677	0.561282	1.077731	0.540870
Kurtosis	1.892663	2.721214	2.037648	3.599107	1.794083
Jarque-Bera	2.631219	5.525661	3.643786	8.341574	4.373997

Probability	0.268311	0.063113	0.161719	0.015440	0.112253
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Initially, Descriptive Statistics helps us to find that all the independent variables are positively skewed, whereas the dependent variable CO₂ is skewed negatively. Moreover, FDI is least dispersed while TRD is the most. Among the variables, only FDI is leptokurtic, while the rest are mesokurtic. According to Jarque-Bera statistics, the variables CO₂, GCF and TRD follow normal distribution, and the variables IVA and FDI are found to be non-normal at ten per cent and five per cent levels of significance respectively.

In the next level of analysis the Pearson's Correlation Coefficient is calculated. The dependent variable of the study, i.e., CO₂ is found to have negative and significant Pearson's Correlation Coefficient value, i.e., it has an inverse association with all the selected independent variables. This makes further econometric analysis more interesting for this study.

Econometric Analysis

Though it is not a pre-requisite for an ARDL model to test for the stationarity, the Augmented Dickey-Fuller (ADF) (Said & Dickey, 1984) test and Phillips-Perron (PP) (Phillips & Perron, 1988) test have been conducted to test the order of integration for each of the variables.

All the variables are integrated of the same order, I(1) i.e., they are integrated in their first differences both under ADF test as well as PP test. Thus, they qualify for the traditional Engel and Granger (1987) test, Johansen and Juselius (1990) test and Vector Error Correction Model (VECM). Whatsoever, the ARDL model is being applied in the study as it has three major advantages. Firstly, ARDL is applicable irrespective of the underlying regressors being purely I(0), purely I(1), or a mixture of both. Secondly, the ARDL model dealing with single co-integration, yields consistent and robust results for both the long-run and short-run relationships. Thirdly, it is relatively more efficient in case of small and finite sample data sizes. Moreover, all the variables of this model are assumed to be endogenous. The cointegration equation thus formed under ARDL could be stated as follows:

$$\Delta CO2_t = \alpha_0 + \sum_{i=1}^n \alpha_{1i} \Delta CO2_{t-1} + \sum_{i=1}^n \alpha_{2i} \Delta IVA_{t-1} + \sum_{i=1}^n \alpha_{3i} \Delta GCF_{t-1} + \sum_{i=1}^n \alpha_{4i} \Delta FDI_{t-1} + \sum_{i=1}^n \alpha_{5i} \Delta TRD_{t-1} + \beta_0 CO2_{t-1} + \beta_1 IVA_{t-1} + \beta_2 GCF_{t-1} + \beta_3 FDI_{t-1} + \beta_4 TRD_{t-1} + \mu_{1t} \dots \dots \dots (1)$$

Where, Δ = the first difference operator,

CO_{2t} = dependent variable CO₂,

IVA_t = independent variable IVA

GCF_t = independent variable GCF

FDI_t = independent variable FDI

TRD_t = independent variable TRD

μ_t = the usual white noise residuals

The left-hand side of the equation signifies the dependent variable. The first part of the right hand side of the equation ($\alpha_1 - \alpha_5$) represents the short-run dynamics of the model; whereas, the parameters ($\beta_1 - \beta_5$), on the right-hand side, correspond to the long-run relationship among the independent variables. This is a test of the hypothesis of no cointegration among the variables against the existence of cointegration among the variables, denoted as:

H₀: There is no long run cointegration among the variables

H₁: There is long run cointegration among the variables.

The equation is executed in the e-views software.

F-statistics (6.27) is higher than the upper-bound critical value (5.06) at the 1 per cent level of significance. This implies that the null hypothesis of no cointegration among the variables is rejected, i.e., there exists a long run cointegrating relationship amongst the variables considering CO₂ as the dependent variable, i.e., the independent variables namely, IVA, GCF, FDI and TRD together, can influence the CO₂ emissions of India in the long run.

The estimated long-run coefficients of CO₂ as shown in Table (5) exhibit that, individually GCF have positive long-run cointegration and TRD have negative long-run cointegration with CO₂, both at five per cent levels of significance.

IVA and FDI as independent variables do not have significant p-values and thus, individually they are not cointegrated with CO₂ in the long-run. The significance of the error correction term (ect) shows causality in at least one direction for CO₂, which is in sync with the findings of the bounds test. Ect is negative and significant implying that in case of any deviation in the long run, the model will restore its equilibrium at a speed of adjustment of 27 per cent per annum. It is worthy to note that the model has qualified the relevant diagnostic tests.

When the time-series are non-stationary and possibly cointegrated, Toda & Yamamoto (1995) fits a standard VAR model in the levels of the variables and thus, minimizes the risks associated with the possibility of miss-specifying the order of integration of the series (Mavrotas & Kelly, 2001). Hence, instead of the traditional Granger Causality test or Wald test, the study has undertaken the Toda and Yamamoto (1995) Granger non-causality test, by applying the following model in the VAR system:

$$CO2_t = \alpha_6 + \sum_{i=1}^k \alpha_{11i} CO2_{t-i} + \sum_{j=k+1}^{d_{max}} \alpha_{12j} CO2_{t-j} + \sum_{i=1}^k \alpha_{13i} IVA_{t-i} + \sum_{j=k+1}^{d_{max}} \alpha_{14j} IVA_{t-j} + \sum_{i=1}^k \alpha_{15i} GCF_{t-i} + \sum_{j=k+1}^{d_{max}} \alpha_{16j} GCF_{t-j} + \sum_{i=1}^k \alpha_{17i} LFDI_{t-i} + \sum_{j=k+1}^{d_{max}} \alpha_{18j} LFDI_{t-j} + \sum_{i=1}^k \alpha_{19i} TRD_{t-i} + \sum_{j=k+1}^{d_{max}} \alpha_{20j} TRD_{t-j} + \epsilon_t \quad (2)$$

The hypothesis being tested in Toda and Yamamoto model, Modified-Wald (MWALD) test, is appended hereunder:

H₀: The independent variables do not granger cause the dependent variable

H₁: The independent variables granger cause the dependent variable

Thus, the outcome obtained from such model helps to conclude about the nature of short run relationship among the study variables.

Dependent Variable	AIC Lags	F Statistics	Decision
F _{CO2} (CO ₂ IVA, GCF, FDI, TRD)	4	6.266305	Cointegrated (at 1% level of significance)
	<i>Lower Bound</i>	<i>Upper Bound</i>	
1 per cent level of significance	3.74	5.06	
5 per cent level of significance	2.86	4.01	
10 per cent level of significance	2.45	3.52	

Lower and Upper Bounds values are taken from Pesaran et al. (2001) Critical Value Table

The findings exhibit that the F-statistics (6.27) is higher than the upper-bound critical value (5.06) at the 1 per cent level of significance. This implies that the null hypothesis of no cointegration among the variables is rejected, i.e., there exists a long run cointegrating relationship amongst the variables considering CO₂ as the dependent variable, i.e., the independent variables namely, IVA, GCF, FDI and TRD together, can influence the CO₂ emissions of India in the long run.

Estimated Long Run Coefficients of CO₂ using the ARDL approach

Dependent Variable	Regressor	T-Ratio	Probability
CO ₂ ARDL (2, 4, 4, 3, 3) selected based on SIC	IVA	-1.714054	0.1071
	GCF	2.308841	0.0356**
	FDI	0.438578	0.6672
	TRD	-2.924986	0.0105**
Ect	-0.273928	-3.202036	0.0059**

** indicates the statistical significance level of five per cent

The estimated long-run coefficients of CO₂ as shown exhibit that, individually GCF have positive long-run cointegration and TRD have negative long-run cointegration with CO₂, both at five per cent levels of significance. IVA and FDI as independent variables do not have significant p-values and thus, individually they are not cointegrated with CO₂ in the long-run. The significance of the error correction term (ect) shows causality in at least one direction for CO₂, which is in sync with the findings of the bounds test. Ect is negative and significant implying

that in case of any deviation in the long run, the model will restore its equilibrium at a speed of adjustment of 27 per cent per annum. It is worthy to note that the model has qualified the relevant diagnostic tests.

Dependent Variable	Tests	Test statistic	Probability (lags)	Decision
$F_{CO_2} (CO_2 IVA, GCF, FDI, TRD)$	Breusch-Godfrey Serial Correlation LM Test	0.33	0.56 (1)	No Serial Correlation
	Breusch-Pagan-Godfrey Heteroskedasticity Test	18.86	0.53 (20)	Homoskedastic
	Jarque-Bera Normality Test	0.74	0.69	Normal
	Ramsey RESET test	0.35	0.57	Stable

When the time-series are non-stationary and possibly cointegrated, Toda & Yamamoto (1995) fits a standard VAR model in the levels of the variables and thus, minimizes the risks associated with the possibility of miss-specifying the order of integration of the series (Mavrotas & Kelly, 2001). Hence, instead of the traditional Granger Causality test or Wald test, the study has undertaken the Toda and Yamamoto (1995) Granger non-causality test, by applying the following model in the VAR system:

$$CO2_t = \alpha_6 + \sum_{i=1}^{d_{max}} \alpha_{7i} CO2_{t-i} + \sum_{j=1}^{k} \alpha_{8j} CO2_{t-j} + \sum_{i=1}^{d_{max}} \alpha_{9i} IVA_{t-i} + \sum_{j=1}^{k} \alpha_{10j} IVA_{t-j} + \sum_{i=1}^{d_{max}} \alpha_{11i} GCF_{t-i} + \sum_{j=1}^{k} \alpha_{12j} GCF_{t-j} + \sum_{i=1}^{d_{max}} \alpha_{13i} FDI_{t-i} + \sum_{j=1}^{k} \alpha_{14j} FDI_{t-j} + \sum_{i=1}^{d_{max}} \alpha_{15i} TRD_{t-i} + \sum_{j=1}^{k} \alpha_{16j} TRD_{t-j} + \epsilon_t \quad (2)$$

The hypothesis being tested in Toda and Yamamoto model, Modified-Wald (MWALD) test, is appended hereunder:

H_0 : The independent variables do not granger cause the dependent variable

H_1 : The independent variables granger cause the dependent variable

Thus, the outcome obtained from such model helps to conclude about the nature of short run relationship among the study variables.

Dependent Variable	χ^2 Statistics (p-value)					All Variables	Direction of Causality
	CO ₂	IVA	GCF	FDI	TRD		
CO ₂	-	7.22 (0.21)	3.78 (0.58)	6.61 (0.25)	6.75 (0.24)	22.74 (0.30)	-
IVA	4.25 (0.51)	-	4.81 (0.44)	3.34 (0.65)	7.06 (0.22)	30.18 (0.07)***	-
GCF	11.53 (0.04)**	17.38 (0.00)*	-	15.52 (0.01)**	4.79 (0.44)	37.72 (0.01)**	CO ₂ , IVA, FDI → GCF
FDI	3.60 (0.61)	2.30 (0.81)	1.71 (0.89)	-	6.09 (0.30)	39.17 (0.01)**	-
TRD	10.78 (0.06)***	14.13 (0.01)**	18.24 (0.00)*	13.57 (0.02)**	-	67.89 (0.00)*	CO ₂ , IVA, GCF, FDI → TRD

The results of Toda-Yamamoto Granger non-causality tests establish that, according to the Modified Wald test, there is multivariate causality running collectively from all the independent variables to each of the dependent variables, namely IVA, GCF, FDI and TRD, excluding CO₂. This implies that, in the short-run none of the variables either individually or collectively, granger cause CO₂ emissions of India. An FDI inflow into India, on the other hand, is impacted by the CO₂ emissions, IVA, GCF and TRD cumulatively. In this study, GCF and TRD have been observed to be granger caused by the independent variables in both multivariate and bi-variate study (excluding TRD in case of GCF). Hence, FDI & CO₂ emissions of India have neither unidirectional, nor bidirectional causality among them in the short run.

Conclusion

The present study has primarily endeavoured to identify whether any of the traditional hypotheses on the relationship among economic performance, foreign direct investment and environmental quality, namely, the Environmental Kuznets Curve hypothesis, Pollution Haven hypothesis and Pollution Halos hypothesis, holds true in Indian situation or not.

The findings suggest that the industrial activity (proxied by industrial value added), capital formation (proxied by gross capital formation and FDI) and openness of the economy (proxied by FDI and trade openness) have significant long run cointegrating relationship with CO₂ emissions of India. Moreover, it has been observed that GCF has a positive and TRD a negative long run cointegration with CO₂ emissions of the country. This signifies that as GCF increases CO₂ emissions of the country would increase and as TRD increases CO₂ emissions of the country would decrease and vice versa. Moreover, IVA and FDI show no cointegration with CO₂ emissions of India. Such outcome may be primarily due to the service-orientation of the economy. In a similar study Banerjee (2019) found positive and significant long run cointegration between gross value added and CO₂ emissions of India. This signifies that economic activities in India as a whole cause her air quality and the environment to deteriorate. But as industrial value added has been hovering around a meager 30 to 33 per cent of the gross value added since the last 40 years, and it is the services sector which has bagged the maximum FDI inflows since 2000, individually these two variables do not possibly have strong cointegrating relation with the CO₂ emissions of India. Moreover, in the short run, none of the independent variables, either individually, or collectively granger cause CO₂ emissions of India, instead, all the variables, collectively granger cause FDI inflows into India. This might be because manufacturing is not the primary source of CO₂ emission in India, it is electricity and heat production that causes maximum CO₂ emissions. Thus, we can conclude that it is not FDI that is influencing CO₂ emissions of India in the short run, rather, on the contrary, it is the conducive Indian business environment that is motivating FDI inflows in here. Hence, none of the above-mentioned hypotheses are found to hold true in the Indian subcontinent due to insufficient development of her manufacturing sector.

The Environmental Performance Index (EPI) 2018 has ranked India 177th among 180 countries across the globe on 24 performance indicators across ten issue categories covering environmental health and ecosystem vitality. India's score is a meager 30.57 as against Switzerland, the highest scorer, at rank 1 and score 87.42 (Yale Center for Environmental Law & Policy, 2018). According to the JRC Science for Policy Report 2017, India stands fourth in the list of highest global emitters of CO₂ after China, USA and European Union (EU) 28. Keeping pace with the GDP growth rate, CO₂ emissions rate of India has also increased at around 5%, and unlike Brazil, no decoupling of India's CO₂ emissions rate and economic growth could be found yet (Janssens-Maenhout, et al., 2017). Moreover, in 2018 the carbon emissions from the developed economies are apprehended to rise for the first time in the last five years (International Energy Agency, 2018).

During the recent two week long (14th) session of the Conference of Parties (COP24) to the Kyoto Protocol held in Katowice, Poland in December 2018, Carbon Capture, Utilization and Storage (CCUS) and energy efficiency were identified as the major tools to fight back global warming, yet no mandate was given as such. It was left to the governments to decide whether to and to what extent, adopt them or not (Khan, 2018). But the UN Bonn Climate Change Conference (SB50) has considered a number of decisions for adoption at the upcoming UN Climate Change Conference in Santiago, Chile in December 2019 (COP25). Because in summer 2019, multiple heat records across the globe especially in India, Pakistan, parts of middle-east, Australia and Europe have been broken and it is being perceived that incremental progress in combating climate change is not going to suffice. Instead, profound, revolutionary and methodical alteration across the society is the need of the hour for ensuring a resilient and sustainable future (UN Climate Press Release, 2019).

The EPI 2018 observed good governance to be the critical factor required to balance the two distinct dimensions of sustainability namely, (1) environmental health, which rises with economic growth and prosperity, and (2) ecosystem vitality, which comes under strain from industrialization and urbanization (Yale Center for Environmental Law & Policy, 2018). Hence, while framing the environment management policies, the government should focus more on the shorter time horizon to expedite the process of mitigation of environmental degradation.

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An Insight Into Societal Marketing: The Future Of Unconventional Business Practices

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1. Introduction

The concept of Societal Marketing was developed during the early 1970s by Philip Kotler (1972) and is defined in his latest editions of text books as follows:

“The *Societal Marketing* concept holds that the organisation's task is to determine the needs, wants and interests of target markets and to deliver the desired satisfactions more effectively and efficiently than competitors in a way that preserves or enhances the consumer's and the society's well-being.” (Kotler 2000)

The Societal Marketing concept, which differs from, yet is based on, marketing, is the “process for influencing human behaviour on a large scale, using marketing principles for the purpose of societal benefit rather than commercial profit.” The key features of social marketing are taken directly from commercial marketing. *Societal marketing* is a generic term: For example, societal marketing campaigns have been used to influence behaviours related to public transportation, solar energy, conservation, military recruitment, urban planning, voter registration, and adopting children, as well as health.

Can Marketing Enforce Societally Desirable Actions?

The answer to this question has led to serious academic cum practitioner debates in the past. A number of ways to add profitability to the socially desirable actions are known; and others could well be developed for the benefit of the stakeholders concerned. In the coming chapters we will find out how marketing is being carried out in socially desirable methods and the various instruments that have been undertaken to carry out the procedure in this direction as a whole.

2. Societal Marketing, Sustainability And Innovation

The societal marketing concept is an enlightened marketing concept that holds that a company should make good marketing decisions by considering consumers' wants, the company's requirements, and society's long-term interests. It is closely linked with the principles of corporate social responsibility and of sustainable development. The primary challenge of companies and marketers has probably always been to meet the needs and requirements of the consumer. If a company fails to do so, failure is unavoidable. From sustainability point of view marketing plays an ambivalent role: On the one hand marketing can also promote a consumer society and materialism which causes problems on the social and natural environments. On the other hand, however, marketing can also help develop and diffuse sustainability innovations such as solar houses, renewable energies, organic food, fair trade products etc. Looking at the societal marketing concept supporting educational and cultural issues, we'll see why and in which way firms adopt the societal marketing concept and how this affects their businesses, customers, organizations, governments and the society as a whole. The societal marketing concept is driven by the company's commitment to act socially responsible and therefore go beyond making profits.

Sustainability is often defined as a balance of the three E's: *the environment, the economy, and social equity*. But as planners embrace the concept, the sustainability "balance" heavily favours one E: the economy. '*Sustainability*' has become the defining term to denote these wider environmental concerns and their appropriate responses. The striving for sustainability is now a defining principle of good planning practice. It provides an ideal for which to aim towards, even if its achievement, not to mention any universally shared and concise definition of how to achieve it, consistently appears to be located somewhere over the horizon.

The evolution and transition of the innovative concept of societal marketing framed the pathway for marketers to go beyond their own products and services, to give back to the society more than they took.

3. Literature Review

Andreasen(2002)conceived of social marketing not as a theory or a unique set of techniques but as a process for developing social change programs. However, the author has differed vigorously with Kotler and Roberto, arguing that “increasing the acceptability of a social idea” is not what social marketing is all about. The ultimate objective should be behaviour change—as a typical hard-charging marketer might say, “If you don’t move the needle, you are not being a successful marketer.” Simply gaining acceptance of an idea without inducing action is not success. Indeed, this approach is more appropriately labelled “education” or “attitude change.”

Crane and Desmond(2002) agreed that societal marketing emerged in the early 1970s, promising a more socially responsible and ethical model for marketing but largely ignoring the moral issues associated with it. By situating discussion within notions of psychological and ethical egoism, they came to the conclusion, the societal marketing concept is clearly an extension of the marketing concept but in a moral way. While acknowledging the use of the societal marketing concept in practice, this use is problematized with respect to a number of critical moral issues. The attention should be refocused away from prescribing what “moral” or “societal” marketing should be, and towards developing an understanding of the structures, meanings and discourses which shape and explain marketing and consumption decision making and sustain its positive and negative impacts on society

Bloom and Gundlach(2000) told that the marketing discipline has had a long history of conducting research on how marketing affects the welfare of the society. Though a significant work has been done on the subject, this book showed newly many linkages between marketing knowledge, decision by policy makers and social outcomes

4. Objectives

- The main aim of this project is to find out to what extent the industries and companies are following or adopting the concept of Societal marketing.
- It is to study and analyse the influence of the Societal Marketing Concept in the Indian Corporate context.
- Along with that this study also analyses the effect of various forms of Societal Marketing techniques adopted by different companies to implement social responsibility and sustainability.
- It also aims to study the primary focus of Corporate Societal Marketing Concept that the companies use to get fruitful results and to which level they implement those.

RESEARCH QUESTION: Have Indian Corporate Companies actually taken up Societal Marketing Concept as an avenue of Unconventional Business Practice for the future?

5. Research Methodology

5.1 Research Design

The research design used in this research is Descriptive Research Design, which is concerned with specific factors.

Data Collection Method

PRIMARY DATA-The primary data are those which are collected afresh and for the first time and thus happen to be original in nature. Here, the primary data was collected by means of preparing a questionnaire and a telephonic/direct interview for the same questionnaire. This helped in drawing conclusions about the case.

SECONDARY DATA-Access to different research papers for writing the literature review.The data collected from the primary sources was analyzed by using bar-charts and pie-charts.

QUESTIONNAIRE DESIGN- Questionnaire consists of a number of questions measuring the responses of the companies on a 5 point Likert scale mostly.

SAMPLING METHOD-Convenience sampling method is used in this research. Our sample set was the prominent companies dealing in the Societal Marketing Concept.

SAMPLE SIZE- This refers to the numbers number of items to be selected from universe to constitute a sample. Our sample size: 5 respondents as companies involved into societal marketing.

SAMPLING AREA – Kolkata

5.2 Analysis And Inference Of The Survey Questionnaire:

The purpose of the survey was to understand the techniques, tools and strategies implemented by Companies in India who decided to be a part of the Societal Marketing Process. It also focuses on the objectives of the companies for which they implement such techniques and also what is their major parameter of objective attainment among the various attributes of Societal Marketing.

For conducting the research, we surveyed 5 companies working in the sphere of Corporate Societal Marketing and got their responses as to how they implement their strategies into this strategy to achieve desired results. The companies which have been surveyed are as follows:

- ITC Ltd.
- HUL
- HDFC Housing Development Finance Corporation Ltd.
- Amul.
- Dabur

It was an overwhelming experience to visit these companies and get their input on what they feel about this concept. The top executives in these companies explained as to how the campaigns and the awareness advertisements have made a better position for them in the market today.

All responses have been combined and conclusions have been drawn to express an opinion thereon.

Does your company engage in any form of Societal Marketing Program?

(1) YES

(2) NO



Inference: The replies of all the companies were in favour of the question. All 5 companies said that they do indulge in the societal marketing practices and they carry out Societal Marketing Programs from time to time. Moreover, in the survey it was also noticed that all of these companies are proudly involved in such activities which is a very pleasant news to hear for the scope of the study.

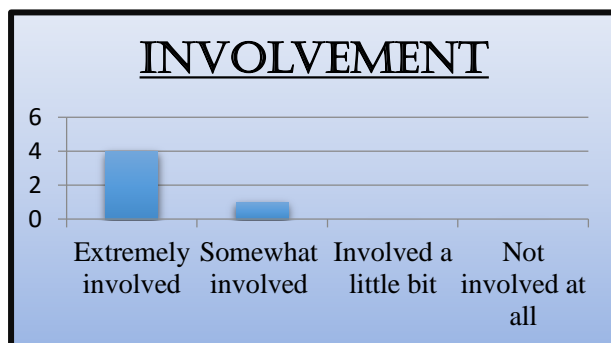
Compared to other companies, how would you rate your involvement in the Societal marketing practices?

(1) Not involved at all.

(2) Involved a little bit.

(3) Somewhat involved.

(4) Extremely involved.

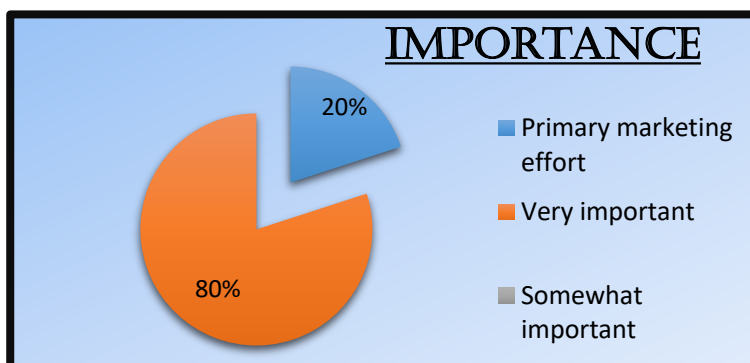


Inference: Majority of the respondents have responded that they are extremely involved into Societal Marketing compared to other companies. 4 out of 5 companies, i.e. 80% of the companies said that they are 'extremely involved' whereas 1 company said that it is 'somewhat involved' depicting that it is involved into societal marketing practices

but that doesn't take most of its activities. The other 4 companies which are extremely involved get into societal marketing programs very frequently and believe it to be one of the major ways to achieve the desired objectives. None of the companies said that they are not involved or only involved a little bit which in itself shows that this marketing concept holds a great deal of importance for the companies.

How important is the Societal marketing concept to your company's marketing efforts?

- (1) Not at all. (2) Somewhat important.
(3) Very important (4) Our primary marketing effort.

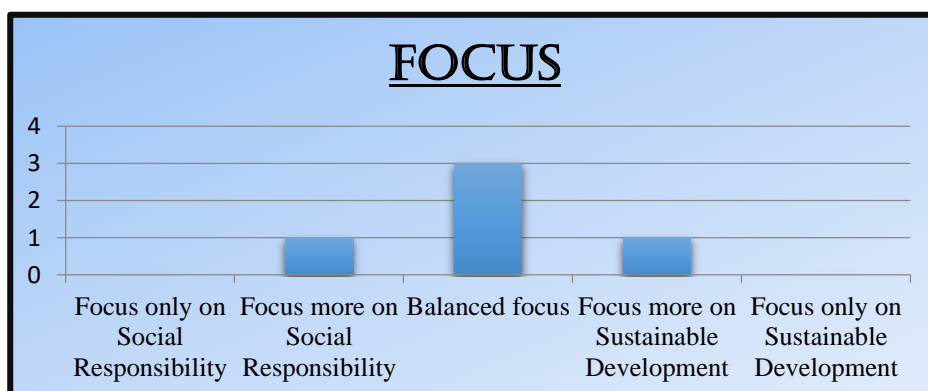


Inference: 4 out of 5 companies i.e. 80% stated that Societal Marketing concept is 'very important' for their marketing efforts. 1 company said that it is their companies' 'primary marketing effort' giving an opinion that it uses societal marketing techniques as its major and primary way of marketing its product. The inference here concluded is that for all of these companies societal marketing concept holds a lot of significance and the majority of their techniques are based on this concept. The mere depiction of their response not selecting 'not at all' reflects that this concept is working wonders for their company in the corporate scenario and has been accepted well by the society and the consumers.

To what extent does the company focus on these two pillars of Societal marketing?

- (i) Social Responsibility (ii) Sustainable Development

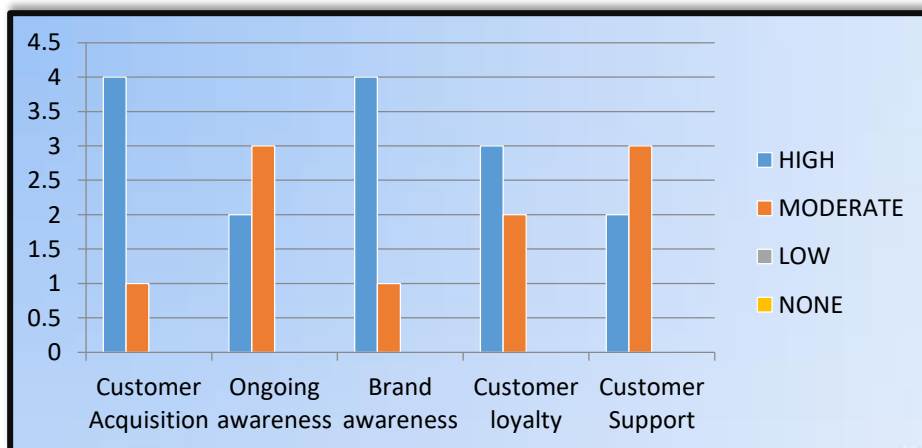
- (1) Focus only on Social Responsibility
(2) Focus more on Social Responsibility
(3) Balanced focus
(4) Focus more on Sustainable Development
(5) Focus only on Sustainable Development



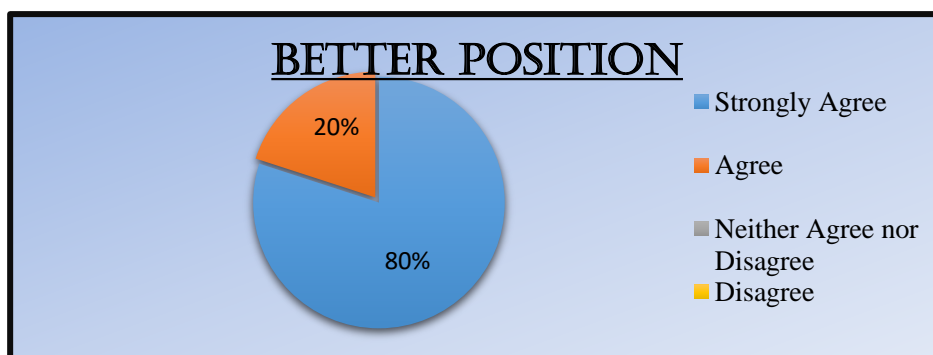
Inference: 3 out of 5 companies stated that they have a 'balanced focus' towards social responsibility and sustainable development. 1 company states its focus to be more on Social Responsibility 1 Company states more focus on Sustainable Development. Hereby, it can be inferred that a company's focus is in direct relation to its work culture and its objective. It is completely at the disposal of the company to choose which aspect to lay more focus on based on its need objective. Though as inferred majority of them would go for a balanced focus to fulfil the two pillars of Societal Marketing.

What are your primary objectives while using forms of societal marketing?

- (i) Customer acquisition
- (ii) Ongoing awareness
- (iii) Brand awareness
- (iv) Customer loyalty
- (v) Customer support



Inference: When asked for the primary objectives of using forms of societal marketing for five parameters, companies replied as follows, For Customer Acquisition, 4 companies replied HIGH as it being one of their primary objectives. For 1 company it was MODERATE. Thus implying that majority of companies adopt societal marketing techniques for acquiring new customers. For Ongoing Awareness of Marketing Campaigns, 2 out of 5 companies i.e. 40% of the companies chose HIGH whereas 3 Companies, i.e. 60% chose MODERATE as far as they adopt societal marketing forms. This implies that companies for making ongoing awareness among customers get into only moderate magnitude of societal marketing. For Brand Awareness, 4 companies, i.e. 80% opt for HIGH and 1 company chooses MODERATE. This shows that majority of companies use societal marketing forms for making consumers aware of their brands. For Customer Loyalty, 3 companies choose HIGH and 2 Companies choose MODERATE as adopting societal marketing forms for creating customer loyalty. It is a 60-40 situation. For Customer Support, 2 companies go for HIGH and 3 for MODERATE. Indicating that getting customer support is not as primary an objective for most companies compared to other parameters. Overall it can be inferred that companies use forms of societal marketing on a scale above average which goes to peaks. Not one of the companies chose for LOW or NONE inclining that these techniques get the desired objectives.

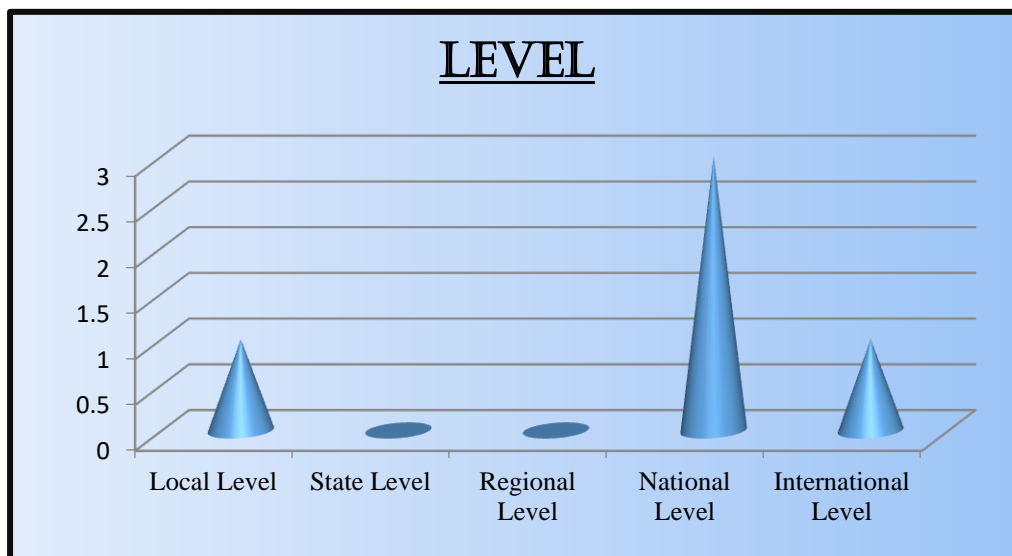


Inference: 4 out of 5 companies, i.e. 80% “Strongly Agree” that societal marketing technique has given them a better stand and position in the market today. 1 of the companies ‘agree’ to it. The implication for these responses stating that none of the companies are at a neutral situation or disagrees to the statement make us believe that the companies strongly believe in the Societal Marketing Concept.

In your opinion the adoption of Societal Marketing should be done at what level/scale? (choose 1)

(1) Local level (2) State level (3) Regional level

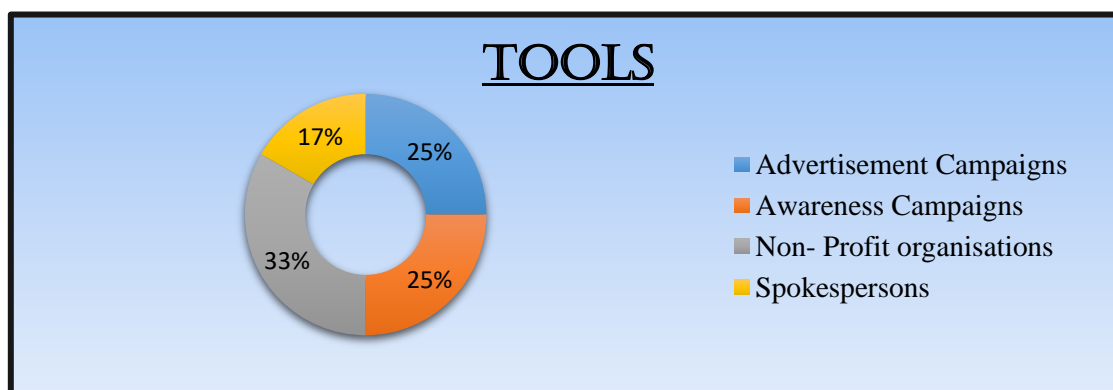
(4) National level (5) International level



Inference: When asked about the companies' opinion about the level at which societal marketing techniques should be carried out, the response have been diverse:1 company believes that charity begins at home and hence it should be applied at LOCAL LEVEL. 3 out of 5 companies i.e. 60% think that the concept should be carried out on NATIONAL LEVEL giving it a broader scenario. This finding in itself makes it prominent the kind of nationwide activities that the companies in an even broader sphere taking the techniques on an INTERNATIONAL LEVEL. When asked why not choose state or regional levels they responded that middle paths are not always fruitful. It loses the essence of the overall concept. Thereby, none of these levels were chosen by the companies.

What are the various tools of Corporate Societal marketing that you use?

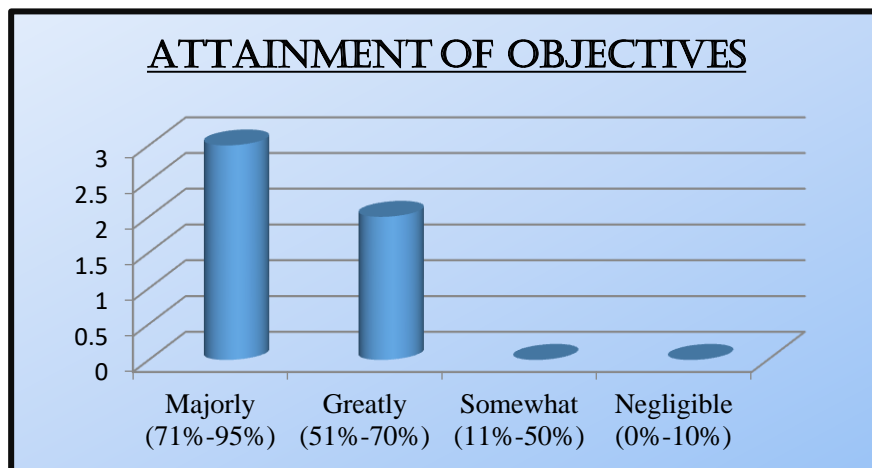
- Advertisement campaigns (TV, print, internet)
- Awareness Campaigns/marches.
- Non-profit organisations.
- Through spokespersons



Inference: For the various tools used by companies for Societal Marketing practices, the responses for the various parameters are as follows. The companies were at a liberty to choose more than one option. Non-Profit organisations received 33% of the acceptance gaining the maximum. 4 out of 5 companies use Non-Profit organisations as one of their tools for marketing. Instances from various companies can be cited for the same. Awareness Campaigns and Advertisement Campaigns(TVs, print, etc.) both have received 25% each. 3 out of 5 companies opted for both of these tools making them second most used tool after Non profit Organisations. Spokespersons received on 17% points as only 2 out of 5 companies use them for marketing processes. Thus companies use combinations of these tools to promote their societal programs.

To what extent have the above stated tools helped the company in attaining the desired objectives?

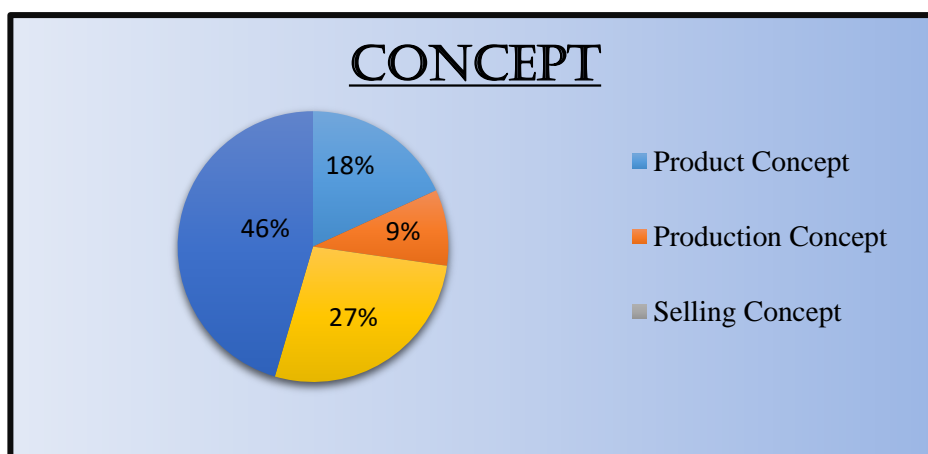
- (1) Majorly [71%-95%] (2) Greatly [51%-70%]
(3) Somewhat [11%-50%] (4) Negligible [0%-10%]



Inference: Talking about the extent to which the previous mentioned tools of Societal Marketing have helped these companies in attaining their objectives, here's an inference into them: 3 out of 5 companies, i.e, 60% believe that these tools have "majorly" proved beneficial for them and have led to the achievement of their objectives. The other 2 companies stated that they have helped 'greatly' having an above average result. None of the companies opt for 'Somewhat' or 'negligible' showing that the societal marketing tools are actually working in the favour of the companies. If not always, atleast it is working most of the time.

In your opinion, which of the marketing concepts have been most fruitful in the Indian context?

- (1) Product concept (focusing only on the product)
(2) Production concept (focusing only on the production)
(3) Selling concept (focusing only on sales)
(4) Marketing concept (focusing on marketing techniques)
(5) Societal Marketing concept (focusing on company, society and customers)



Inference: When asked to choose a combination of the marketing concepts fruitful in Indian context, all 5 Companies chose the Societal Marketing Concept as one of them thus proving that it has now become a necessity to be adopted in the Indian scenario. 46% of the points is received by it in this context. 3 companies also chose marketing concept and preferred it. It has received 27%. A companies' choice for a particular concept also coincides with its own prevalent marketing concept that it uses. These three companies believe that marketing efforts are required to be made in the

Indian scenario. 2 companies chose Product Concept emphasizing on the importance of how much a product also makes in achieving the goals. Any company would perish if its product is not suitable. 1 company opts for the production concept inferring that it is needed on the basis of the nature of work it does.

The three parameters of Societal Marketing are:

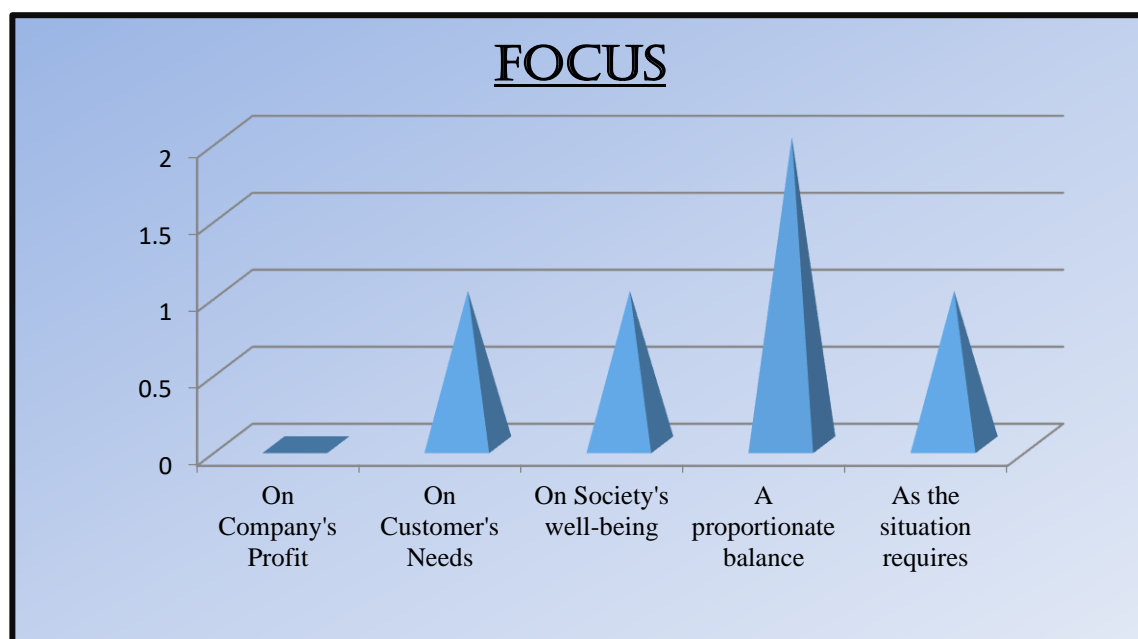
i) Company's Profit, ii) Customer's needs iii) Society's well-being

What should be the ideal proportion of focus on each one of them?

(1) Mostly on Company's profit. (2) Mostly on Customer's needs

(3) Mostly on Society's well-being (4) A proportionate balance

(5) As the situation requires.



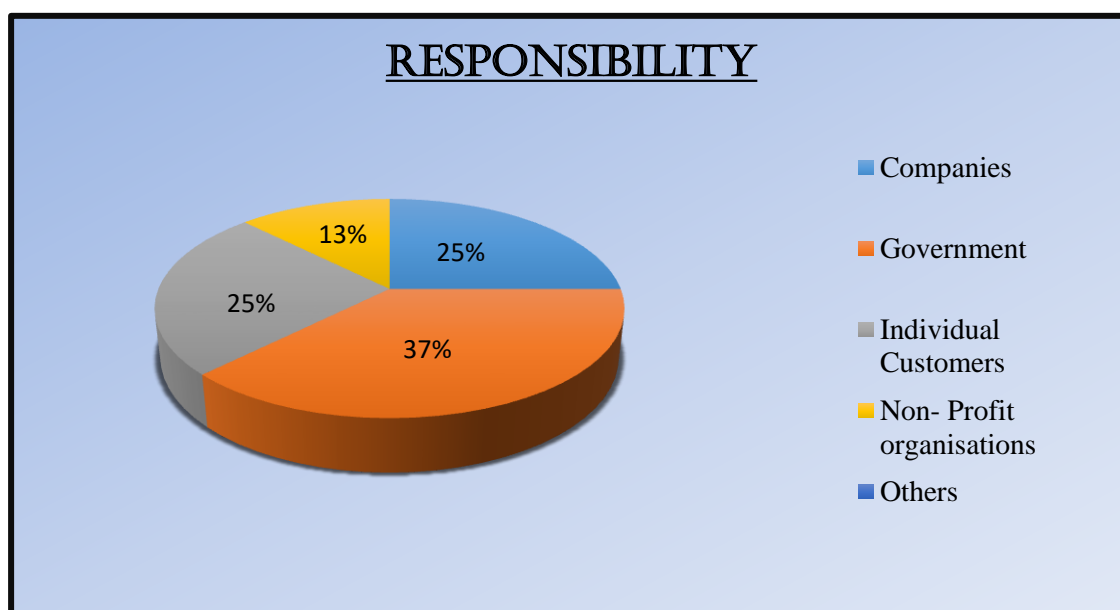
Inference: Out of 5 companies stated that there should be a “balance proportion” of the three parameters of Societal Marketing applied to any program. Whereas the other 3 companies have a different view to offer. 1 believed that more emphasis on customer's need, 1 on Society's well-being and 1 said the focus should depend on the situation.

All the companies kept the company's profit as the secondary factor which in itself shows that if the societal marketing parameters are adopted, company's profit will automatically follow.

Who do you feel is responsible for the development of Societal Marketing concept in the modern day scenario?

(1) Companies (2) Government (3) Individual customers

(4) Non-profit organisations (5) Others, (please specify)



Inference: The responsibility of the development of Societal Marketing concept can be given to many entities. Companies have various opinions in this regard depending on the nature of work that these companies carry out and the kind of entities that they have to keep in mind during that process.

3 out of 5 companies stated that Government has a major role to play in the Implementation of Societal Marketing because for existence in a political surrounding it is very important to get Government's approval before making any implementation. It takes the major chunk making it 37%.

Individual customers and companies are at par at 25% as 2 out of 5 companies chose for them respectively. They are of the opinion that customers and companies have to strike a mutual relationship between them for the proper implementation of the Societal Marketing Programs.

Lastly, 1 company believes that NGOs also hold somewhat responsibility in implementing the Societal Programs. It may also depend on the Companies relationship with NGOs in its normal course of business.

6. Findings:

- "Societal Marketing Concept" is the modern concept of Marketing and it is becoming popular among the companies and the consumers at a very fast pace. Companies are now indulging into this concept and are using forms of Societal Marketing to achieve the predetermined objectives of the organisation.
- From the survey conducted it is evident that maximum companies are following the Societal Marketing path. The ultimate objective of the companies might differ, but the means to achieve those objectives are seen to be the same. i.e. the Societal Marketing Concept.
- The two pillars of Societal Marketing are:
- Social Responsibility 2) Sustainable Development

The attitude of each company towards these two pillars differs. The findings are testimonial to the fact. Where one company emphasizes on Social Responsibility another focuses on Sustainable Development and some go for a balanced approach. This implies that a company's adoption of the means depends on its own way as to how it wishes to implement the pillars of Societal Marketing.

- The various objectives that a company intends to target through tolls of Societal Marketing are Customer Acquisition , Ongoing awareness, Brand awareness , customer loyalty and customer support just to name a few and a company's way to achieve these objectives are hidden behind the societal marketing tools that they implement and in what proportion.
- As far as the question of implementing Societal Marketing at various levels is concerned, it has been observed that various companies have variety of opinions. Some say it should be on National basis, while some say on local or international level. From this it can be interpreted that a company's adoption of the level is directly proportional to the kind of audience and the depth of audience reach the company wants to target.

- The Government plays a responsible role in the development of the Societal Marketing Concept in the modern day scenario because without the approval and allowance of the government and its agencies no step can be taken forward in this direction. Government's support is sought at every step of the Societal Marketing Programmes.
- To achieve its objectives, the companies often decide initiating partnerships with other companies interested in the social issue in question. In choosing a reliable partner, an organization, whether it is a non-profit or private one, should consider the following aspects: common market segments, compatible mission and values, good market image, similar reputations and adequate resources.
- Companies like ITC, HUL, Dabur, J&J Body shop to name a few, are actively involved in the social field. They are involved in various social campaigns, advertisement and other activities most of the times which has made them very popular among the consumers and are believed to be reputed brands which hold a great deal of goodwill in the market. All these owe to their societal marketing initiatives.
- One example of the societal marketing concept is cause-related marketing, where a firm offers to contribute a specific amount to a designated cause when customers engage in revenue-providing exchanges that satisfy organizational and individual objectives. It is then, a version of the societal marketing concept and requires the linking of a company's product or service to a relevant social cause for their mutual benefit. A number of companies have employed cause-related marketing and it is one major factor in their success.

The fundamental concept of Societal Marketing lies on the three parameters which are:

- Company's Profit
- Customer's Needs
- Society's well-being
- Societal Marketing is still a sunrise concept and corporate are focusing on it as the most unconventional way to carry out business in the future.

The findings from the above research have been put forward as they have been surveyed from the respective companies mentioned earlier. Proper justification to the ability of our knowledge has been stated for the interpretations made.

7. Conclusion:

In the ever changing markets, Globalization and liberalization are the buzz words. In the age of globalised world, the concept of Societal Marketing can't be ignored by the corporate firms. By keeping in mind the changing market scenario, business firms have to change their work culture as per the market demands. Previously we were fighting for the issues like labour laws, factory acts and child labour. But we can see the paradigm shift in the relation of corporate house and workers. Now a-days firms and workers all together work as a family and work achieving the common goals. Profit sharing is the main agenda of the corporate houses. Those days have gone when basic business of business is to earn profits only. Now, the scenario has broadened and the companies look into the consumer's needs and work to satisfy them to the fullest. Along with that it keeps the well-being of the Society into mind at the same time ensuring that no action of the company goes against the welfare of the society in which it operates. The evolution and innovation of the societal marketing concept reiterates the fact that in today's world business houses cannot look only inside them, but has to look around them and certainly in the go forward direction. The transition phase of societal marketing has made the companies realize its value and worth and its importance in their growth.

In conclusion, the findings of this study provide insights into an area of growing concern of firms towards society. Firms have been doing great effort for the achievement of business goals and marring the business goals with social responsibility practices. As per the changing market demands need of the hour is for the development of sustainability and social responsibility that has been imposed by the government so that, we can contribute to make better planet to live in. The future is ever dynamic and changing, and to be sustainable in this era, companies have to do business in unconventional and innovative ways. Societal Marketing concept is providing them with that opportunity where the society too is getting the benefit. It is a win win situation for all which may turn out to be the future road map of worldwide marketing concepts.

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An Analysis of the Financial Literacy of the Young Generation in Kolkata

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1. Introduction

1.1 Background

Complex financial products, little awareness and absence of knowledge about financial matters makes the need of financial literacy significant. The level of financial literacy differs from individual to individual.

A country like India with high young demographic dividend and socio-economic diversities should undergo researches in this topic. With 65 percent of its population under the age of 35 years, India today has one of the largest available workforces in the world. A large segment of this demographic belongs to the young generation group. So, measuring financial literacy among the people under the age of 28 becomes important.

1.2 Motivation for Research

Research has previously been conducted worldwide for measuring the level of financial literacy. Also, financial literacy survey has been conducted at country level by governments. Most of the surveys have shown the poor level of financial literacy.

Research conducted among the young generation is relevant as the young generation's decisions influence the future of the nation, and the financial decisions of this generation can only be efficient if they are financially literate. Thus, this study ascertains their financial literacy level and suggests measures to improve them, in turn, contributing to the future of the country.

1.3 Literature Review

(Chen & Volpe, 2002) attempts to examine financial literacy among college students by determining their personal finance knowledge in the areas of general knowledge of personal finance, savings & borrowings, insurance

and investment. The results suggested that women generally were less knowledge about personal finance as compare to male counterparts. It was also noted that participants financial literacy was related to the education and experience.

(Lusardi, 2008) shows that financial illiteracy is widespread among the U.S. population and especially acute among some specific demographic groups, like those with low level of education. Also, almost 50% of older workers were not aware of the type of pensions they had and a large majority of workers knew little about the rules relating to social security benefits.

(Jappelli, 2009) conducted an assessment of financial literacy across the world based on a survey of executives in 55 countries, in 1995-2008. The survey respondents are a certain group of managers and experts, through regression analysis it showed that its level depends on educational achievement, social interactions, and mandated savings in the way of social security contributions.

(Chakrabarty, 2013) addresses a few key issues relating to financial literacy in India. The paper highlights the importance of financial literacy, the target audience for financial literacy and the key suggestions to improve the levels of literacy for the growth and development of the nation.

(Agarwalla, Barua, Jacob, & Varma, 2013) studies the influence of various demographic factors on financial literacy of the working young in urban India. The influence of these factors in the Indian context has been compared with their influence globally. The study also analyses the relationship between these demographic variables and financial literacy.

(Sekar & Gowri, 2015) makes an attempt to measure the level of financial literacy of Generation Y employees. It examines how well-equipped a young employee is to make financial decisions.

(Verma, Pandagre, & Nema, 2017) studies the present level of financial education in India. It analyses the various initiatives taken by the RBI, SEBI and IRDA for imparting financial education. It also recommends required actions in order to enhance the level of financial literacy in India.

(Gupta, 2017) focusses on measuring levels of financial literacy of people in Delhi. The study also examines the relationship between financial literacy and other demographic factors like age, gender, occupation, marital status, education, monthly income, etc.

(Dube & Asthana, 2017) compares the financial literacy of Uttar Pradesh with Central Zone States in India. The financial literacy of Uttar Pradesh is assumed to be in pre-financial inclusion scenario and the Central Zone States are assumed to have financial inclusion.

(Sharma, 2017) identifies those factors which are responsible for the low level of financial literacy in Punjab and suggest some of the policy measures to improve the level of financial literacy in Punjab which further help in improving the financial inclusion.

2. Objectives

2.1 Objectives of the Study

- i. To measure the level of financial literacy of the young generation in Kolkata.
- ii. To find out the relationship between financial literacy and various demographic factors.

2.2 Research Hypotheses

- i. Hypothesis 1: There is no association between age and financial literacy level
- ii. Hypothesis 2: There is no association between gender and financial literacy level
- iii. Hypothesis 3: There is no association between educational qualification and financial literacy level
- iv. Hypothesis 4: There is no association between family income and financial literacy level

3. Theory

3.1 Financial Literacy – Meaning

Financial Literacy is an awareness of how money should be spent and managed, and how it can be used that would make a person more financially secure in the future.

A person is financially literate when they:

- Understand basic financial concepts
- Feels comfortable discussing finances with family members
- Understands financial products
- Has confidence in their ability to take financial decisions
- Is able to plan for their financial future
- Can respond to unanticipated life events

3.2 Definitions

A number of definitions of financial literacy exist in the literature. Following are some definitions used by research scholars in selected studies.

1. “The ability to make informed judgments and to take effective decisions regarding the use and management of money”.

(Noctor, Stoney, & Stradling, 1992)

2. “Personal financial literacy is the ability to read, analyse, manage and communicate about the personal financial conditions that affect material well-being.”

(Anderson, Kent, Lyter, Siegenthaler, & Ward, 2000)

3. “Financial knowledge is defined as understanding key financial terms and concepts needed to function daily in society.”

(Bowen, 2002)

4. “Confidence with managing money.”

(Australian Securities and Investments Commission, 2003)

5. “The process by which financial consumers/investors improve their understanding of financial products and concepts and, develop the skills and confidence to become more aware of financial risks and opportunities, to make informed choices, to know where to go for help, and to take other effective actions to improve their financial well-being.”

(Organisation for Economic Co-operation and Development, 2005)

6. “Financial literacy refers to a person’s ability to understand and make use of financial concepts.”

(Servon & Kaestner, 2008)

7. “Financial literacy is the ability to use knowledge and skills to manage financial resources effectively for a lifetime of financial well-being.”

(Huston, 2010)

8. “Financial literacy is the ability to make informed judgements and to take effective decisions regarding the use and management of money.”

(Australia & New Zealand Bank, 2011)

3.3 Components of Financial Literacy

Financial literacy has three components:

Core competency

Proficiency and

Opportunity

A financially literate person must be proficient in the core competencies, and be able to utilize the opportunity to acquire financial literacy and its advantages.

Core Competencies

i. Numerical Ability

Numerical ability relates to the knowledge required for the essential day to day calculations involving finance. This takes the form of basic calculations connected with the cost of buying goods, paying bills, interest and discount calculations.

ii. Budgeting and Living Within Means

Budgeting means keeping account of finances and reducing unnecessary expenditure. Living within one's own means is a skill essential for effective budgeting, and budgeting is crucial when there is limited income. (Monetary Authority of Singapore, 2013)

iii. Savings

Savings relate to keeping aside some money for future use. It may be short-term savings or long-term savings. Short-term savings relate to budgeting, and long-term savings are important for post-retirement life or purchase of expensive items.

iv. Borrowing

This involves the ability to understand debt, and how to avoid it, reduce it and repay it. Debt illiteracy is thus related with over-indebtedness, and failure to reduce existing debt. (Lusardi, 2008)

v. Investing

Competence in selecting the most suitable investment portfolio is one more key feature of financial literacy. Selection of an investment portfolio depends on the finance obtainable for investment and the purpose of investment. (Hiroshi & Cheng, 2002)

Proficiency

All five core competencies are important for financial literacy, but these competencies also necessitate a degree of proficiency. Thus, a financially literate person must be proficient in the core competencies, having financial knowledge, skill and confidence.

i. Financial knowledge

This refers to a person's level of knowledge of the core competencies and the conviction that financial knowledge will lead to financial wellbeing.

ii. Skill and confidence

A financially proficient person possesses all the skills necessary to manage finances to achieve well-being, and this includes communication skills, mathematical and computational skills. (Huston, 2010)

Opportunity

Financially capable consumers plan in advance, find and use information, know when to seek out advice and can understand and act on this advice, leading to better financial decisions. However, knowledge cannot be usefully applied without relevant skills. (H.M. Treasury, 2007)

3.4 Financial Literacy Initiatives in India

1. Reserve Bank of India

The central bank of the country has taken up initiative to enhance financial literacy and financial inclusion in the country. The draft strategy for financial education to be conducted by the RBI not only focuses on the role of banks, but also talks about imparting financial education in schools. The project titled "Project Financial Literacy" also contributed to the financial literacy programme of RBI. The project is aimed to disseminate information regarding RBI and common banking concepts to several target groups.

2. Commercial Banks

In India, commercial banks stand as pillars of the financial market, thus their role is pivotal. Commercial banks have introduced several measures for creating awareness through Counselling Centres and Rural Self Employment Training Institutes on financial literacy. The objective of such practices is to create awareness about personal finance management, counselling people dealing indebtedness, rehabilitation of borrowers in distress, and making people aware of the financial system prevalent in the country.

3. Securities & Exchange Board of India

The SEBI has one of its objectives to protect the interest of the investors and also to educate them. SEBI has several youth related programs through which it inculcates knowledge about the various financial products available in the market. SEBI is also conducting school level financial awareness tests on its websites, and felicitating the top performer of every month and year.

4. Insurance Regulatory and Development Authority

The IRDA has taken up several initiatives in order to financially educate the insurance policyholders. Awareness programs through advertisements about the rights and duties of policyholders have been circulated through both electronic and print media in 13 languages. IRDA has also taken up innovative steps like publishing comic books through which the process and benefits of insurance are highlighted.

5. Pension Fund Regulatory and Development Authority

The PFRDA has been engaged in spreading various social messages to the public regarding the utility of pension. It has also developed FAQ on pension related topics which is put up on its website and circulated through NGOs. PFRDA has also appointed intermediaries called Aggregators who bring out pension awareness in vernacular languages and in line with socio-economic sensibilities.

(Verma, Pandagre, & Nema, 2017).

4. Methods

4.1 Data Collection

Type of Data:

This study is conducted with the use to primary data. However, several research papers have been consulted in order to understand the concepts and framework of conducting the research.

Data Collection Method:

Data from the respondents is collected by using a structured questionnaire. Questions regarding 4 demographic variables, and 14 financial literacy questions were asked.

Questionnaire Distribution:

The questionnaire is administered through email and LinkedIn.

4.2 Sampling Design

Sample Structure:

For the purpose of the study a survey is conducted among the young generation i.e. persons within the age group 18-29, of Kolkata.

Sample Size:

A total of 101 respondents constitute a sample for this study.

Sampling Technique:

Respondents are to be selected using convenience sampling.

4.3 Tools Used

Software Used:

Microsoft Excel is used to compile and code the data. SPSS is used to analyse it by performing tests on it.

Methods Used:

- To measure the financial literacy level, questions in the areas of savings & borrowings, insurance, investments, financial decision making and financial opinions/habit is asked. Total score for each respondent is calculated.
- ROC Curve is used to find the cut-off point to distinguish between financially literate and financially illiterate respondents.
- Hypotheses are developed to find the association between financial literacy level and age, gender, educational qualification, and family income. For the purpose of testing these hypotheses, ANOVA is used.

5. Results

5.1 Reliability Test

Reliability assesses the quality of the measurement procedure used to collect data. In order for the results from a study to be considered valid, the measurement procedure must first be reliable.

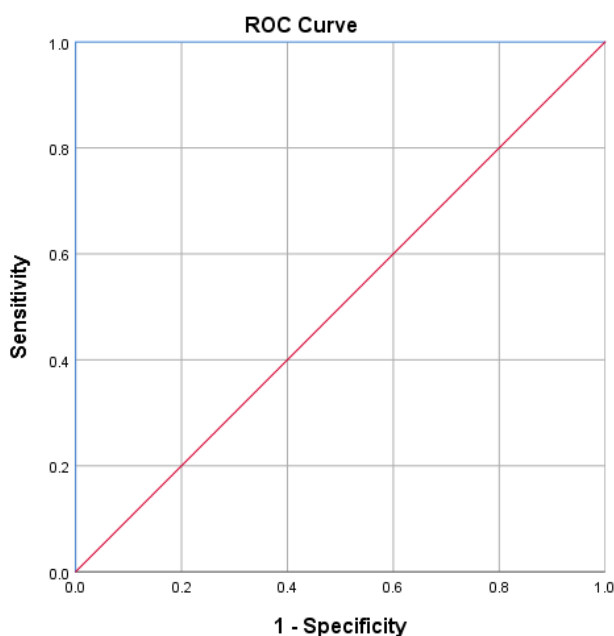
In this study for assessing the reliability, Cronbach's Alpha has been computed. A value of Cronbach's Alpha more than 0.7 signifies that the data is reliable.

In this case the value of Cronbach's Alpha is 0.711, thus we can say that the data is reliable.

5.2 Distinction between financially literate and financially illiterate respondents

In order to distinguish between financially literate and financially illiterate respondents, we use a Receiver Operating Characteristic (ROC) Curve.

In it, the true positive rate (Sensitivity) is plotted in function of the false positive rate (100-Specificity) for different cut-off points. Each point on the ROC curve represents a sensitivity/specificity pair corresponding to a particular decision threshold. The closer the ROC curve is to the upper left corner, the higher the overall accuracy of the test.



To find the cut off value we need to find the point on the ROC Curve in the upper left corner, the co-ordinates of this point is found to be (0,1).

Coordinates of the Curve

Test Result Variable(s): Score

Positive if Greater Than or Equal To ^a	Sensitivity	1 - Specificity	Positive if Greater Than or Equal To	Sensitivity	1 - Specificity
6.00	1.000	1.000	54.50	.833	.000
9.00	1.000	.976	56.00	.783	.000
11.50	1.000	.951	57.50	.767	.000
13.50	1.000	.878	58.50	.700	.000
17.00	1.000	.829	59.50	.683	.000
20.00	1.000	.780	60.50	.667	.000
22.00	1.000	.756	61.50	.633	.000
24.00	1.000	.732	62.50	.583	.000
25.50	1.000	.707	63.50	.567	.000
27.00	1.000	.610	64.50	.533	.000
30.00	1.000	.561	65.50	.500	.000
32.50	1.000	.537	67.00	.467	.000
33.50	1.000	.390	68.50	.400	.000
34.50	1.000	.366	70.50	.333	.000
35.50	1.000	.317	72.50	.300	.000
38.00	1.000	.244	73.50	.267	.000
40.50	1.000	.195	74.50	.250	.000
42.50	1.000	.171	75.50	.233	.000
44.50	1.000	.146	77.00	.183	.000

46.00	1.000	.098	78.50	.167	.000
47.50	1.000	.049	81.00	.100	.000
48.50	1.000	.024	84.00	.067	.000
49.50	1.000	.000	87.50	.050	.000
50.50	.950	.000	92.00	.033	.000
52.50	.883	.000	95.00	.000	.000

From this table, we find that the point (0,1) corresponds to the value 49.50. Thus, respondents below the score of 49.50 are financially illiterate and those with scores above 49.50 are financially literate.

It has already been found out from the ROC Curve that the score for a respondent being financially literate is 49.50. The mean financial literacy score in our study is 51.75 which is higher than the cut-off of 49.50, thus it can be observed that an average respondent is financially literate.

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
Score	101	7	94	51.75	21.166
Valid N (listwise)	101				

According to this 49.50 cut-off point, the respondents have been classified into financially literate and financially illiterate. It is noticed that 40.6% of the respondents are financially illiterate, whereas 59.4% are financially literate. Thus, it can be said that the majority of the young generation in Kolkata are financially literate.

Literate_Illiterate					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Illiterate	41	40.6	40.6	40.6
	Literate	60	59.4	59.4	100.0
	Total	101	100.0	100.0	

5.3 Hypothesis Testing

Association between Age and Financial Literacy Level

Descriptives								
Score								
	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
18-20	18	46.28	20.297	4.784	36.18	56.37	12	78
21-23	58	53.52	21.503	2.824	47.86	59.17	7	94
24-26	23	49.48	19.975	4.165	40.84	58.12	15	90
27-29	2	76.00	25.456	18.000	-152.71	304.71	58	94
Total	101	51.75	21.166	2.106	47.57	55.93	7	94

It can be observed that the age group 27-19 has the highest mean literacy score of 76, whereas the lowest literacy score is of the age group 18-20.

Analysis of Variance (ANOVA) is conducted (at 95% level of significance) in order to find out whether there is a relationship between the 2 variables.

Null Hypothesis: There is no significant relation between Age and Financial Literacy Level

Alternate Hypothesis: There is a significant relation between Age and Financial Literacy Level

ANOVA					
Score					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2014.979	3	671.660	1.523	.213
Within Groups	42785.833	97	441.091		
Total	44800.812	100			

The p value in this case is 0.213, which is more than 0.05; thus, we accept the null hypothesis that age and financial literacy level are not related. Therefore, it is evident that the financial literacy level does not depend on age.

Association Between Gender and Financial Literacy Level

Descriptives							
Score							
	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean	Minimum	Maximum

					Lower Bound	Upper Bound		
Male	48	53.42	22.118	3.193	46.99	59.84	12	94
Female	53	50.25	20.359	2.797	44.63	55.86	7	83
Total	101	51.75	21.166	2.106	47.57	55.93	7	94

In this case, we observe that the financial literacy is slightly higher for males. The mean financial literacy score for males is 53.42, whereas that for females is 50.25.

Analysis of Variance (ANOVA) is conducted (at 95% level of significance) in order to find out whether there is a relationship between the 2 variables.

Null Hypothesis: There is no significant relation between Gender and Financial Literacy Level

Alternate Hypothesis: There is a significant relation between Gender and Financial Literacy Level

ANOVA					
Score					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	253.334	1	253.334	.563	.455
Within Groups	44547.478	99	449.975		
Total	44800.812	100			

The p value in this case is 0.455, which is more than 0.05; so, we accept the null hypothesis that gender and financial literacy level are not related. Therefore, it is found that financial literacy and gender are independent.

Association Between Educational Qualification and Financial Literacy Level

Descriptives								
Score								
	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Secondary	3	25.00	11.790	6.807	-4.29	54.29	12	35
Higher Secondary	18	51.89	17.763	4.187	43.06	60.72	21	78
Graduate	38	46.84	22.524	3.654	39.44	54.25	7	85
Post Graduate	42	58.05	19.544	3.016	51.96	64.14	15	94

Total	101	51.75	21.166	2.106	47.57	55.93	7	94
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Here it is observed that the mean financial literacy score is the highest for post graduates and the lowest for secondary qualified respondents. But, the scores for graduates are found to be lower than higher secondary qualified respondents.

Analysis of Variance (ANOVA) is conducted (at 95% level of significance) in order to find out whether there is a relationship between the 2 variables.

Null Hypothesis: There is no significant relation between Educational Qualification and Financial Literacy Level

Alternate Hypothesis: There is a significant relation between Educational Qualification and Financial Literacy Level

ANOVA					
Score					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	4728.077	3	1576.026	3.815	.012
Within Groups	40072.735	97	413.121		
Total	44800.812	100			

The p value is 0.012 which is less than 0.05, thus the null hypothesis of educational qualification and financial literacy level being not related is rejected. So, the educational qualification is playing a role in determining the financial literacy level.

Association Between Family Income and Financial Literacy Level

Descriptives								
Score								
	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Below 250000	23	37.17	17.544	3.658	29.59	44.76	11	76
250000 - 500000	31	54.81	19.944	3.582	47.49	62.12	12	85
500000 - 1000000	22	54.14	22.548	4.807	44.14	64.13	7	94
Above 1000000	25	59.28	19.041	3.808	51.42	67.14	23	94
Total	101	51.75	21.166	2.106	47.57	55.93	7	94

The financial literacy score is found to be the lowest for respondents with a family income of less than Rs. 250000 and highest for respondents with a family income of more than Rs. 1000000.

Analysis of Variance (ANOVA) is conducted (at 95% level of significance) in order to find out whether there is a relationship between the 2 variables.

Null Hypothesis: There is no significant relation between Family Income and Financial Literacy Level

Alternate Hypothesis: There is a significant relation between Studying/Working Status and Financial Literacy Level

ANOVA					
Score					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	6719.038	3	2239.679	5.705	.001
Within Groups	38081.774	97	392.596		
Total	44800.812	100			

The p value computed in this case is 0.001 which is less than 0.05, thus the null hypothesis of family income and financial literacy level not being related is rejected. Thus, family income of respondents does affect the financial literacy score.

6. Summary of Findings

Financial Literacy Level

The overall financial literacy level is found out to be 51.75%, whereas the cut-off score for financial literacy is 49.50%. Therefore, an average respondent is financially literate.

Component	Literacy Level
Savings and Borrowings	62.38%
Insurance	50%
Investments	39.29%
Decision Making	47.52%
Opinions/Habits	55.96%
<i>TOTAL</i>	<i>51.75%</i>
<i>Cut-off Score for Financial Literacy</i>	<i>49.50%</i>

Associations

This study has observed that Financial Literacy is related to Educational Qualification and Family Income; but it is not related to Age or Gender.

Demographic Variable	P Value	Whether Related to Financial Literacy
Age	0.213	Not Related
Gender	0.455	Not Related
Educational Qualification	0.012	Related
Family Income	0.001	Related

7. Future Directions

For further research the following may be considered:

- In this study, the association between financial literacy and 6 demographic variables have been identified. It is possible that financial literacy is also associated to some other demographic variable. Future research can be made in relating other demographic factors to financial literacy.
- Research can also be carried out on role of financial literacy in bringing about financial inclusion and thereby promoting a sound financial system.
- This research is carried out in the city of Kolkata. Future researchers can also perform the study in other parts of India and/or at national level as a whole. Also, comparative study of data of two or more places can be promising.
- Here, research has been conducted into only a certain age group, further research could be conducted for other age groups, say for senior citizens. Research could also be conducted for specific part of the population, say for the women or the teenagers.
- In this research, only the urban population is considered, as Kolkata is the sample city chosen. The results would reflect different outcomes if the same study is conducted in rural areas, where financial literacy is very relevant.
- A longitudinal study can be conducted in order to find the impact of financial literacy on a certain part of the demographic population, over a specific period of time. This could further show the importance of financial literacy.

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A Revisit Of EKC For Some Selected States Of India

1. Introduction

The Environmental Kuznets Curve, being an inverted 'U' shape, hypothesizes the relationship between environmental degradation and per capita income. It is suggested by the EKC that, with the course of economic development, environment degrades initially followed by rise in per capita GDP. That means environmental degradation increases up to the achievement of a certain level of per capita income in the earlier stage of economic growth. Beyond that, the trend becomes opposite and with the economic growth, environment starts improving. In other words, the level of environmental degradation escalates to the maximum level during the pre-industrialization phase followed by its decline in the post-industrialization phase. People attain a subsistence level of income at the beginning of the development process which makes them to have a little WTP (Willingness to Pay) for an improvement in environmental quality. But they achieve a position that make themselves concerned about the harmful effect of environmental degradation on their well beings with the upward thrust in per capita GDP. Certain rules and regulations are put forward to protect the environment cutting down environmental pollution for their willing to pay for abatement as well as their intuition towards the achievement of good environment. India has become world's sixth largest economy in World Bank ranking (2017). India's gross domestic product (GDP) extended to \$2.597 trillion at the end of the last year.(<http://economictimes.indiatimes.com>)

In 2016-17, the share of the Services sector, Industrial sector, Agriculture and allied sector in GDP of India are 53.66%, 29.02% and 17.32% respectively. As GDP measures all final goods and services produced in a period in money terms, is an indicator of the health of the economy. Each state or union territory comprises a part of the GDP of the nation and that counterpart is referred as gross state domestic product (GSDP). It is important to notice that there is a disparity among the contribution of Indian states in GDP. A developing nation like India, is very much economically diversified with its states having varying intensities (statisticstimes.com).

Unfortunately, in the ground of the Global Environmental Performance index (EPI) rankings, the country has performed very poor. In 2016, it had ranked 141 out of 180 countries (ref). The country is not in a position to improve its air quality, protect its biodiversity, and cut its GHG emissions. WHO's World Global Ambient Air Quality Database shows an alarming scenario for India. Measurements and calculations have been done for year 2016 for air monitoring stations in 4,300 cities, WHO reported that Indian cities suffer the most. 11(Kanpur is in the first position in the list, followed by Faridabad, Varanasi etc.) of the 12 cities having highest levels are located in India according to the database's ranking of particulate pollution in cities. In 2018, India has slipped to 177th position, according to the figures of State of India's Environment (SoE). According to the World Health Organization (WHO), 14 Indian cities figured in the top 20 most polluted cities in the world.

With the emission of harmful substances to the atmosphere air quality can be polluted. A snapshot of various pollutants and respective roles in air pollution has been presented below.

Using a panel data for 1981-2017 We have attempted to empirically test the environmental Kuznets hypothesis relating ambient air quality with per capita GDP for some selected states of India. on the basis of statistics on various air pollutants. The Ambient Air Quality index (AAQ) has been calculated for the selected states within the selected years. At constant price of 1980-81 the relationship between AAQ and per capita income has been tested empirically.

This paper has been organized as follows. Section 2 deals with the objectives of the study. A brief literature on different air pollutants and its impact on human life are presented in section 3. Econometric Model, Methodology and Data have been discussed in section 4. Section 5.1 states descriptive statistics on AAQ and its several ingredients. In

section 5.2 regression estimates have been presented along with Environmental Kuznets Curve for Select States and Union Territories India in section 5.3. Finally, section 6 presents the summary and conclusions of this study.

2. Objectives of the Study

Contrary to the Fisher-Clark hypothesis, though the tertiary sector in India has developed significantly, her secondary sector too has achieved high growth in spite of the fact that her process of industrialization has not taken place in full extension. With the course of industrialization, pollution is expected to strain the air quality for human beings. Industrialization marks a key transition point in the extent of SO₂ emissions as a result of large-scale burning of sulphur-containing fuels and industrial processing. The main focus is on PM_{2.5}, which is one of the most concerning air pollutants for human health. There is particular concern for the smaller particles with a diameter of less than 2.5µm since they can penetrate into the lungs, impacting respiratory health. This motivates us to look into the EKC for India during her process of industrialization. Our major objectives are noted below-

- to discuss the emission levels and intensities of various pollutants in various states and union territories of India
- to test the shape of EKC (relation between AAQ and GDPPC) for the selected states and union territories in India
- inter-state analysis and comparison of the relationship between of AAQ and GDPPC during 1981-2017

3. Background Theory

In a study by Haque and Singh (2017) Kolkata, being a metropolitan city, has a critical ambient air quality. In this article, Exceedance Factor (FE) method has been used to measure air quality and selected air pollutants are SO₂, NO₂, RPM and SPM. The average concentration of various pollutants has been categorized as critical, high, moderate and low pollution. Among 17 air monitoring stations located in Kolkata, in 5 stations NO₂ concentration is critical while remaining 12 are under high category. Numbers of stations under critical and high category are 4 and 13 respectively in case of RPM, vehicular emission (51.4%) is the major source of NO₂ and RPM, followed by industrial sources (24.5%) and dust particles (21.9%). The adverse effect of air pollution on human health has been surveyed for 100 individuals at some medicine shop. Significant number of patients are suffering from Acute Respiratory Infection (ARI), Chronic Obstructive Pulmonary Diseases (COPD), Upper Tract Respiratory Infection (UTRI), Influenza and acid fast bacillus (AFB). outdoor air pollution is more severe for human health according to the respondents,.

According to Anderson *et al.* (2012), particulate matter air pollution is responsible for causing eight lakh premature deaths each year throughout the world. PM contributes through small particles and liquid droplets containing acids, organic chemicals, metals and soil or dust particles, a significant portion of air pollution and ranks 13th position in leading the cause of mortality. The diseases caused by PM are cardio vascular, cerebro vascular by mechanism of systemic inflammation direct and indirect coagulation activation and direct translocation into systemic circulation. It also causes respiratory morbidity and mortality by creating oxidative stress and inflammation leading to pulmonary anatomic and physiologic remodeling. The PM effect on susceptible population and the preponderance of data shows that PM exposure causes a small but significant increase in human morbidity and mortality. Only by reducing the use of air conditioning indoor combustion of heating and cooking will reduce indoor PM exposure and such consciousness will benefit individual patients in both short term symptomatic control and long term cardio vascular and respiratory complications.

Pope (2000) has examined the effect of fine particulate air pollution on human health. He has provided an early and speculative discussion of epidemiology of fine particulate air pollution and tried to evaluate who is at risk. His study shows that elderly, infants and persons with COPD, Influenza or Asthma are more susceptible to mortality and serious morbidity effect from short term acutely elevated exposures to fine particulate air pollution.

Singh (2014-15) attempted to estimate EKC in India during 1990-2009. The variables taken into consideration are per capita GDP, per capita CO₂ emission and Trade-GDP ratio. The methodology used for the study is the method of least squares for time series data. The estimation of quadratic regression model supports traditional inverted 'U' shaped EKC in the context of India. EKC becomes 'N' shape when cubic regression model is estimated.

4. Econometric Model, Methodology and Data

We have computed Ambient Air Quality index (AAQ) to examine the relationship between air pollution and per capita income in some selected states of India. On the basis of index of various air pollutants, AAQ has been

calculated. The relationship between AAQ and per capita income at constant prices (Base Year: 1980-81) has been tested.

Econometric Models provide us to test the various forms of relationship between economic growth and environment. Instead of getting traditionally inverted 'U' shaped EKC, in our model there are possibilities of various shapes of EKC. Several possibilities are mentioned below.

1. If $\beta_1 < 0, \beta_2 = \beta_3 = \beta_4 = \beta_5 = \beta_6 = 0$, equation of AAQ will be linear and it shows a monotonically decreasing relationship between ambient air quality and per capita GSDP.
2. If $\beta_1 > 0, \beta_2 = \beta_3 = \beta_4 = \beta_5 = \beta_6 = 0$, equation of AAQ will be linear and it shows a monotonically increasing relationship between ambient air quality and per capita GSDP.
3. If $\beta_1 > 0, \beta_2 < 0, \beta_3 = \beta_4 = \beta_5 = \beta_6 = 0$, equation of AAQ will be quadratic. The traditional inverted 'U' shaped EKC will exist in present situation with reverse interpretation.
4. If $\beta_1 > 0, \beta_2 < 0, \beta_3 > 0, \beta_4 = \beta_5 = \beta_6 = 0$, equation of AAQ will be cubic. It is to be noted that with the increasing per capita GSDP AAQ after its decrease (first stage) takes a downward turn (second stage) followed by another decrease (third stage).
5. If $\beta_1 > 0, \beta_2 < 0, \beta_3 > 0, \beta_4 < 0, \beta_5 = \beta_6 = 0$, equation of AAQ will be quartic (polynomial of degree four).
6. If $\beta_1 > 0, \beta_2 < 0, \beta_3 < 0, \beta_4 > 0, \beta_5 < 0, \beta_6 = 0$, AAQ will be quintic (polynomial of degree five).
7. If $\beta_1 > 0, \beta_2 < 0, \beta_3 < 0, \beta_4 > 0, \beta_5 < 0, \beta_6 > 0$, AAQ will be hexic (polynomial of degree six).

Calculations of various indices of pollutants causing air pollution are shown below. The pollutants, which have been taken into consideration, are shown below.

- a. Index of SO_2 : SO_2 has been used to calculate total emission. The unit of measurement of this pollutant is $\mu\text{g}/\text{m}^3$ (microgram/cubic meter).
- b. Index of NO_2 : Total emission of NO_2 has been used to calculate it. Here also, $\mu\text{g}/\text{m}^3$ is the unit of measurement of this pollutant.
- c. Index of RSPM/PM10: it is used to calculate total emission of respirable particulate matter with diameter $2.5 \mu\text{m}$ or particulate matter with diameter $10 \mu\text{m}$. The unit of measurement of this pollutant is $\mu\text{g}/\text{m}^3$.
- d. Index of SPM: Total emission of SPM having a cut-off at 100 micron has been used to calculate it. The unit of measurement of this pollutant is $\mu\text{g}/\text{m}^3$.

Our data set consists of four major pollutants (SO_2 , NO_2 , RSPM/PM10, and SPM) for nineteen states of India for the years 1981 to 2017.

Two econometric models have been estimated for further analysis where AAQ index has been regressed on GDPPC and in our models, GDPPC is taken up to its sixth degree and growth rate of population. This is a hexic (six degree) polynomial which is so constructed that we can make comparative judgment among the states. Andhra Pradesh has been considered as contrast dummy variable in this study. The study is based on secondary data collected from Government of India database, Reserve Bank of India database, EPW Society data base and Census India Library data base. On the basis of population density, selection of states has been made.

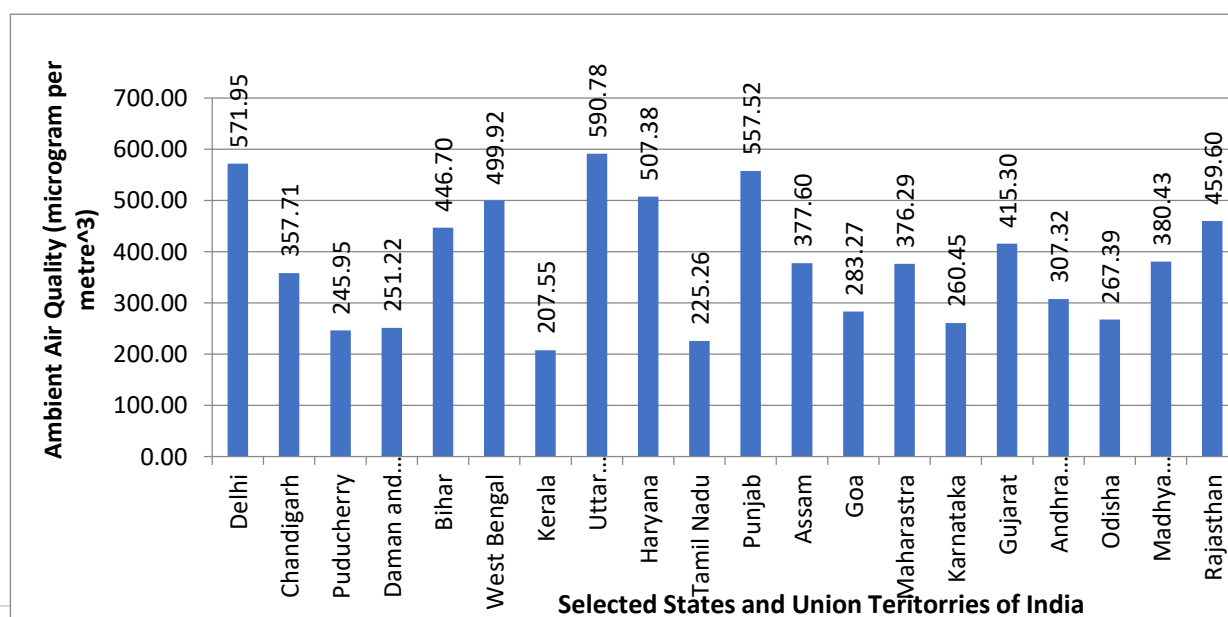
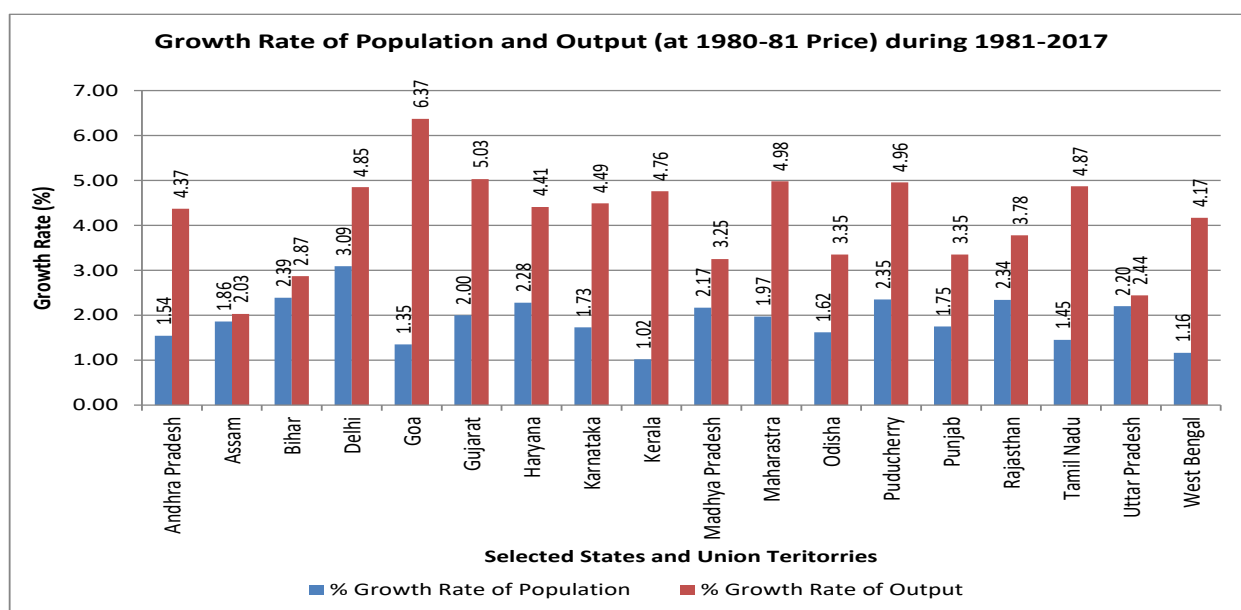
Either Fixed Effect Model (FEM) or Random Effect Model (REM) is used in the estimation of panel data. We use FEM when we are sure about that there is correlation between cross-section specific time invariant disturbance term and explanatory variable. On the other hand, when it is not certain that disturbing term is going to affect the explanatory variable REM is used. The decision of selection between FEM and REM is confirmed by Hausman test where the null hypothesis that REM is consistent is tested against the alternative hypothesis that FEM is consistent. From the test, if the decision is to accept the alternative hypothesis, we shall proceed to estimate the LSDV model.

5. Empirical Estimates

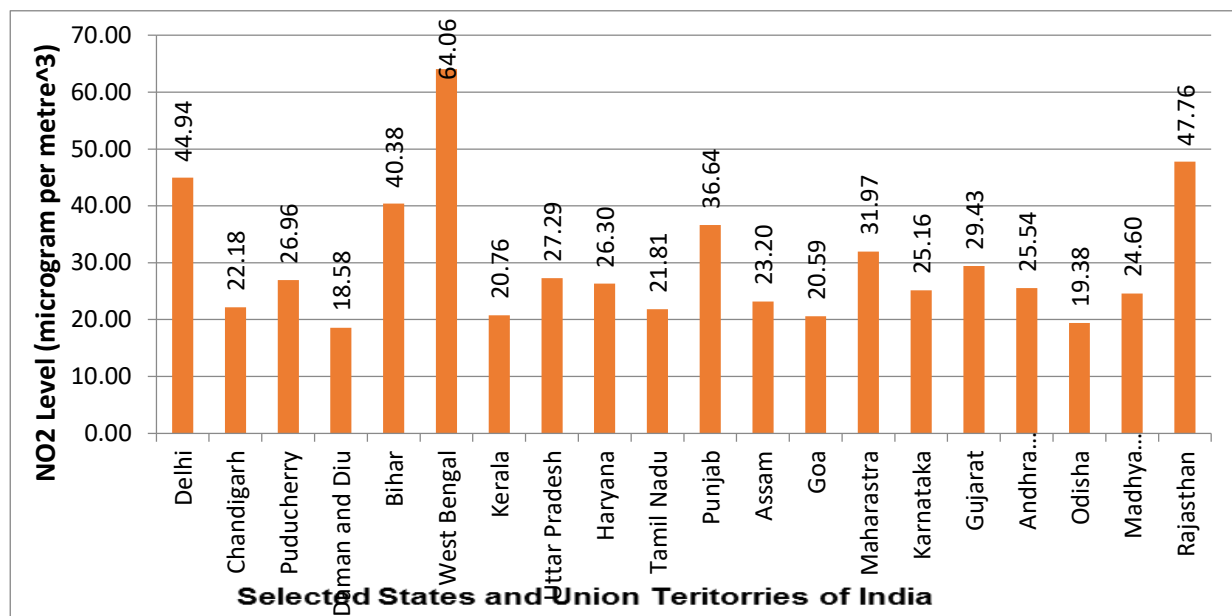
Let us proceed to explore the AAQ-GDPPC relationship.

5.1 Descriptive Statistics

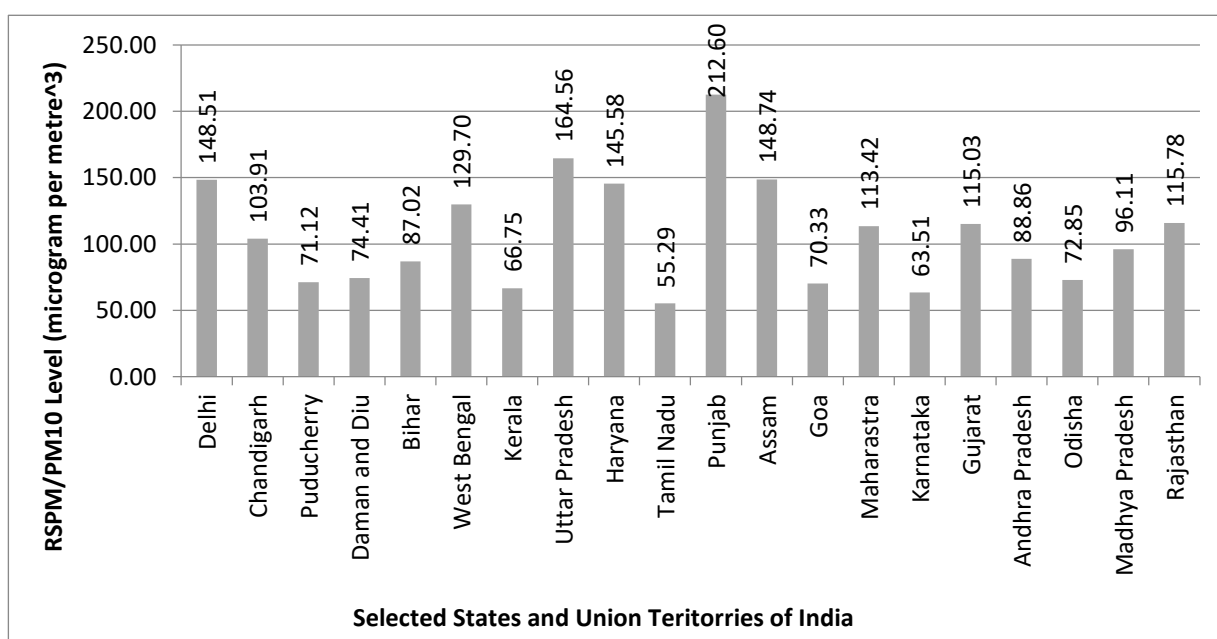
- Growth rates of population and output (at 1980-81 prices) have been shown for the years 1981 to 2017 against the selected states using multiple bar charts. Delhi and Goa are exhibiting highest growth rate in the field of population and output respectively among the selected states and union territories. The population growth rate is observed to be lowest for the state Kerala. On the other end, the growth rate of output is found to be lowest in case of Assam. Particularly, in case of Odisha, average growth rate of population and output are 1.62% and 3.35% respectively.
- The emission level of SO₂ has been shown using simple bar charts. For the state West Bengal the emission is found to be highest. The lowest emission of SO₂ comprises to Daman and Diu. Besides, Chandigarh, Kerala and Assam have relatively greater control over the emission of SO₂ (below 10 microgram/meter³). On the other hand, Bihar, Haryana and Gujarat have higher rate of SO₂ emission after West Bengal (above 20 microgram/meter³). State Odisha has a moderate emission of SO₂ at a level 14.10 µg/m³.
- Among the selected states and union territories, West Bengal has the highest emission of this air pollutant NO₂ followed by Rajasthan and Delhi. On the other hand, Daman and Diu has the lowest emission of NO₂ while Odisha achieves the second lowest position by controlling its emission of NO₂.

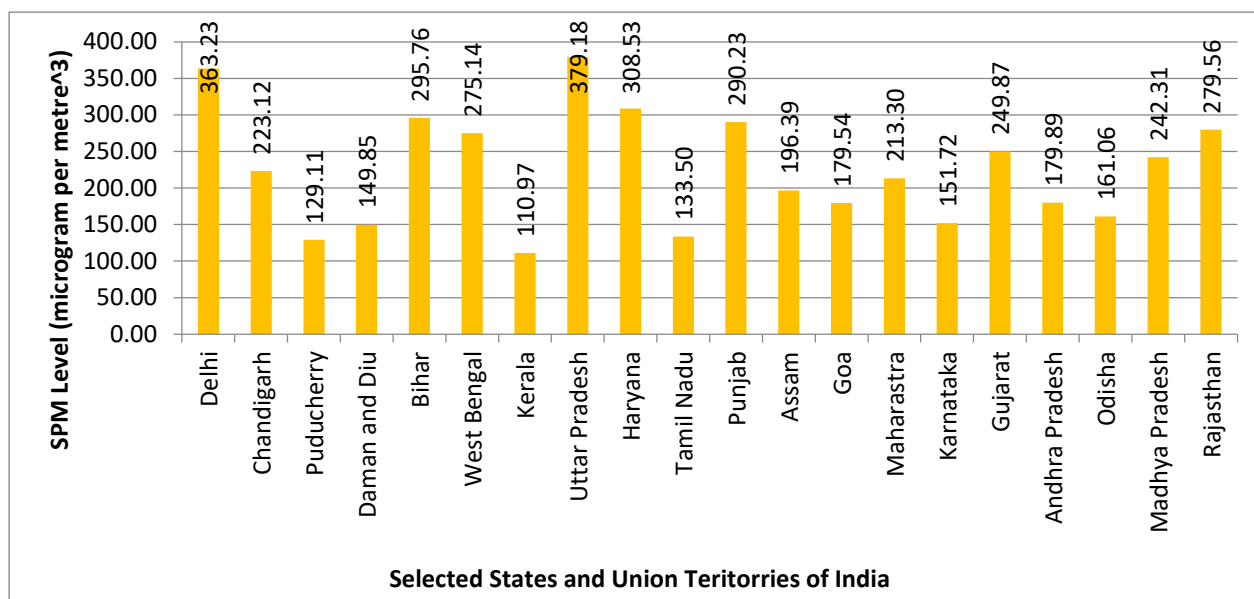


- RSPM or PM 10 level in selected states and union territories of India during 1981-2017 has been shown using simple bar charts. Here, highest emission of RSPM/PM10 is noticed for the state Punjab. The second position is apprehended by Uttar Pradesh with its huge emission of RSPM/PM10 causing health damage to its inhabitants. Assam and Delhi also have significantly higher emission of particulate matter. On the contrary, in the state Tamil Nadu RSPM/PM10 level in air is lowest. Besides, Karnataka, Kerala and Goa also have been controlled the emission of respirable particulate matter into the air. In case of Odisha also, it can be observed that there is much controlled level of emission of RSPM/PM10 at a level $72.85 \mu\text{g}/\text{m}^3$.

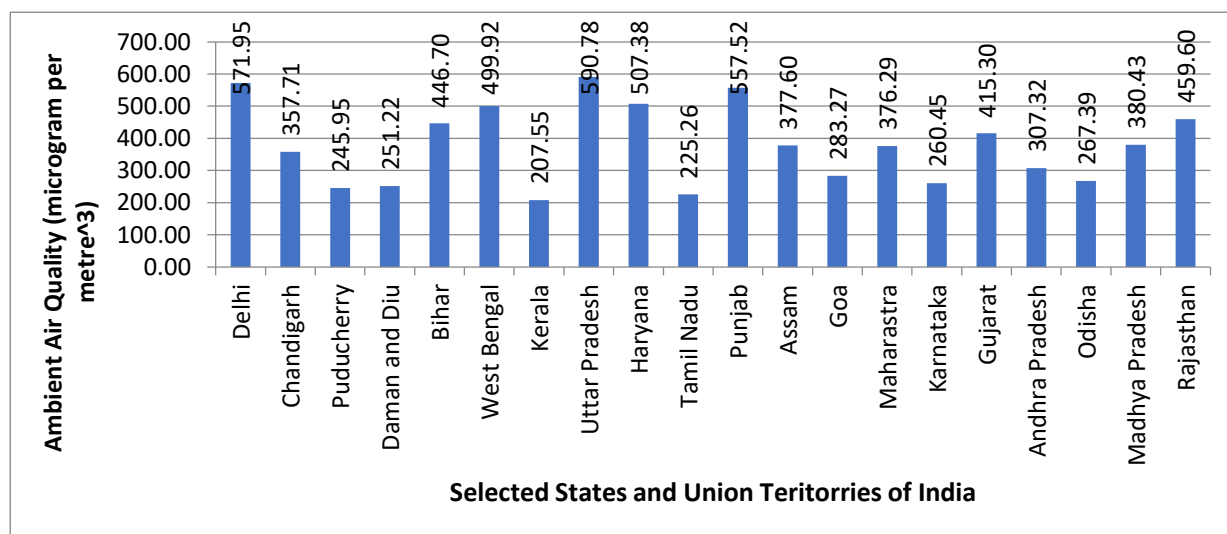


- Using simple bars we can get an overview of Suspended Particulate Matter level in the air. highest bar representing maximum level of emission of SPM associates with the state Uttar Pradesh followed by Delhi and Haryana setting their emission level of SPM above $300 \mu\text{g}/\text{m}^3$. On the other end, emission of SPM is found to be lowest for Kerala followed by Puducherry and Tamil Nadu. Specifically, in case of Odisha, the emission level is fixed at a level $161.06 \mu\text{g}/\text{m}^3$.



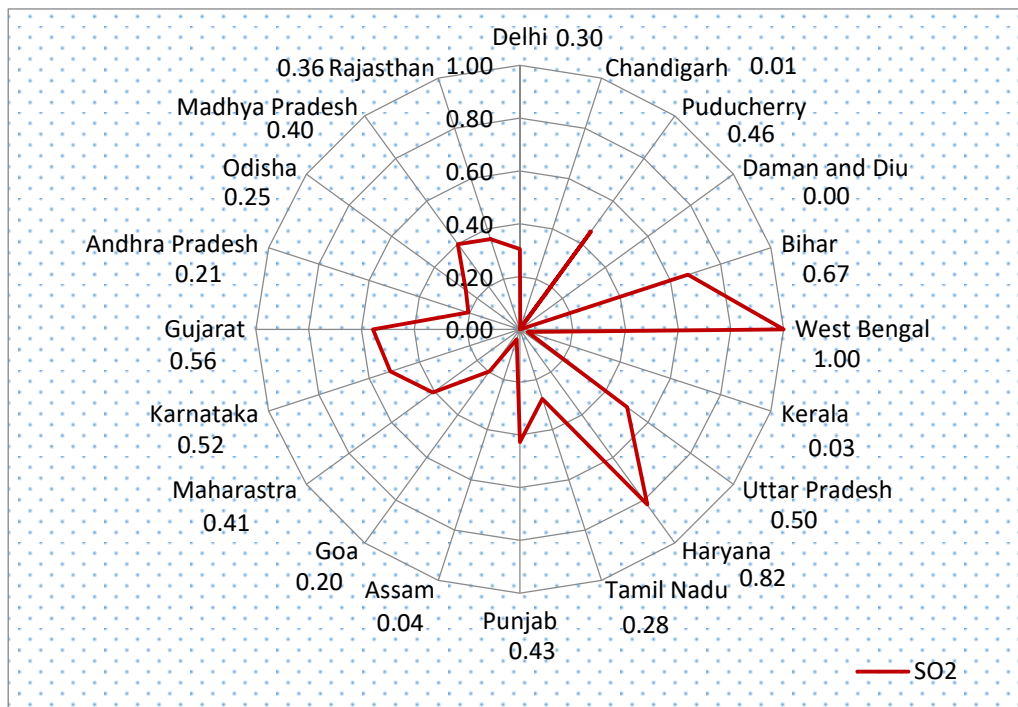


- Ambient Air Quality for the selected states and union territories has been shown for the year 1981 to 2017. It is observed from the chart that the height of the bar is maximum for the state Uttar Pradesh indicating the poorest quality of air followed by Delhi and Punjab. Again, ambient air quality is best for Kerala having lowest value of AAQ. After Kerala, there are Tamil Nadu and Puducherry in second and third lowest position respectively. The AAQ value stands at 267.39 implying an average air quality for the state Odisha.

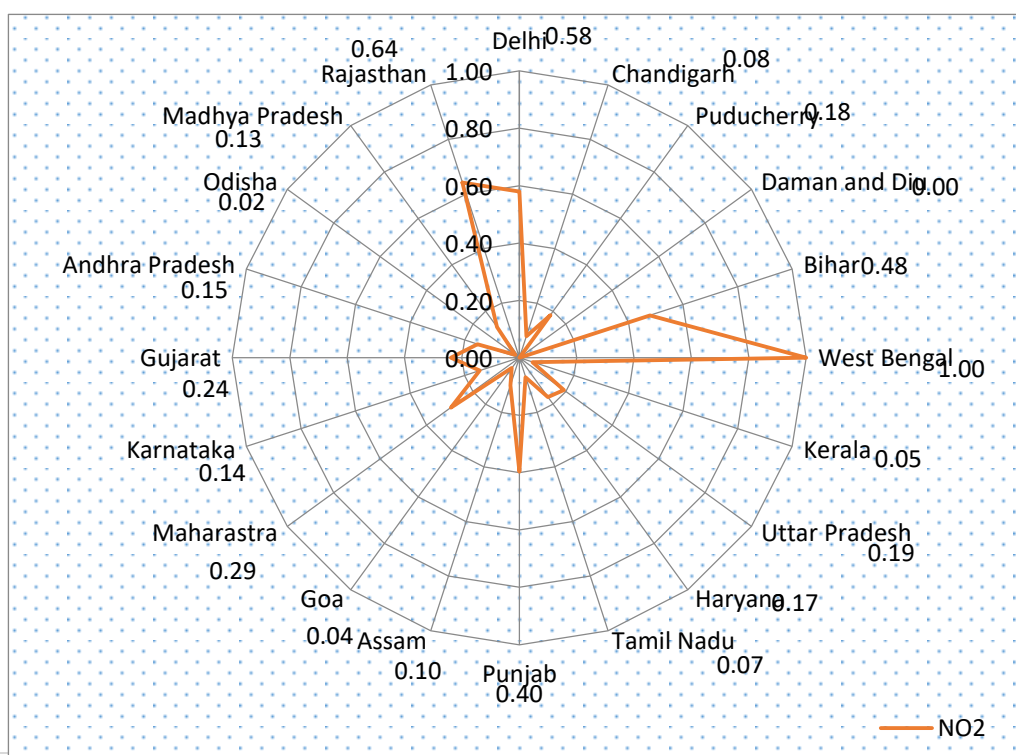


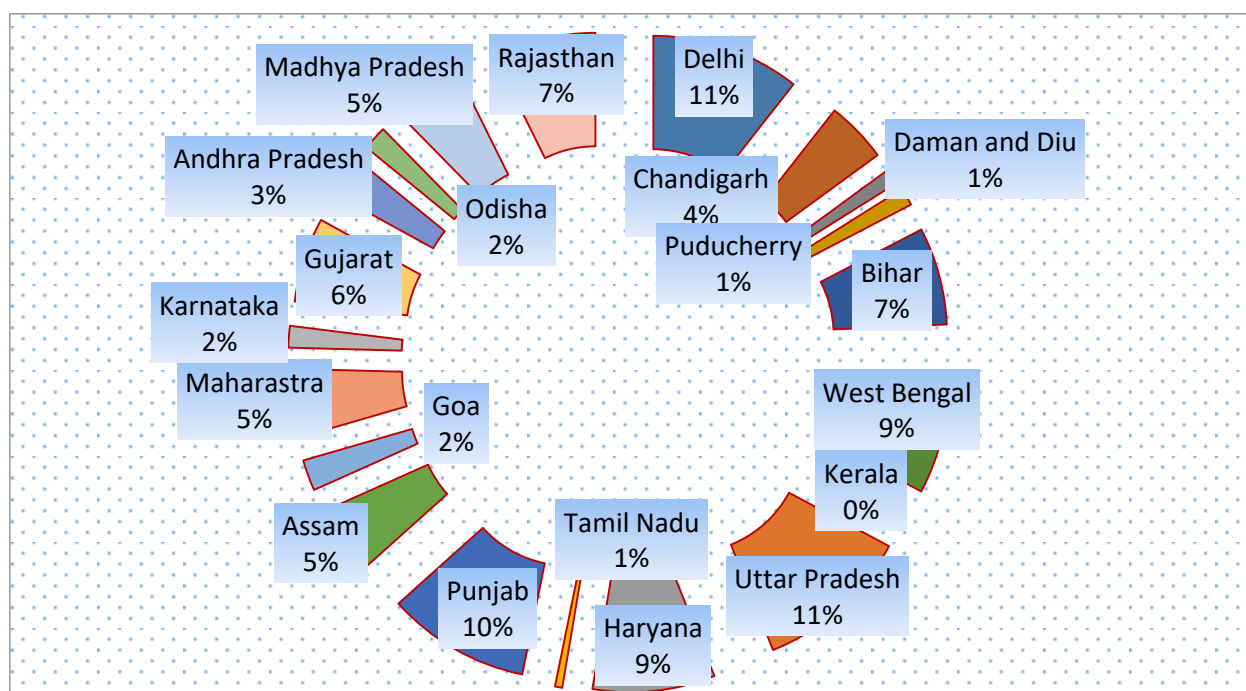
- Comparative positions of various states and union territories of India for the years 1981 to 2017 have been presented using a radar diagram. From the respective diagram, it is observed that among the selected states and union territories, West Bengal has highest intensity of SO₂ followed by Haryana, Bihar and Gujarat. The value of index is 1.00 For West Bengal, implying maximum intensity of SO₂ in air compared to other states and union territories. Haryana is in the second position with its average value of SO₂ intensity. Daman and Diu is found to have lowest intensity of SO₂ and Kerala has second lowest intensity. Odisha has controlled the intensity of SO₂ is much.

- Comparative intensities of NO_2 have been shown using radar diagram. From radar diagram, West Bengal is found to have highest intensity of NO_2 among all states and union territories followed by Rajasthan. On the other end, the intensity of NO_2 is found to be lowest for Daman and Diu. Odisha is in the second lowest position followed by Goa.



- We have tried to study comparative analysis regarding the intensity of RSPM/PM10. With highest emission of RSPM/PM10 the state Punjab is found to be in first position. Delhi and Assam are in second position with the same level of intensity of RSPM/PM10 of 0.59. In contrary, the intensity is lowest for the state Tamil Nadu followed by Karnataka and Kerala. In case of Odisha, the intensity level is found to be 0.11 which is significantly low indicating its control over this specific pollutant.





- The comparative intensities of SPM in selected states and union territories in India during years 1981 to 2017. Uttar Pradesh is the state in the first position with highest emission of SPM followed by Delhi and Haryana. The lowest intensity of SPM is constituted to the state Kerala. Puducherry achieves Second lowest position. The intensity of SPM is found to be 0.19 in case of Odisha, which is significantly low suggesting fresh air to her inhabitants.
- Using Bubble diagram we have represented Ambient Air Quality (AAQ) for some selected states in India for the years 1981 to 201. A composite index of pollution, AAQ, considers various air pollutants. Let us consider the chart, it can be noted that AAQ is highest for Delhi and Uttar Pradesh having same value of 11%. On the other end, Kerala attains the minimum value exhibiting its greater control over air pollution. Tamil Nadu and Puducherry are in the second lowest position. Possessing same value of AAQ, Odisha and Goa are in third lowest position improving their overall air quality.

6. Regression Results

Empirical Estimates of EKC

Let us estimate a model showing the relationship between AAQ and GDPPC using FEM and REM. For estimation purpose, when FEM is used, the correlation coefficient between disturbance term and explanatory variable is found to be positive. But when REM is used for estimation, it is assumed that disturbance term and explanatory variable are uncorrelated. All the estimated coefficients are found to be statistically significant in case of both FEM and REM. But which should we go for, FEM or REM, Hausman test has been performed. From the result of Hausman test, null hypothesis has been rejected. Hence, FEM is to be used to estimate the regression model.

The estimation of the regression model using FEM is parallel to the estimation of LSDV (least-square dummy variables) model. From the estimation, estimated coefficient of GDPPC is found to be positive showing there is a positive impact of increase in GDPPC over AAQ. This implies that at the very beginning of growth process, air quality deteriorates with the rise in per capita income. People are less conscious about environment because their income does not permit them to pay for an improvement in air quality. The estimated coefficient of squared GDPPC is negative indicating that as per capita income increases people become conscious about the harmful effect of environment on their health. Hence, they pay a part of their income to get better air quality and consequently, pollution decreases. Further, the estimated coefficient of cube of GDPPC is found to be positive. This result signifies that with further rise in per capita income, people feel that the environment is now safe for them and becomes casual. They start to pay less for the environment even if their income increases and air pollution again increases. This cycle repeats and hence, the estimated coefficients of even degrees of GDPPC are found to be negative and the estimated

coefficients of odd degrees of GDPPC are found to be positive. All the estimated coefficients are statistically significant at 1% level.

Population growth rate has been found to have a significant effect on AAQ. The estimated coefficient is found to be positive which implies that deterioration in air quality results from increase in population.

The estimated coefficient of time is observed to be positive and this implies that time is positively connected with AAQ and plays a significant role in determination of ambient air quality.

The models are constructed in such a way that it is possible to compare selected states and union territories. All the state dummies are significant and estimated coefficients are either positive or negative. It must be noted that the state Andhra Pradesh has been used as contrast variable. Air quality of Andhra Pradesh is represented by the constant term. In the absence of explanatory variables, the AAQ of Andhra Pradesh is represented by the constant term. For a state, having estimated coefficient negative in sign, implies that particular state attains a lower value of AAQ and is in a position to provide relatively fresh quality of air to its habitants as compared to Andhra Pradesh. In contrary, a state with coefficient positive in sign, indicates that the state concerned has a higher value of AAQ and the quality of air is poorer in comparison with Andhra Pradesh. For instance, in case of Odisha, the estimated coefficient is found to be negative which implies that air quality in this state is better than Andhra Pradesh and have a relatively fresh air by lowering its level of pollution.

In case of West Bengal, estimated coefficient is positive. Hence, it must have a higher value of AAQ that indicates poorer quality of air compared to Andhra Pradesh.

Similarly, from the regression result, it can be argued that air pollution is controlled in Goa, Karnataka, Kerala, Puducherry and Tamil Nadu as compared to Andhra Pradesh. Among them the safest air quality is achieved by Kerala having highest negative coefficient. In contrary, Assam, Bihar, Delhi, Gujarat, Haryana, Madhya Pradesh, Maharashtra, Punjab, Rajasthan and Uttar Pradesh have relatively poor quality of air in contrast with Andhra Pradesh. Among them, poorest air quality is found in Delhi.

7. Environmental Kuznets Curve for Select States and Union Territories India

Major states and union territories under consideration have been clubbed into six regions according to their location - central, eastern, north-eastern, northern, southern and western. We can specify shapes of EKC for various states and union territories using regression results. Further, comparative study can be done for the states and union territories within a specified region.

Region-wise EKC

- Graphically, the shape of EKC for India during 1981 to 2017 has been shown. The curve has five turning points. The first turning point is associated with annual GDPPC 4,000 rupees (at 1980-81 prices). Beyond that, air pollution starts declining. Second turning point comes when the per capita income level is 9,000 rupees. After that, air pollution starts rising and reaches its maximum level at around per capita income level of 21,000 rupees. This is another turning point and beyond this, air quality starts improving. Further, EKC has another turning point at GDPPC level of 34,000 rupees. AAQ again increases with increase in per capita income until the achievement of last turning point. After GDPPC attains 39,000 rupees, air quality starts improving.
- EKC has been shown for the north-eastern state. Within this region, we have only one state Assam for which EKC is inverted 'U' shaped having longer tail towards higher values of GDPPC. At around 1,800 rupees per capita income, EKC has a turning point. Before that AAQ has been increased sharply and beyond that turning point, air quality has improved gradually with the rise in GDPPC.
- We have specified the shape of EKC which looks like a wave having cyclical pattern, for state Madhya Pradesh that belongs to central region. Initially with rise in GDPPC, AAQ has an upward trend. After GDPPC attains 2,500 rupees, AAQ becomes downward sloping showing an improvement in air quality. Second turning point is attained when GDPPC has its value around 3,400 rupees. Beyond that, pollution increases up to the next turning point where GDPPC is Rs.4,800. Further, air quality starts improving. Beyond per capita income level 6,000 rupees, air quality deteriorates. Last turning point takes place at around GDPPC of 7,000 rupees.

- EKC has been shown for three states namely, West Bengal, Bihar and Odisha that belong to eastern region. The peak points of EKC for Odisha lie below those for West Bengal and it implies that pollution is relatively controlled in Odisha. Initially, peak point of Odisha was above that of Bihar at lower value of GDPPC but the situation become worsen for Bihar at higher value of GDPPC. In case of Bihar, though the pollution is controlled at lower values of GDPPC, it has highest peak at large value of GDPPC.
- We have presented EKC for four states, Uttar Pradesh, Delhi, Haryana and Punjab, belonging to northern region. EKC looks 'M'- shaped for Uttar Pradesh, Haryana and Punjab, instead of traditionally inverted 'U'- shaped. In case of Delhi, AAQ has a continuous rising trend with the rise in GDPPC. At the lower per capita income, Punjab and Uttar Pradesh have relatively high pollution level while Delhi has the highest peak at the high value of GDPPC. Haryana has maintained relatively less pollution throughout the study.
- Shapes of EKC have been shown for southern states, Andhra Pradesh, Tamil Nadu, Karnataka, Kerala and Puducherry. All the states have wave like shape of EKC. Among them, Puducherry and Kerala have put effort to control air pollution and achieved low pollution level at higher value of GDPPC. Pollution in Tamil Nadu is continuously increasing.

8. Summary and Conclusions

- a. It has been found that annual growth rate of per capita GDP is highest for West Bengal (3.01%) and it is lowest in Bihar (0.48%) in case of eastern region.
- b. In the northern region, the state Haryana has the highest growth rate of per capita income (2.13%) and the state Uttar Pradesh has the lowest growth rate of per capita GDP (0.24%).
- c. For the southern region, maximum growth rate of per capita GDP is achieved by Kerala (3.74%) and it is minimum in case of Puducherry (2.61%).
- d. Goa is the state having highest annual growth rate of per capita GDP (5.02%) while Rajasthan has the lowest position (1.44%) within the western region.
- e. Madhya Pradesh is the only state in central region and it has attained growth rate of per capita GDP at 1.08% annually.
- f. In the northeastern region, the performance of Assam, is very poor having low growth rate of per capita GDP and it is 0.17%.
- g. From the overall study, it is found that state Goa has achieved highest growth rate of per capita GDP. Poorest performance has been observed in case of Assam followed by Uttar Pradesh and Bihar.
- h. Intensity of SO₂ and NO₂ is highest for the state West Bengal and that is lowest in case of Daman and Diu..
- i. The state Punjab has been found to have highest RSPM/PM 10 intensity, followed by Delhi. It is minimum in case of the state Tamil Nadu.
- j. Highest intensity of SPM is observed in state Uttar Pradesh followed by Delhi and it is lowest for the state Kerala.
- k. AAQ, composite index of various pollutants, attains maximum value for Delhi and Uttar Pradesh which signifies that air quality is worse in these two states. The quality of ambient air is best in case of the state Kerala having very low value of AAQ.
- l. State Odisha has significant control over the emission of all pollutants and consequently, it has a moderate air quality.
- m. The standard shape of EKC is inverted 'U' which implies the fitting of data to second degree polynomial in GDPPC. Our regression result extends the standard shape of EKC up to sixth degree polynomial. The coefficients of all even orders of GDPPC are found to be negative whereas the coefficients of all odd orders of GDPPC are positive. It implies that with rise in per capita income, environmental pollution first increases. Further increase in GDPPC helps to decline the pollution level. After a certain level of GDPPC, environmental pollution again tends to increase. This process continues up to sixth degree of GDPPC. This result becomes valid for the entire country as well for all states and union territories.
- n. Considering Andhra Pradesh as contrast variable, Kerala has the best quality of air by curbing down emission of air pollutants. On the contrary, Delhi has the poorest quality of air among all the states and union territories.
- o. Instead of inverted 'U' shaped EKC, we have got various shapes of EKC for various states and union territories. For states West Bengal, Odisha, Uttar Pradesh, Haryana and Punjab, major portion of the relationship between AAQ and GDPPC is 'M'-shaped. Beyond that, there is possibility of increase in pollution followed by a rise in GDPPC. In case of Delhi, EKC is continuously upward rising with the increase

in GDPPC. For Assam, we get EKC of inverted 'U'-shaped having a longer tail towards higher value of GDPPC. In southern region, except Tamil Nadu, all other states have EKC of 'M'-shaped. The shape of EKC looks like a wave for state Madhya Pradesh.

In today's world, world economy concentrates on the idea of sustainable development. The World Development Report (1992) has highlighted on the relationship between economic development and environment. This report has put stress on sustainable development and suggested that sustainable development is possible with the improvement in environmental conditions. The improvement in environment requires major policies, programs and institutional shifts. The report has considered World Development Indicators calculated on selected social and economic statistics of 125 countries (World Bank.1992).

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The Relationship between Perceived Psychological Capital and Self-Perceived Leadership Effectiveness of Transformational Corporate Leaders in Kolkata

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1. Introduction

VUCA (Volatile, Uncertain, Complex and Ambiguous) is a popular acronym to describe today's fast changing business environment and thus companies are desperately trying to be proactive by continuously developing new products and services. In the VUCA world, the corporate leaders are compelled to face challenges and thus they are constantly working on finding out more innovative ways to strengthen competitive edge in the face of ever-increasing stakeholder expectations. The organizational complexities have been accentuated by change of demographics, customer profile, and innovations in the fast pacing technological changes. With a complex and large organizations in the modern world, Leadership has assumed totally new set of contingencies to become effective in these changing circumstances.

Leadership

Leadership in business is the capacity of a company's management to achieve challenging organizational goals, take decisive action when needed, and inspire followers to perform at the highest level they can.

Corporate Leadership

A company's corporate leadership is composed of the top executives who oversee its operations and plot its strategies for the future in order to achieve success and influencing change among the company's workforce.

Transformational Corporate Leadership

Leadership expert James McGregor Burns introduced the concept of transformational leadership in his 1978 book, "Leadership" where he defined transformational leadership as a process where "leaders and their followers raise one another to higher levels of morality and motivation." Bernard M. Bass later developed the concept of transformational leadership in his 1985 book, "Leadership and Performance Beyond Expectations", this kind of leader is a model of integrity and fairness and is also able to positively enforce them. It involves personal and individual contact and increasing employee capabilities. By knowing what employees want and what their ambitions are, a transformational leader can guide them in the right direction.

Transformational leaders trust and train their employees to take authority over decisions in their assigned jobs and concentrate on three pillars; to convey inspiration and vision to employees, individual attention and offering an intellectual challenge. Transformational leaders are proactive having active factors of charisma, inspirational motivation, idealized influence, and individualized consideration and intellectual stimulation.

Leadership Effectiveness

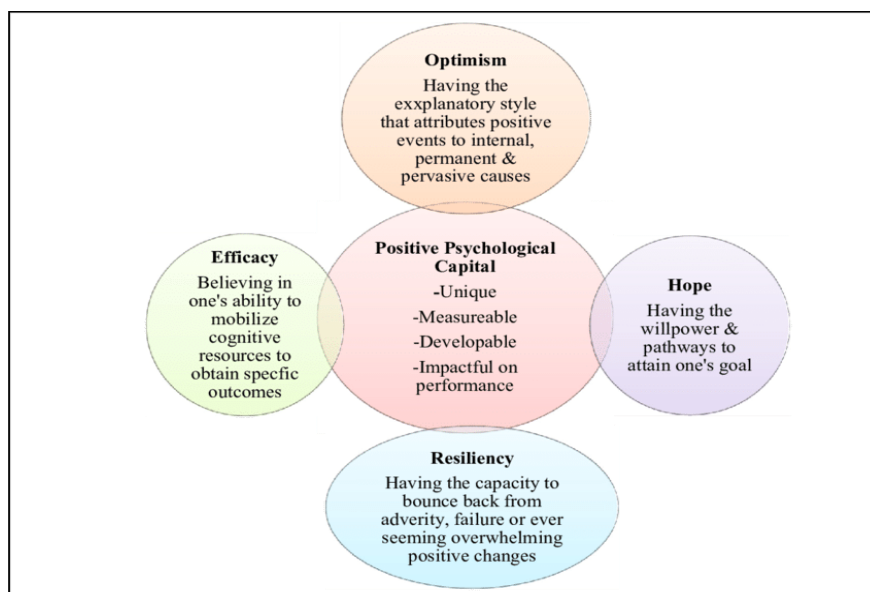
An effective leadership is the ability to influence and align the follower's outlook, motivation, and beliefs with accomplishing organizational goals (Spatig, 2009). Leadership Effectiveness must result in enabling and empowering the team of people to accomplish the desired task and effective leaders successfully guide the organization through continuous development and influence their organization's effectiveness by inspiring the workforce.

Most researchers appraise leadership effectiveness in terms of the consequences of influence on a single individual, a team or group, or an organization (Yukl, 2013). The ratings obtained from the leader's superiors, peers or subordinates can be seen as subjective measures of effectiveness (Yukl, 2013). Leadership effectiveness is occasionally measured in terms of the leader's contribution to the quality of group processes, as perceived by followers or by outside observers (Yukl, 2013).

Psychological Capital

The emerging construct of psychological capital is an individual's positive psychological state of development which is characterized by self-efficacy, optimism, hope and resiliency to attain success (Luthans, Youssef et al., 2007). While every component has its own characteristics and interventions, the concept of PsyCap is greater than the sum of its parts.

Components of Positive Psychological Capital (PsyCap).



Components of Positive Psychological Capital (PsyCap). Source: Luthans, F., & Youssef, C. M. (2007). Emerging positive organizational behavior. Journal of management, 33(3), 321-349.

Hope: According to Rick Snyder et al. (1991), hope is a cognitive process which motivates to find willpower (goal-directed determination) and way power (planning of ways to meet goals) which leads to positive emotions (the expectation of meeting desired goals). Hope can be enhanced by focusing on goal design acceptance and commitment (through empowerment, inspiring behaviours), creative role modelling (through inspiring and leading by example behaviours), pathways generation (through empowering, problem solving, clarifying behaviour), and through developing alternate pathways and skill of re-goaling and overcoming obstacles (through problem solving, clarifying, supporting behaviours) (Luthans, 2002; Luthans, Avey & Patera, 2008).

Optimism: Optimism is defined as “reacting to problems with a sense of confidence and high personal ability” [Martin Seligman (1991)]. Optimism has been defined as making a positive attribution about succeeding now and in the future and has been shown to be amenable to development through Schneider’s (2001) three-step process, which includes leniency for the past, appreciation for the present, and opportunity seeing for the future (Avey, Luthans & Jensens, 2009).

Self-efficacy: Self-efficacy is a concept borrowed from Albert Bandura which is often defined as task-specific self-confidence or the belief that one is able to accomplish something effectively. Bandura (1997) defined **self-efficacy** as “people’s beliefs about their capabilities to produce effects”. Whether we have the confidence to take on and put in the necessary effort to succeed at challenging tasks determines how we feel, think and motivate ourselves. The belief that we can produce the desired effect is a major incentive to act in the first place. The higher our efficacy expectancy, the harder we will work to achieve our goals, leading to a higher probability of success. There are two key ingredients to self-efficacy, such as Outcome expectancy (examination of what needs to be done) and Efficacy expectancy (examination of our own capability to do what needs to be done).

Resilience: Resilience is the capacity to bounce back from adversity and grow stronger from overcoming negative events (Fred Luthans, 2002; Reivich & Shatté, 2002). In essence, resilience is about learning to fall.” Resilient individuals have a firm acceptance of reality, a deep belief, often buttressed by strongly held values, that life is meaningful, and an astounding ability to improvise and adapt to significant change (Avey et al., 2006; Masten, 2001). Resilience is, also, characterized by a staunch view of reality (Coutu, 2002) that promotes emotional stability (Masten & Reed, 2002) and gives positive coping (Fredrickson, Tugade, Waugh & Larkin, 2003) potentially enhancing their exhibition of creative performance behaviors.

2. Literature Review

The past literature in the field of psychological capital and leadership effectiveness, keeping in view their leadership style has been revised below.

Maher. et al., (2018) stated the impact of psychological capital on Egyptian employees’ work well-being indicated that positive psychological capital should be a significant factor to leaders of public organizations in Egypt due to its effect on employees’ work well being. The significance of the study was for increasing deterioration in public employees’ job performance and productivity, which was reflected in the poor quality of services rendered to citizens causing their dissatisfaction.

Plessis and Bosho (2018) stated that the role of psychological capital in the relationship between authentic leadership and work engagement of employees was a desirable characteristic of the workforce in the creation of peak performance (Bakker, Demerouti, & Sanz-Vergal, 2014). Even though the engagement of more than a million employees had been studied (Bargagliotti, 2012), it was anticipated that employee engagement will remain an important concern for countries and organisations who would seek to increase labour productivity (Gallup, 2013). Thus, from a psychological perspective, the growth and interest in the field of Positive Psychology, with its focus on happiness, human strengths and optimal functioning (Seligman & Csikszentmihalyi, 2000), gave impetus to the interest in engagement. Psychological capital partially mediated the relationship between authentic leadership and work engagement. Similarly, Psy Cap was also a moderator of the relationship, although the main effects remained significant.

Chen. et al., (2017) stated the relationships between leaders' and their followers' psychological capital and organizational identification in a Chinese community on the basis of 423 followers on 34 work teams, each with its

respective team leader. Hierarchical linear models (HLM) were used to delineate the relationships among participants' demographic background, human capital, and tenure. The results revealed that leaders' psychological capital positively influenced their followers' psychological capital through the mediation effect of enhancing followers' organizational identification.

Tsai. et al., (2018) conducted a wide-ranging meta-analytic review of empirical psychological capital studies in the management field. On the basis of published types of research, the results revealed that, with different weighting, the influencing factors had significant associations with psychological capital such as organizational climate, organizational justice, authentic leadership, leader-member exchange, and occupational stress. Also, with different influencing weighting, psychological capital was confirmed to have impacts on job satisfaction, attitude, performance, organizational citizenship behavior, and undesirable behaviors.

Armenio. et al., (2017) stated that a leader's within-team consistency in conveyed PsyCap moderated the effects, such that leaders who were more consistent in conveyed PsyCap were rated by followers as better leaders, via the mediating effect of team positive energizing. A post hoc analysis further suggested that conveyed PsyCap was more consistent when conveyed PsyCap was congruent with self-attributed PsyCap. This work contributed to a better understanding of the underlying mechanisms that made leaders more effective with greater conveyed PsyCap.

Gupta (2012) tested the relationships between leader behaviors, psychological capital and employee creative performance behaviors in Indian R&D context. The study provided an insight into the underlying process through which leadership affected employee creativity. The characteristics of R&D professionals and the nature of R&D projects (high risks of failures, uncertain processes) made R&D a unique and interesting context to study.

3. Rationale of the Study

In the context of studies related to psychological capital and leadership effectiveness, there are controversies to identify the predictors of leadership effectiveness of corporate leaders. Few studies considered theory driven hypotheses or used standardized instrumentation. In India, there was hardly any research done to identify the relationship between self-perceived psychological capital and leadership effectiveness of transformational corporate leaders in Kolkata. These limitations created the need to develop an empirical study to get a more conclusive finding to clarify several contradictions.

4. Objective of Study

The objective of the study is to determine the relationship between self-perceived psychological capital and leadership effectiveness of transformational corporate leaders from different corporate sector organizations in Kolkata.

Hypotheses

H1: There will be significant prediction of leadership effectiveness of transformational corporate leaders in Kolkata by their self- perceived psychological capital score.

5. Methodology

Research Population

In this study, corporate leaders who are decision makers in organizations in Kolkata are a well-defined group of individuals which can be considered as a population.

Sample

The study uses a sample which consists of 273 transformational corporate leaders in Kolkata from various organizations in Kolkata (North, West, South, and East) by applying probability sampling method (simple random sampling technique). This study is done by collecting data from 481 corporate leaders are chosen from various organizations in Kolkata such as Normura Research Institute, Financial Technologies India Pvt Ltd, Infinity Infotech Parks Ltd, Jyoti Motors Bengal Pvt Ltd, SMS India, IRS-ISSPL, Artintel Systems Laboratories Pvt. Ltd, Alumnus Software Limited, ARB Software India (P) Ltd, Atlas Software Technologies (India) Pvt. Ltd, Acclaris Business Solutions Pvt. Ltd, AMB Computer Integrated Engineering P. Ltd, AIG Systems Solutions Pvt. Ltd, BRI

Technologies Pvt. Ltd, etc and among 481 leaders, 273 are categorized as transformational corporate leaders by applying MLQ form 6S.

Demographic Characteristics of Sample

a) Gender-Wise Distribution: Among the sample (N=273), there were 228 (83.5%) males and 45(16.5%) females (see Table 2).

b) Age-Wise Distribution: The range of age is 18 years to above 55 years which is categorized into 4 parts: Age Category 1 [(18-30) years]: n= 0; Age Category 2 [(30-40) years]: n= 25; Age Category 3 [(40-55) years]: n=166; Age Category 4 (Above 55 years): n=82. It implied that among the sample, 0 %, 9.2 %, 60.8 % and 30% are included in age category 1, 2, 3 and 4 respectively (see Table 3).

c) Income -Group -Category-Wise Distribution: Income wise corporate leaders are classified into 6 categories: Income Group Category 1, n=0; Income Group Category2, n=36; Income Group Category 3, n=0; Income Group Category 4, n=78; Income Group Category 5, n=32; Income Group Category 6, n=127; Hence, among the sample, 0%, 13.2%, 0% , 28.6% , 11.7% and 46.5% are included in experience category 1, 2, 3, 4,5 and 6 respectively(see Table 4).

d) Work-Experience-Category-Wise Distribution: Work experience of corporate leaders are classified and is shown in terms of the Table 5.

Measures

Questionnaire 1: Demographical Sheet

The first questionnaire is the demographical sheet which includes information regarding the respondents' gender, age, income group and years of experience.

Questionnaire 2: Leadership Self-Assessment Questionnaire

This self-assessment scale (having Cronbach's Alpha 0.85) gives the opportunity for assessing the perceived ability to perform the tasks required of a leader from their own view point.

Questionnaire 3: Multifactor Leadership Questionnaire (MLQ) Form 6S (the Leader/ Self Form)

The short form (Bass & Avolio, 1992) is a self-report inventory (having Cronchbach's Alpha 0.833) which is completed by the leader themselves, indicates a high level of internal consistency for the scale.

Questionnaire 4: Psychological Capital Questionnaire:

The original scale developed by Luthans, Youssef and Avolio (2007) in the context of organizations is the Psychological Capital Questionnaire 24 (PCQ-24) which is a six point scale and describes how a leader may think about him /her. Internal consistency for the PCQ-24 on the four samples reported in Luthans, Avolio, Avey and Norman (2007) ranges from 0.72 to 0.80 for hope, 0.66 to 0.72 for resilience, 0.75 to 0.85 for self-efficacy and 0.69 to 0.79 for optimism.

Test Administration

The data collection is undertaken in Kolkata from January to May 2018 by administering 4 questionnaires on 273 respondents representing the corporate leaders of Kolkata.

6. Data Analysis

Data Analysis is done in terms of (i) descriptive statistics (mean, SD) and (ii) the testing of hypothesis in showing the relationship between the dependent and independent variable by applying simple linear regression analysis for continuous scores with the help of SPSS package 23.

Descriptive Statistics of Demographic Characteristics of the Sample in the Model

	N	Mean	Std. Deviation
Gender(Male=0, Female=1)	273	.165	.3717
Age	273	3.209	.5913
Income Group	273	4.784	1.3777
Work Experience as a manager	273	19.516	6.2043
Valid N (listwise)	273		

Frequency Table of Gender of Transformational Corporate Leaders

Gender(Male=0, Female=1)

	Frequency	Percent	Valid Percent	Cumulative Percent
.0	228	83.5	83.5	83.5
Valid 1.0	45	16.5	16.5	100.0
Total	273	100.0	100.0	

Frequency Table of Age of Transformational Corporate Leaders

Age

	Frequency	Percent	Valid Percent	Cumulative Percent
2.0	25	9.2	9.2	9.2
Valid 3.0	166	60.8	60.8	70.0
4.0	82	30.0	30.0	100.0
Total	273	100.0	100.0	

Frequency Table of Income Group of Transformational Corporate Leaders

Income Group

	Frequency	Percent	Valid Percent	Cumulative Percent
2.0	36	13.2	13.2	13.2
Valid 4.0	78	28.6	28.6	41.8
5.0	32	11.7	11.7	53.5
6.0	127	46.5	46.5	100.0
Total	273	100.0	100.0	

Frequency Table of Number of Years of Work-Experience of Transformational Corporate Leaders

Work Experience as a Manager					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	8.0	25	9.2	9.2	9.2
	9.0	1	.4	.4	9.5
	10.0	1	.4	.4	9.9
	15.0	46	16.8	16.8	26.7
	16.0	1	.4	.4	27.1

	17.0	11	4.0	4.0	31.1
	18.0	37	13.6	13.6	44.7
	20.0	98	35.9	35.9	80.6
	30.0	53	19.4	19.4	100.0
	Total	273	100.0	100.0	

Descriptive Statistics of Transformational Corporate Leaders in Kolkata, India

	N	Mean	Std. Deviation
Leadership Effectiveness	273	69.392	20.5103
Transformational Leadership Score	273	9.032	1.0720
Psychological Capital Score	273	94.700	33.05
Valid N (list wise)			

Model Summary Table for the Relationship between Leadership Effectiveness with Psychological Capital of Transformational Leaders in Kolkata

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.719 ^a	.516	.515	14.2903	.516	289.313	1	271	.000	1.603

- a. Predictors: (Constant), Zscore: Psychological Capital score
b. Dependent Variable: Leadership Effectiveness Score(Self Assessment Scale)

ANOVA Table for showing the Relationship between Leadership Effectiveness with Psychological Capital of Transformational Leaders in Kolkata

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	59081.398	1	59081.398	289.313	.000 ^b
Residual	55341.664	271	204.213		
Total	114423.062	272			

- a. Dependent Variable: Leadership Effectiveness Score(Self Assessment Scale)
b. Predictors: (Constant), Zscore: Psychological Capital score

Coefficient Table for showing the Relationship between Leadership Effectiveness with Psychological Capital of Transformational Leaders in Kolkata

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics	
	B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
(Constant)	69.392	.865		80.232	.000					
1 Zscore: Psychological Capital score	14.738	.866	.719	17.009	.000	.719	.719	.719	1.000	1.000

- a. Dependent Variable: Leadership Effectiveness Score(Self Assessment Scale)

The mean of leadership effectiveness for transformational leaders is 69.392 with SD20.51, the mean score of transformational leadership style score is 9.032 with SD 1.072, the mean of psychological capital is 94.700 with SD 33.05 for transformational corporate leaders.

Referring to the Model Summary Table of Simple Regression Analysis, the R value represents the simple correlation (0.719) which indicates moderately high degree of correlation. The R^2 value (see Table 7) indicates of the total variation of leadership effectiveness which can be explained by perceived psychological capital of corporate leaders in Kolkata is 51.6% and it is acceptable.

The ANOVA table reports how well the regression equation fits the data and indicates that the regression model predicts the dependent variable significantly well. Here $p=0.000$ which is < 0.05 . Thus the regression model is statistically significant, $F(1, 271) = 289.313$, $p=0.000$. This indicates that, overall the model applied can statistically significantly predict the dependent variable Therefore H1 is accepted and it can be concluded that self- perceived psychological capital is a good predictor of perceived leadership effectiveness of corporate leaders in Kolkata and overall, the model applied can statistically significantly predict the dependent variable.

Thus, the relevant regression equation is:

Leadership effectiveness of corporate leaders in Kolkata = $69.392 + 14.738 \times \text{Psychological Capital of Corporate Leaders}$

7. Conclusion

The present study concludes that psychological capital of transformational corporate leaders strongly predicts corporate leader's self-perceived leadership effectiveness in Kolkata.

Findings and Discussion

Psychological capital allows corporate transformational leaders to boost psychological strength in the face of change and build the resiliency needed to address difficulties effectively. Thus, higher Psy Cap is associated with higher performance, lower stress levels, and better well-being of transformational corporate leaders when it comes to workplace performance since it is associated with lower absenteeism, higher job satisfaction and commitment, and increased positive interpersonal behaviors (Luthans et al., 2006). Psychological resources provide the inner energy necessary to meet the demands of a changing environment (Gorgievski & Hobfoll, 2008).

Building Psychological Capital is created from four key internal qualities such as hope, efficacy, resiliency, and optimism. Research shows these qualities are multiplicative and synergistic; when people have all four, the positive effects are greater than the sum of each individual effect (Luthans, Youssef, & Avolio, 2006; Luthans, Avolio, Avey, & Norman, 2007). Thus, higher psychological capitals makes the transformational corporate leaders as visionary, energetic and achieve tough goals as they are team builders, risk takers and recognize failures as temporary setbacks. Psychological capital can help the transformational leaders to sort through complex challenges, create new paradigms, and respond to changing conditions. A leader's ability to engage with a range of perspectives and create a climate for change is essential to a successful workplace. Moreover, psychological capital helps the corporate leaders to respond effectively to the pressure, chronic demands, and responsibilities of authority.

Generally, transformational corporate leaders understand that for leadership to be effective must be built on a solid foundation of a clear mission, a vision for the future, a specific strategy, and a culture conducive to success. Since effective corporate leaders must be able to inspire followers to change expectations, perceptions, and motivations to work towards common goals, thus, corporate leaders have higher levels of performance and satisfaction because they believe that their followers can do their best, leading members of the group to feel inspired and empowered.

Thus, the current study explores that psychological capital is a good predictor to determine leadership effectiveness of transformational corporate leaders in Kolkata in order to better deal with organizational complexity in this VUCA world as psychological capital helps for the development of self-awareness, learning agility, communication, and influence. It also stresses the ability to think and act systematically, to be adaptable, and to persevere to enhance a leader's potential. This study supports the work of Rego et al., (2017).

8. Limitation

This study considers only 273 transformational corporate leaders in Kolkata and time period is short for conducting the research only in Kolkata but the number is not satisfactory to conclude the prediction of leaders' psychological capital upon the leadership effectiveness of transformational corporate leaders in Kolkata. Thus, future studies should be recommended to consider more leaders across the country to reflect the prediction of leaders' psychological capital upon the leadership effectiveness in the corporate sector organizations in Kolkata. The prediction examined in the study was based on self-perceptions of corporate leaders towards his/her own leadership effectiveness which was prone to common method variance (Doty & Glick, 1998) in spite of being representative of organization and sample.

Finally, the present research is cross-sectional in nature that means the data is collected for one-time period. This study takes a one-shot of corporate leaders' leadership effectiveness. Instead, a longitudinal approach that permits following up of these leaders for a number of years would yield more meaningful information in order to assess the predictive validity for future.

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An Empirical Study On Jesuits Contributions Towards Higher Education In West Bengal An Overview. Joseph K

1. Who are the Jesuits?

Jesuits are the members of the Society of Jesus, a Religious Order founded by St. Ignatius of Loyola in 1540. The Jesuits are engaged in Evangelization and various apostolic ministries in 112 countries. They work in Education, Research and Cultural Pursuits.

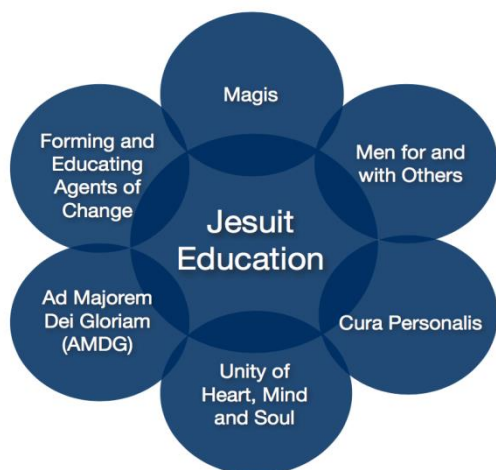
Jesuits in India

The relationship between Jesuits and India began in the 16th Century with the arrival of St. Francis Xavier on the shores of India and continues in the 21st Century. Suppression and various hurdles worldwide did not obliterate the presence of Jesuits in India. From 1834 onwards Jesuits started coming once again from different parts of the world to work in India, restoring the old and inaugurating new areas and activities. Together with their collaborators, Jesuits have contributed and still contributing to nation building in India. Their tireless efforts over the years have culminated in many well known Colleges, Universities and premier B- Schools which are constantly working for the betterment of youth in India.

Jesuits in Bengal

A host of seven Belgian Jesuits arrived at Calcutta in November 1859, led by Fr. Henri Depelchin and this was the humble beginning of the Jesuit Mission in Bengal. They first founded St. Xavier's College in Chowringhee, from where they later shifted to the Sans Souci Theatre in January 1860, which is now the honest home of learned professors and zealous students. Later the Jesuits have reached the remotest parts of Bengal to establish the Mission stations. Their mission was to uplift the downtrodden and the marginalised by exposing them to Education, the biggest weapon to conquer the world.

2. Characteristics of Jesuit Education



Note:

Magis – “more” or “greater”

Cura Personalis – Care for individual

Ad Majorem Dei Gloriam – Doing everything for the greater Glory of God

3. Objectives of the Study

To understand the role played by Jesuits in contributing towards development in higher Education in West Bengal.

4. Methodology

To know a brief history of Jesuit Colleges and Universities in Bengal. A brief presentation of Quantitative and Qualitative data of Jesuit Mission in West Bengal. Data has been collected in two ways-

1. Primary data and
2. Secondary data for the study

Primary data:

Primary data has been collected through structured questionnaire and personal interview

Secondary data:

Secondary data has been collected through various books, Jesuit journals, web sites of different Jesuit Colleges and Universities etc.,

Few statistical tools have been utilised for the analysis of data like Pie chart, Bar and line diagram etc.,

5. Brief history of selected Jesuit Higher Education Institutions In Bengal

The Jesuit Higher Education Institutions in West Bengal

a) St. Xavier's College, Kolkata

St. Xavier's College, Kolkata was the first Higher Education institution to be set up by the Jesuits. This is the second oldest Jesuit College in India only after St. Joseph College, Trichy. The college has a history of 159 years during which it has remained steadfast and persevered in the midst of troubles and anxieties. With all the richness of the past, it embraces the future with the same spirit "Nihil Ultra" – Nothing Beyond

b) St. Joseph's College, Darjeeling

The college came into existence in the year 1927. It grew out of St. Joseph's School which was established in 1888. The college since inception has been a torch bearer of Education in the Hills. It has a rich heritage of over Nine decades. The college made its humble beginning in the year 2007 with the motto Gyan Vigyan Bimukte meaning Liberation of people through Knowledge and wisdom. It was primarily made to provide quality education to the students of Jalpaiguri, a district in the Northern part of our state.

c) North Bengal St. Xavier's College, Rajganj

Since inception the Jesuits are concerned about providing a healthy learning environment where students can develop themselves holistically. Recently the college has opened another campus in Siliguri to embrace more number of students. The college came into being in the year 2014. The first batch of U.G students successfully passed out in the year 2017. Within a very short span of time the college has made a good reputation of its own by virtue of providing Quality education and ensuring overall development of the students.

d) St. Xavier's College, Burdwan

The college came into being in the year 2014. The first batch of U.G students successfully passed out in the year 2017. Within a very short span of time the college has made a good reputation of its own by virtue of providing Quality education and ensuring overall development of the students.

e) St. Xavier's University, Kolkata

St. Xavier's University Kolkata was a part of Vision 2020. In January 2012, the Chief Minister of West Bengal Smt. Mamata Banerjee invited the St. Xavier's to be upgraded to the status of University. The College authority took this positively. The very next year in December 2013 the foundation stone was laid by the Chief Minister herself at Rajarhat.

6. Analysis of Data

The study will analyse in brief about the contribution by the Jesuits in the field of Higher Education taking both Qualitative and Quantitative data taken from the five Jesuits Higher Education Institutions in West Bengal. They are discussed below.

St. Xavier's College, Kolkata

Sl. No	Particulars	Quantitative Figure	
1.	Student Strength		8468
2.	Staff		
	Teaching	346	
	Non-teaching	242	588
3.	Courses		43
4.	Campuses		4
5.	Placement		619

Interpretation:

From the above data and subsequent illustration we can conclude that the college is in the right direction about the overall development of its students and thereby contributing tremendously to the nation building.

St. Joseph's College, Darjeeling

Sl. No	Particulars	Quantitative Figure	
1	Student Strength		2453
2	Staff		
	Teaching	83	
	Support Staff	30	113
3	Courses		
	UG	18	
	PG	03	21
4	Placement		

Interpretation:

The above data is self sufficient to justify the work done by the Jesuits as torchbearer of education to the needy and nurture them so as to make them responsible global citizen.

North Bengal St. Xavier's College, Rajganj

Sl. No	Particulars	Quantitative Figure	
1	Student Strength		910
2	<u>Staff</u>		
	Teaching	49	
	Support Staff	28	77
3	<u>Courses</u>		
	Arts	5	
	Science	5	
	Commerce	1	11
4	Placement		

Interpretation:

The above data is self sufficient to justify the work done by the Jesuits as ambassador of education to the marginalised and downtrodden so as to make them responsible citizen.

St. Xavier's College, Burdwan

Sl. No	Particulars	Quantitative Figure	
1	Student Strength		402
2	Staff		
	Teaching	47	
	Support staff	16	63
3	Courses		
	Arts	5	
	Science	5	
	Commerce	2	12
4	Placement		

Interpretation:

It is evident from the above analysis of data that the college which is still in its growth phase is not keeping any stone unturned to make a bigger impact on the Educational sector in Burdwan district.

St. Xavier's University, Kolkata

Sl. No	Particulars	Quantitative Figure	
1.	Student Strength		
	Arts & Social Science	321	
	B.Com Morning and Day	508	
	BMS	354	
	M.A., M.Com, Mass Com & MSW	392	
	Xavier's Business School	167	
	Xavier's Law School	140	1910
	Ph. D Scholars	28	
2.	Staff		
	Teaching	64	
	Officers	06	
	Administrative	06	
	Support Staff	62	
3.	Placement		100%

Interpretation:

It is easily understandable from the above analysis that the university is doing extremely well and in the right direction to do something for the greater glory of God.

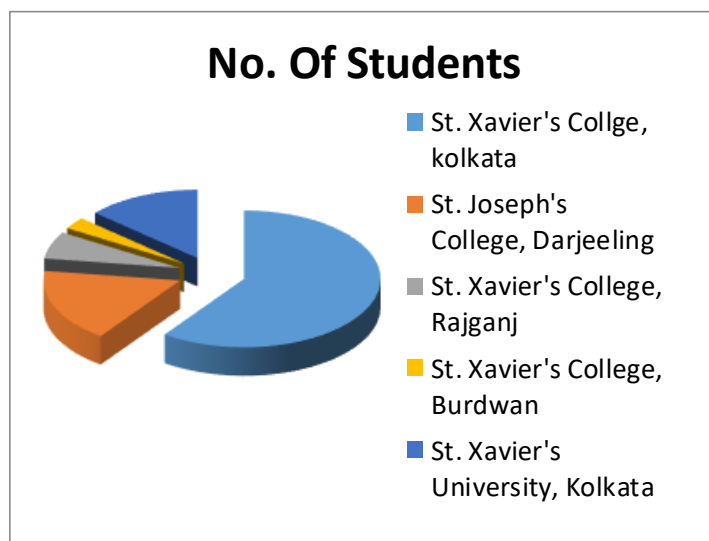
The Jesuit Higher Educational institutions in Bengal at a glance

Institutions	No. of students	No of courses	Teaching Staff	Support Staff	Placements
SXC, Kolkata	8468	43	346	242	619
SJC, Darjeeling	2453	21	83	30	100%
NBSXC, Rajganj	910	11	49	28	
SXC, Burdwan	402	12	47	16	
SXUK	1910	12	76	62	
Total	14143	-	601	378	-

All the Jesuits Higher Education Institutions have a staggering 14,143 students, who are given quality education and above that they are formed men and women for others.

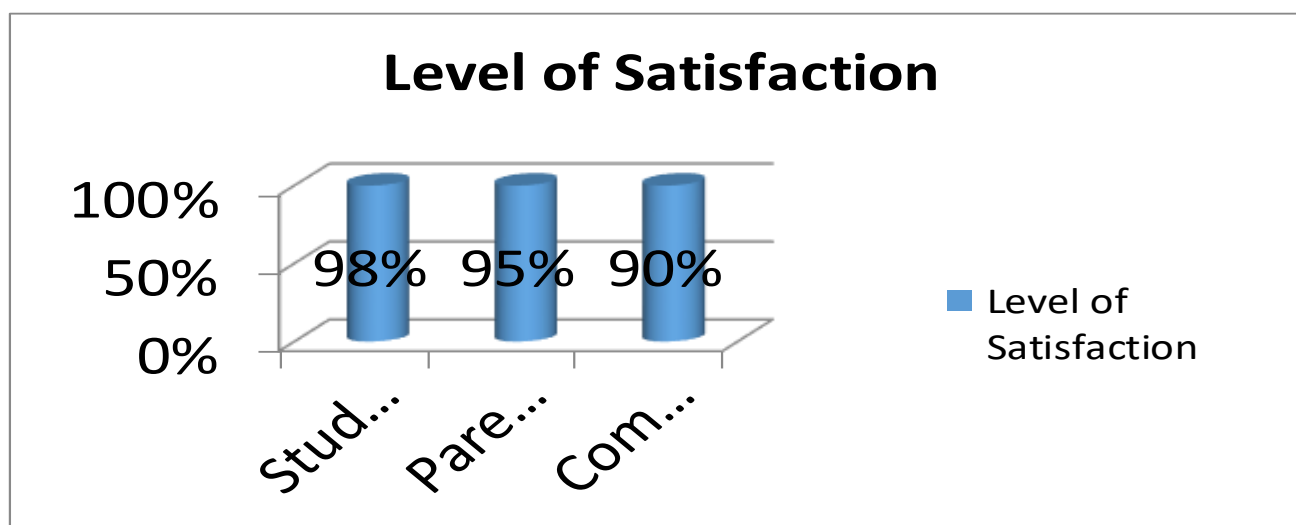
Note:

SXC: St. Xavier's College, SJC: St. Joseph's College



Interpretation:

From the empirical study conducted among students, parents and the common people about Quality and Integrity of Jesuit education, it is evident that they are fully satisfied. If we put them numerically, it will be as follows



7. Findings of the study

a. The findings of the study can be summarised as under:

- b. **Expansion:** The Jesuit Higher Education are expanding tirelessly in terms of new courses and number of campuses for the betterment of student fraternity
- c. **Inclusivity:** Jesuits are reaching out to the needy specially those who are marginalised and downtrodden. An apt example could be the establishment of Raghapur Campus, the rural phase of St. Xavier's College, Kolkata.
- d. **Attractiveness:** The Jesuit Higher Education Institutions have always been at the forefront of students' preference for their impeccable record on academics and discipline.
- e. **Modernisation:** Jesuits are always open to new and innovative ideas. They have been pioneers in introducing new technology in the teaching and learning process.

- f. **Balanced Teacher Student Ratio:** The above educational institutions have balanced teacher to student ratio which is always an added advantage to the teaching and learning process.
- g. **All round development:** Human development is always stressed at these institutions. This emphasises Character, Compassion and Conscience.

8. Future Plan : Target

For the Jesuits, Education is instrumental to transform the Lives of the aspiring youths. They never have the luxury of relaxation, rather they are on the spree of expansion and development of the existing ones and to bring up new educational venture as they believe “The sky is the only limit”

The 4 Jesuit Colleges and 1 University share one aspect in common and that is they want to expand the horizon of learning in the days to come. For that to happen they want to emphasis on a few things. They are follows:

- ▶ Maximum PG Department so as to facilitate research.
- ▶ Digitalization of Marks Sheet, admit card, E- attendance system.
- ▶ Introducing greater environment awareness through water conservation and eradication of Single Use Plastic (SUP)
- ▶ Developing St. Xavier's Colleges to more cleaner and greener campuses to implement the Swachh Bharat Mission.
- ▶ More innovative ways to connect college to village initiatives through knowledge, cultures and values.
- ▶ Developing St. Xavier's Colleges to more cleaner and greener campuses to implement the Swachh Bharat Mission.
- ▶ More innovative ways to connect college to village initiatives through knowledge, cultures and values.
- ▶ Finance Lab for the greater benefits of Commerce students for their studies and research.
- ▶ Mentoring other colleges under UGC scheme known as Paramarsh
- ▶ Introduction of Plagiarism software in all the Department in order to stress on originality.
- ▶ To introduce more National seminars, conferences and workshops to further improve the quality of education.

9. Conclusion

The Jesuits Institutions are fulfilling the characteristics of Jesuit Education. They are ever vigilant in ensuring the quality of education and also incorporating new initiatives and ideas for betterment of teaching-learning process. They always want to ensure overall development of human person. They always to keep themselves on the same footing with the educational institutions of national and international acclaim.

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Islamic Banking: A Step Taking Financial Inclusion Beyond Bank Accounts In India

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1. Introduction

Islam is one such religion which has laid down rules for almost every activity of an individual. These rules include rules for social and economic activities of the society too. The rules for economic activities deal with three major areas. First are the rules of behavior in relation to each aspect of manufacture and trade starting from resource allocation, production, exchange, distribution and finally redistribution. Second are the rules for actual economic implications of the operations of these rules; and third are the suggestions laid down for compliance with the rules in the form of policy which could be followed to create an ideal economic system as stated in Islam. One very interesting point stated by Islam is regarding the poverty. It had stated that poverty is neither caused by scarcity of natural resources nor is it caused due to the lack of coordination between the production and distribution channels. It is caused because of waste, indulgence, uneven distribution and non-payment of resources which belongs to the lower segments of the society.

In Islam, development has three dimensions which are self-development, development of the earth and lastly development of the humans. Self-development implies growth of the individual towards perfection. Development of the earth implies utilization of natural resources to develop the earth so that the material needs of the people are catered. Development of the humans addresses towards progress of the humans as a community towards integration and unity. Islam strives towards complete development of an individual through these three dimensions and strongly states that happiness cannot be achieved in a person's life by a mere increase in his total income. Together with this, Islam encourages economic progress and prosperity and states that this would provide the means by which they can satisfy their material needs.

It can be said that in an Islamic society, everyone must be given the same opportunities for growth and development which includes access to the natural resources provided by God. In case there is someone who doesn't have any work or someone who cannot work such as those who are handicapped, the society has the responsibility to provide them with at least the minimum requirements so that they can live a dignified life. Islam has a system of wealth distribution and redistribution between the rich and the poor which is aimed at achieving social justice. This fair distribution of resources creates a balanced society in which wealth is considered as a blessing by the God and is used to support those who do not have sufficient income. In order to avoid a situation of extreme wealth or poverty, unnecessary accumulation of wealth, overspending and wastage of money has been prohibited. After maintaining a modest lifestyle, a portion of the net surplus must be returned to the members of the society who are unable to work and earn a decent living for themselves. Islam considers the rich as agents earning income on behalf of the poor. This results in a balanced economy where there is no extreme of wealth or poverty.

2. Literature Review

A lot of studies have been carried out on Islamic banking and financial inclusion in other countries but very few studies have been done in the Indian context. One of the earliest studies by **Khan (1990)** had recognised that Islamic Banking could become an important tool in financial inclusion and inclusive growth of an economy. Two decades later **Khan M. (2011)** studied about the gaining popularity of Islamic banking and stated that this gaining popularity had led to the increase in the number of Islamic banking service providers. New Islamic banks were entering the economy and with this some existing conventional banks have also opened units related to Islamic banking products so as to increase the level of financial inclusion in the economy. Even **Shamshad (2011)** in his paper concluded that India has a huge market for Islamic Banks and suggested that there should be a positive change in the regulatory framework towards bringing in Islamic Banks in the country. Alongside **Kurpad (2016)** stated the reasons for introduction of Islamic Banking in India. She studied about the two approaches which could be adopted, i.e, a dual banking system, where the conventional bank have a separate window for Islamic Banking or a piecemeal

approach where both the banks exist together and amendments are made to existing laws which also govern the conventional banking system. **Singh & Kaur (2014)** in their paper studied about the Islamic Banking in the Indian context and highlighted the problems which will be faced in implementation of the profit and loss sharing mechanism in India. One of the most recent studies by **Sethy & Goyari (2018)** examined the state level financial inclusion level of India and suggested that there is a need for a comprehensive plan for achieving financial inclusion in a complete sense in India.

3. Objectives

- To identify the Islamic instruments which can be used as tools for financial inclusion.
- To highlight how the Islamic banking system can help in financial inclusion and inclusive growth in India.

4. Methodology

This paper is of conceptual nature and is solely based on information from secondary sources. For achieving the above objectives, information from various journals, e-papers and certain authentic websites have been collected and results have been drawn based on these information.

5. Islamic Instruments As Tools Of Financial Inclusion

Many of the Islamic instruments, such as *Zakaat*, *Qard-al-Hassan*, *Waqf*, act as a tool helping in increasing financial inclusion.

5.1. Zakaat As A Tool Of Financial Inclusion

Zakaat refers to the compulsory charity which everyone has to do yearly out of the savings and wealth accumulated for the year. It can be a significant tool for increasing financial inclusion as well as economic growth. The money given out as *Zakaat* by the individuals can be pooled together and can be used to provide funds to the micro business entities. This would help in reducing the disparities present within the economy. *Zakaat* also helps in maintaining liquidity in the system as it is imposed on wealth and savings which brings cash in the financial market. It has immense potential to become the major source of social spending in order to eradicate poverty in the society. *Zakaat* funds can be allocated to productive activities which can enhance the opportunity to grow for the poor section of the society which ultimately leads to reduction in poverty and financial inclusion of that section of the society.

5.2. Qard-Al-Hassan As A Tool For Financial Inclusion

Qard-al-Hassan refers to the loan which is given free of interest to the needy. A small amount can be charged as maintenance fee. This is basically provided to the borrowers from the rich lenders. This can be used as a tool for increasing financial inclusion in the country. There are many individuals who cannot take up entrepreneurship and any other activities for a living because of shortage of money and do not possess any security against which they can take a loan. Even if they can get a loan, the rates charged are so high on those that they fear of being unable to repay the amount. This can help the poor and the farmers as well as the aspiring entrepreneurs in the country. Eventually they all can be financially included by the use of this instrument.

5.3. WAQF As A Tool To Enhance Financial Inclusion

Waqf is another Islamic instrument which can be used to increase the level of financial inclusion. *Waqf* are non-perishable items that are donated voluntarily for charity. *Waqf* can be in the form of land, buildings, shares, stocks, cash, etc. *Waqf* requires an institutional setup and is governed by the authorities. In the *Waqf* setup, the authority accumulates the private wealth and then decides to give out either for social welfare or for the welfare of a group of persons. *Waqf* are usually utilised for upliftment of health, education, municipal and other sectors. They help in reducing government spending and thus the budget deficit and government borrowing. Another significant feature is that it helps in increasing financial inclusion by providing land, machineries, etc., to those who are in need of it to earn a decent standard of living. Overall, it helps in the growth of individuals, small and medium enterprises and leads to inclusive economic development.

6. Islamic Banking System And Financial Inclusion And Inclusive Growth In India

For any country to be considered as a developed one, the wealth of the country has to be distributed equitably. The Indian economy has been growing considerably and the share of the financial sector in the Gross Domestic Product (GDP) has increased in the recent years with an annual growth rate of 6.3% in 2017. However, post demonetization this increase in the GDP has slowed down a little. It has also been seen that this growth of GDP is

mainly because of the contribution by the corporate sector. If we look at the current system of banking in India, the common man suffers a lot. The loans and credit are basically for the rich as collateral security is a pre-requisite for the loans and other advances and the interest rate charged on those loans are very high. Many new entrepreneurs, farmers and other poor people have undertaken loans with high interest to meet their day-to-day needs from the commercial banks and due to either of the reasons could not meet their repayment deadlines and the situation is such that some are on the verge of bankruptcy. The number of people falling below the poverty line is going on increasing day after another. This scenario has become very common throughout the country and immediate attention of the Government is required in this sector.

The government of India has started many schemes like Pradhan Mantri Jan Dhan Yojana (PMJDY), Pradhan Mantri Suraksha Bima Yojana (PMSBY), Pradhan Mantri Jeevan Jyoti Bima Yojana (PMJJBY), Deendayal Antyodaya Yojana (DAY), MGNREGA and more to increase the coverage of financial inclusion. But to tackle both the problems mentioned above in the economy, changes in the banking system is required or rather it can be said that interest free banking system is very much required at this point of time. Islamic banking system is that system of banking which can be used as a tool in solving both the problems. Conventional banking system leads to concentration of wealth in the hands of a few while in the very same place Islamic banking system encourages equity finance, partnership and joint ventures and promotes equitable distribution of income and wealth. Islamic banks provide loans at no interest which will help the lower class develop and will finally lead to inclusive growth of the economy. Islamic banking is practiced in 75 countries globally most of which have taken up Islamic banking as a tool for inclusive growth of their economy or faster growth of their economy.

Islamic banking System can help India in achieving its goal of inclusive growth and financial inclusion in the following ways:

6.1. Financial Inclusion Of Muslims

In March 2005, the Prime Minister had asked the Sachar Committee to look into the social, economic and educational status of Muslims in India. The Sachar Committee presented its report in November 2006 which stated that the socio-economic conditions of Muslims are on the disadvantageous side as compared to the other minority communities in India. If we look into the financial sector, the Committee reported that the share of Indian Muslims in savings deposits is only of 7.4% and in terms of Priority Sector Advances they only get 4.7% in credit. The committee also stated that the Muslim-majority areas are marked as negative zones by the banks as they prefer to invest in gold and real estate but not deposit their money in banks. Ten years after the Sachar Committee Report, nothing much has changed, the status of India Muslims is still at the same level. Reliance Money had conducted few surveys on the status of Indian Muslims. One survey revealed that 35% of the Muslims live in urban areas and rest in sub-urban areas. Out of which 80% do not avail banking facility either because of their illiteracy or because of their religious belief. Later from another survey, it was found that those 80% of Muslims residing in urban areas are willing to deposit and invest in Islamic Financial Institutions or borrow from those institutions. The Indian Muslims do have NBFCs functioning as per Islamic principles but many of the NBFCs just manipulate their funds and cheat them and thus in the present scenario many of the Muslims never invest in interest-based commercial banks or other organisations as well as financial institutions established under NBFCs. The Muslims only have an option to invest in unproductive investment like the real estate sector or keep their money idle in their home. If they keep their money in their houses the value will decrease day after another due to inflation. This will again hamper the mobilization of the capital held by the Muslims and stand as a constraint to economic growth. The solution for this is the Islamic banks. The importance of Islamic banks very well understood by the RBI long time back as can be seen in the RBI report of 2005 in which it was mentioned that interest-free banking is an attractive proposition gaining currency all over the world and so it is time for India to introduce it. Once the Islamic banks are introduced in India, the Muslims will have an option to invest and deposit their money in the banks. As they deposit their money in the Islamic banks, the money sitting idle in their houses would come out in the economy and the resources would be mobilised and growth rate of the economy would increase. The goal of financial inclusion would also be achievable with the introduction of Islamic banks and as it is said an economy cannot become a developed economy without financial inclusion. After the demonetization phase, many rules are coming out which is making the cashless transactions a necessity but still it is seen that the Muslims even though having a bank account are not keeping their money in the bank or are just keeping that much which is required for transactions. Financial inclusion is not just opening up of bank accounts but also operation of bank accounts and investments by their customers in their products, etc. thus for proper financial inclusion of Muslims to be achieved, Islamic banks are the only feasible option in India.

6.2. Upliftment Of Farmers

Agriculture is still the primary source of income in the Indian economy. The farmers earn their livelihood by agricultural activities only. As the Indian economy is growing, the primary sector should also have shown growth over the years but this is not the scenario. In spite of the growth of the economy, the farmers are burdened with huge amount of debts with attached high interest to it. Many farmers had opted for suicide because of various reasons such as inability to repay the loan and accumulated interest over the years, family disputes because of loans, depression, etc., decrease in prices of agricultural produce, increase in costs of agricultural inputs, lack of credit availability for the small farmers and lastly the compensation which the farmer's family get after suicide as it can help his family in repaying the debt. Indebtedness and Lack of credit availability for small farmers are the major reasons in farmer's suicide. As per the annual reports submitted by the National Crime Records Bureau, the number of farmer's suicides is increasing year after other. In the year 2013, the farmer's suicides including the agricultural labourers were recorded as 11772, which increased to 12360 in the year 2014 and to 12602 in the year 2015 and have been increasing since then. The major reason for these extreme steps by farmers to end their life is failing to repay the debt and its interest and the increasing cost of equipments, seeds, fertilizers, pesticides, etc. The government had introduced Kisan Credit Card Scheme (KCC) but it did not help much. For their betterment, bringing up of an interest free system can play an important role. In this context, Islamic Banking can play an important role as modes of Islamic banking like lease financing, equity financing and interest free loans benefit the farmers in more than way. Islamic banking can not only help the Muslim farmers but also farmers from other religions too in their upliftment. This is so because the Islamic banks can prove to be a better option for the farmers than the greedy Money lenders who charge a high rate of interest from the farmers. As mentioned earlier Islamic banking works on interest free principle. Another important point about Islamic banks is that they work on partnership basis. It means that if any farmer takes a loan for any agriculture inputs, the Islamic Banks will purchase it from the market on behalf of the farmers and sell it to the farmers at an amount which includes the profit. Now the farmer can repay that loan in installments. They don't have to pay interest in any form. The farmers are aware about their amount to be repaid as well as the installments. In case there is any loss due to any reason other than negligence on the farmer's part, a part of loss is borne by them too. This indicates that the risk is borne by both the farmers and the Islamic bank. Even a small farmer can get immense benefits from the Islamic banks as the Islamic banks can provide interest free personal loans to the farmers too in the form of *Qard-al-hasan* in which they only charge a small convenience fee and no interest.

6.3. Elimination Of Poverty

Apart from the upliftment of farmers, the Islamic banks can also help in the upliftment of the poor class in the society and thus eliminate poverty in the long run. One of the main reasons of poverty is the interest on loan or capital which is again the main hindrance in the elimination of poverty in the economy. Regional disparities, unequal distribution of wealth and economic policies can be taken as the other factors. Until and unless interest is eradicated from the economy, this problem of poverty cannot be solved as this interest based economy is increasing the unequal distribution of wealth in the economy, the rich are becoming richer and the poor are becoming poorer. For solving this problem permanently, the economic power should be transferred to the poor class by appropriate structural reforms, the unequal distribution of wealth should be reduced and a competitive economic environment should be created for them. Many reforms and schemes have been introduced in the past for reduction of poverty but the success ratios of those schemes have been very low. In addition to this, for schemes some amount is required to be allotted to it, while Islamic banks can make them self-reliant and help them in undertaking small ventures and improve their standard of living through its interest free loans, partnership ventures, etc. The Islamic principles recommend a fair deal to the rural population which contains the largest proportion of the poor in our economy.

6.4. Growth Of Small And Medium Enterprises (Smes)

Small and Medium Enterprises require capital at various point of time for which they turn to banks but due to high transaction cost and the risk involved in it, the lending to SMEs has reduced. A lending system based on interest discourages the enterprises to undertake growth and innovation specially the small and medium enterprises as they are burdened with the liability of the loan and the interest thereon. Large scale enterprises can afford the innovative techniques as they have huge capital and reserves so they can survive in the long run. Even the Banks are willing to give loans to the large scale enterprises and hesitate to give loans to the small and medium scale enterprises. The banks have a commitment to pay a defined rate of interest to its depositors. This makes them cautious about the return of the loan amount together with the said interest and thus they lend to the big business enterprises which are already established or to small and medium enterprises who can pledge a collateral security. This over-rated security

orientation acts as a hindrance to growth as it does not allow a smooth flow of bank resources to many of the potential entrepreneurs who have innovative ideas but do not have the required security to pledge for satisfying the eligibility criteria of creditworthiness. If they get the monetary help, they can add to the gross national product by their productive endeavor. Thus, it can be said that conventional banking system doesn't consider the viability of the project but is only considered in recovering their principal amount and interest. Now here it can be noted that the Islamic banking system gives due consideration to the strength of the project too together with the creditworthiness of the individual. This consideration by the Islamic banks will make it possible for new and competent entrepreneurs whether coming from the poor class or from the middle class to be at least considered for financing if they have worthwhile projects, managerial ability, morality and integrity. This can promote entrepreneurs from the grass root level of the society and help them in becoming self-reliant or even improving their standard of living. Some of the individuals fear about the loss if their endeavor fails. They would be losing out their own capital and with that their liability of the loan would also increase with the number of days. Islamic banking system provides a solution to that also. There are loans without interest available for the enterprises and Islamic banking products like *Mudarabah* which involves profit and loss sharing and *Musharakah* in which joint ventures with the bank can be taken up where if there is loss in the future, a part of loss is borne by the Banks too. This leaves the entrepreneur with only operational risk as the financial risk is eliminated by the bank. This will improve the condition of the Small and Medium scale enterprises in the country and would ensure sustainability in the Small and Medium Enterprises and overall the Indian economy would develop as the Small and Medium Enterprises constitute 80% of the total industrial enterprises contribute about 40% share in industrial output.

6.5. Employment Generation

As stated earlier, India is aiming for financial inclusion and becoming a developed economy. This can only be achieved in a complete sense if proper employment opportunities are provided to all. Indian government is still struggling with employment generation in the country. Islamic banking can also help in generation of employment opportunities. If Islamic banks are set-up in the country, many personnel would be required from the highest level to the lowest levels as bank officials which would help many masters, graduates and even under graduates to get hold of a job. For the Islamic banks, the principles are different and therefore research and development would be required and many personnel would be involved in this department. In addition, many training institute can come up for training the individuals to become competent enough to work in an Islamic bank. This would create even more jobs opportunity. The Islamic banks offer products in which joint ventures are undertaken by the bank and the individual. This can help many individual who have the expertise but not the money to form a joint venture and earn a living for them. One thing to be noted here is it is not necessary that only Muslims would be getting the job opportunity. Though it is a fact that where the Islamic principles are there, Muslims would be preferred but many non-Muslims would also be getting the opportunity too. Thus Islamic banks can be successful tool in employment generation in the country.

6.6. Attainment Of Constitutional Goals

The three main pillars of the constitution are the Preamble, the Fundamental Rights and the Directives for accomplishment of the constitutional goals. Out of the three, the Directives are the fundamentals which were laid down to be used in the governance of the country and the State has to apply them in framing its economic policies and laws. There exists a direct relation between the Directives and the preamble. The objectives of the Constitution which are laid down in the preamble are clarified and strengthened through the Directives. In the year 1976, with the 42nd Amendment, the word "Socialist" got added in the preamble to incorporate the philosophy of socialism. The basic framework of socialism is to provide a decent standard of life to the working class. The Court directed the State to put in efforts in equitable distribution of income and maximisation of production so that the problems of unemployment, low income and mass poverty can be solved and the standard of living of the economy as a whole can be improved. In this context, Article 39, Clauses (b) and (c) are relevant for ascertaining the socialist's goal. Article 39 (b) directs the state to control and distribute the material resources of the community to provide advantages in a common way to all. The term "Material resources of the community" includes all things which are capable of producing wealth for the community, i.e., those resources too which are in the hands of the private persons and not only those which are already there with the State. Article 39(c) discourages concentration of wealth in the hands of a few. Again, Article 14 of the Constitution guarantees "Equal Protection of the Laws". But the system of lending followed by the conventional banks is not in conformity with Article 14 of the Constitution. Lending on the basis of a collateral security to farmers and poor people are against the constitutional goals. Even their obligation to return money with interest is also against the principle of positive discrimination. Thus, the constitutional goal of equality of status and

opportunity is not implemented. Islamic bank's principle is somewhere common with the motive of our constitution and therefore it can be concluded that Islamic banks will also be helping the constitution of India in accomplishing its goals.

6.7. Gulf Investment

If the Islamic banks are set up in India, it could attract huge inflow of cash and investments from the Gulf region namely UAE, Qatar, Bahrain, etc. According to an article in Headlines India in 2010, it was estimated that trillions of dollars can flow in India from Gulf as people they invest only in Shariah-compliant institutions. The same thing was opined by the Indian Centre of Islamic Finance. Currently, they invest in the Islamic banking windows of conventional banks in London, New York, Frankfurt, etc. Now they want to expand their investments in different regions and India can take up this opportunity for its growth and development. India has the potential to become an attractive destination for them taking into consideration its economic scenario, huge untapped market and good growth rate. The Dubai Islamic Bank is ready to open up its branch in India and invest in India. Once this Dubai deal is done many more will follow. Even the conventional foreign banks operating in India are interested in opening up Islamic window here. Only if the estimated money comes into India from the Gulf, it would create more than 2.7 million jobs in India. It will also help to reduce the fiscal deficit. This will again help in inclusive growth of the economy as creation of jobs is one of the things the Indian government is struggling with.

7. Conclusion

India has been aiming at financial inclusion and inclusive growth from a long time and every government which comes to power launches new initiatives for financial inclusion and inclusive growth. Some of which work up to a certain extent and some of which fail to achieve their target. Financial inclusion or inclusive growth is not only providing the poor class with a bank account or subsidies but in a true sense it is to provide them with opportunities to earn and access to finance. If a banking system which can work on its principles and earn profit together with inclusion of the financially excluded class, then that must be launched as a tool of financial inclusion as it will achieve the goal without increasing the burden of the government. Islamic banking is that banking system and can play a very important role in financial inclusion and inclusive growth by bringing in the gulf investment, uplifting farmers, eliminating poverty, increasing employment opportunities and helping entrepreneurs with finance. Islamic Banks have a structure which is comparatively similar with a difference of an additional Shariah (Islamic law) supervisory board from the conventional banks. They operate in a different manner with different principles but the benefits this system of banking provides is immense. In countries where both the Islamic banks and conventional banks operate side by side, these banks have shown similar signs of efficiency. Islamic banks are basically equity based institutions and therefore they are more stable than the conventional banks and can absorb the economy shocks. Moreover, many of the countries had adopted Islamic banking as a tool of financial inclusion or for inclusive growth of the country and have benefited from Islamic banking system which is why Islamic banking system is now present in more than 80 countries globally. The concept of financial inclusion is synonymous to inclusive growth in Islam and thus they have many products offered by their banking system which can help India achieve inclusive growth in a true sense.

8. Limitations Of The Study

- The Islamic Banking system in India is still at a pre-development stage and so not much of secondary data is available.
- Primary data could not be collected and customer's acceptability and awareness could not be gauged due to the time constraint.

9. Scope For Further Research

- A comparative study of Islamic bank performance and conventional banks performance.
- A study on customer's awareness and attitude towards Islamic Banking System.

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A comparative study on the Effect of Global Inclusion and Liberalization on the Vietnamese and Indian Economy after their accession to WTO.

Trupti Upadhyay and Subhankar Parbat

1. Introduction

Vietnam

Christine Lagarde, Managing Director of the International Monetary Fund had said, "in a single generation, Vietnam moved from being one of the world's poorest nations to lower middle-income status, from a heavy reliance on commodities to manufacturing excellence, from economic stagnation to relentless dynamism."

From the start of Doi-Moi the Vietnamese economy has undergone a continuous transition from a centrally planned society to a socialist-oriented market economy, where the state has played a decisive role in the economy, but private enterprises plays the significant role of commodity production even in this kind of society. Economic integration and liberalization acted as the "big bang" in transforming a stagnant peasant economy into a vibrant, market-driven, almost making it a capitalist society. This makeover leads to the establishment of 'street front capitalism' by sudden swelling of ranks of petty entrepreneurs producing a boom in the local market.

To summarize "the foundation for Vietnam's success - and the core of the Doi Moi program- has been a combination of liberalization, stabilization, institutional changes, and some structural reform" (Kokko, 1997).

This major change has witnessed both economic windfall as well as few hiccups leading to a mixed growth of Vietnam pre- WTO.

Between 1991-2009 Vietnam's real GDP grew at an average growth rate of 7.4 %. In 1990 Vietnam's GDP per capita was of 98 US\$ and in 2009 the GDP per capital of 1109 US\$ leading to a huge growth pre- WTO. In the year 2014 GDP per capita reached 2052 US\$ (Haughton et al. 2001; Quan 2014).

After 11 years of negotiation since 1996, Vietnam became the 150th member of WTO in 2007. Vietnam opened up various business sectors to foreign investment, in some cases under a phased approach, with diplomatic relations with more than 170 countries and export to more than 80 overseas market under its accession commitments.

Vietnam has entered into or completed FTA's with the Japan, Chile, EU, and Eurasian Economic Union. The EU-Vietnam FTA is a major milestone which should be effective by end of 2019; this FTA is expected to liberalize 90% of imports from both sides in 10 to 15-years' time.

India

India's growth miracle has attracted worldwide attention, because this growth has been pursuant to the wide-ranging economic reforms introduced in the early 1990s. Many other developing countries intensified Liberalization during this period but were unable to experience a similar spurt in their economic growth. One

distinctive feature of Indian Liberalization experience is the gradual and calibrated manner in which reforms were being introduced, especially with respect to external Liberalization, be it in the financial, agricultural or manufacturing sector.

The Indian economy has experienced a major transformation in trade after the implication of WTO. On January 1, 1995 when World Trade Organization (WTO) came into existence the entire economy of the world affects in respect of international trade because WTO framed the new global trade rules for international trade.

Multilaterally, as a result of the Uruguay Round of Multilateral Trade Negotiations, India bound its customs duty on two thirds of the industrial products. Also, being a participant to the WTO's Information Technology Agreement, India eliminated tariffs on abroad range of information technology (IT) products. At the bilateral level, India gradually allowed zero duty imports on substantially all trade from Sri Lanka, Singapore, SAFTA, ASEAN, Korea and Malaysia.

According to Sanjiv S (2016) Prior to becoming member of WTO India's foreign trade appeared quite sluggish. In 1992-93 imports valued at Rs.63,375 crores and exports were noted at Rs.53,688 crores while in 1993-94 imports went up to Rs.73,101 crores and exports were noted at Rs.69,751crores in 1993-94. But after becoming part of WTO there was sudden spurt in imports which were noted at Rs.3,33,907 crores and value of exports went up to Rs.2,42,435 crores in 2004-05 respectively.

Thus, we can understand how impactful the joining of WTO was for these two countries and to study the actual change we have to do proper investigation of the macro economic variables to understand the econometric impact of liberalization.

2. Literature survey

Rani D.M. & Kailash K P (2014): The India-Vietnam bilateral relationship during the past has been supported by various commonalities including six decades of anti-colonial interests and independent foreign policies. The first instance of India's developed cooperation towards Vietnam predates India's 1991 'Look East Policy' by thirty years. Importantly, with India's rapid economic growth during the past decade and its consequent desire for energy security, open trade through the South China sea, and development partnership with South East Asia, the strategic and economic significance of Vietnam for India has grown manifold.

Sanket V.R. (2014) India opened up the economy in the early nineties following a major crisis led by a foreign exchange crunch that dragged the economy down to defaulting on loans. The foreign exchange reserves of the country were depleted. The government decided to bring about major economic reforms to revive Indian economy. The government announced a New Economic Policy on July 24, 1991. This new model of economic reforms is commonly known as the LPG or Liberalization, Privatization and Globalization model. Liberalization is the process of making policies less constraining of economic activity and also reduction of tariff or removal of non-tariff barriers. The term "Privatization" refers to the transfer of ownership of property or business from a government to a private owned entity. Globalization refers to the expansion of economic activities across political boundaries of nation states. More importantly perhaps it refers economic interdependence between countries in the world economy.

Ultius, Inc. (2013) Globalization is a double-edged sword as it impacts and affects all generations of people, economically, politically, environmentally, and culturally. While Globalization has its benefits-millions of people around the world are now more empowered because of global interconnectedness-there are still many problems that can and already have risen from cultural and economic development around the world.

Srivastava (2017): After the Cold War, India and Vietnam bilateral relations have been revitalized, and are marked by greater mutual trust and beneficial cooperation across all sectors. However, there is need to fast track a number of bilateral projects and schemes, to expand bilateral trade and investment in mutually beneficial sectors of garment and textile, pharmaceuticals, agriculture, agro processing & agro-commodities, leather & footwear, machinery & engineering, ICT, energy, tourism, mineral exploration etc, as well as to tap new potential areas. Potential future areas of cooperation include maritime economy and security, cyber security, space, civil nuclear energy, defense production and technology, renewable energy and climate change. The infrastructure for this is already in place in terms of bilateral MOUs/ Agreements. This would help in qualitative upgradation of our bilateral relationship going into the future.

Samsheer, S. (2014) WTO has been playing a very important role in India's foreign trade. It needs further research to see why India has not benefited from the WTO as per expectation while the major speculated beneficiaries of the WTO were the developing countries as per the researcher. As concerned the econometric results, we have to wait for some years to have the robust results about the impact of different variables on international trade of the nations before and after WTO. It is suggested by the researcher that being a member of the WTO, India enjoys the most-favored nation status instead of accepting the agreements which are against the national interest. Scope of the above studies is restricted factors and it has not covered the other implications of the WTO. The other implications of WTO which are concerned with India must be study for research. However as mentioned in the above analysis there is serious and urgent need to re-analyze the policy followed by India in the context of increasing competition and openness at global level.

Harsh, V. P. (2018): Both India and Vietnam are members of ASEAN and India Free Trade Agreement. India is among the top ten trading partners of Vietnam. Bilateral trade between India and Vietnam in FY: 2017-18 reached 12.8 billion dollars i.e. in the year 2017-18 the bilateral trade increased by 27% as compared to the bilateral trade of the year 2016-17. Vietnam is the fourth largest trading partner of India among the ASEAN countries considering data of both import and export. Vietnam is the eighth largest export destination of Indian products in the world and the second largest in the ASEAN region.

3. Research Gap

From the review of various literature and after seeing the relationship that India and Vietnam shared between themselves there was a need to put the effect that this bilateral agreement had on the macroeconomic variables on both the economies. This relation was a result of the liberalization and globalization policy as adopted by both the economies.

There is hardly any research to show the effect that liberalization brought in both the economies on a comparative basis. The macroeconomic variable like GDP, FDI, Export and Import has undergone a level of changes as both the countries have opened up to the rest of the world. Through this research paper we would like to study the change that took place after the implementation of liberalization policy both in India and Vietnam and analyze it through proper statistical tools.

4. Research Objective and Methodology

The research objective was formed on the basis of research gap.

The objective for this paper is to find out the comparative performance of Vietnam with that of Indian economy by studying the performance of Indian economy during the period of Vietnamese liberalization and also comparing that with India's liberalization period that is from when India became a part of World Trade Organization (WTO).

Although the policy of liberalization, Privatization and Globalization came to India in the year 1991 but here we have considered 1995 and 2007 as the period of break since during those year India and Vietnam joined WTO respectively.

The research design is based on the objective taking the point of Vietnam and India joining the WTO as the fulcrum and its renovation from there on. We have framed our hypothesis conducted paired sample T-Test to show the impact that Economic Liberalization and Integration had on Vietnamese economy. For this test we have consider data from the World Bank for ten years from 1998-2007 denoting the period before Vietnam joined the WTO which is termed as the **pre-WTO period** for the test. And the period from 2008-2017 that is after Vietnam joined WTO as the **post-WTO period**. And for India the pre-WTO period was from 1985-1994 and post-WTO period was from 1995-2004.

5. Research Analysis

Export of Goods and Services (% of GDP)

The Export of goods and services forms the basic criteria to understand the effect of Liberalization taking place in a particular country. As we have already discussed that the Exports of Goods and Services in Vietnam increased after

it's accession to the WTO, let us analyze the level of increase that Vietnam had in terms of Export of Goods and Services with that of India.



Source: World Bank Report (2018).

From the above figure which shows the level of increase in export as a % of GDP for India and Vietnam we find that the rate of increase is higher for Vietnam than India. Except the initial stage where Vietnam fell below India in terms of Export for the year 1988, it has seen considerable rise from there on maximizing its gap as we reach closer to 2017. This indicates that maximum portion of GDP of Vietnam has been contributed as a result of Export which was 101.6% having ranked 6th in the world by the Global Economy.com.

The paired T Test which helped us in denoting the difference between two periods after a certain change will help us determine the exact impact that liberalization had on the economy of both India and Vietnam.

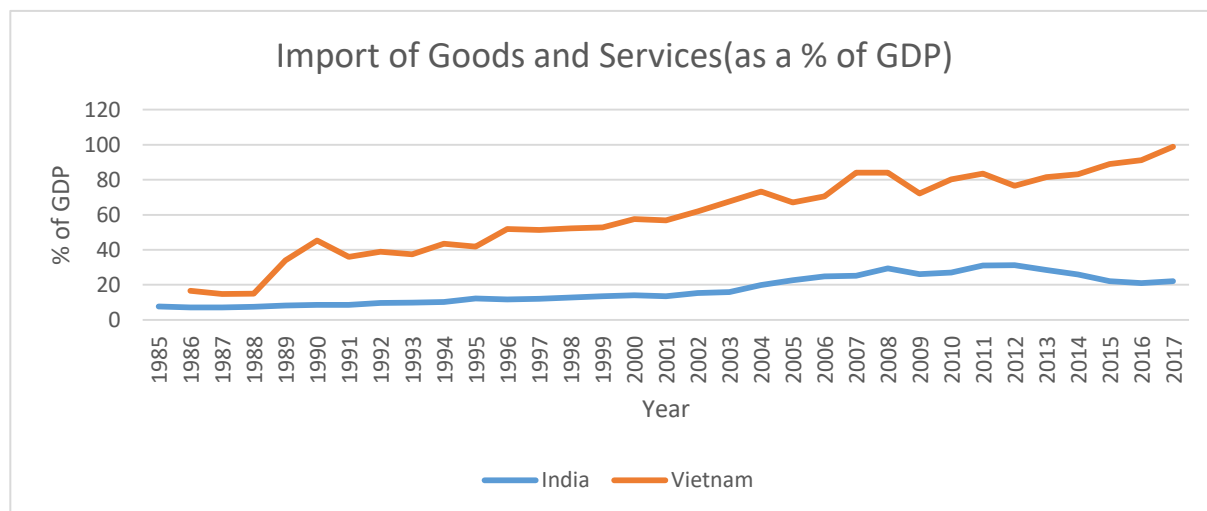
In Pair 1, we have the pre-WTO export (as a % of GDP) for India which was for the time period of ten years from 1985-1994 and post-WTO export (as a % of GDP) for India (1995-2004). Here 1995 is taken as the mid-year as India became a member of the World Trade Organization on 1st January 1995. A high T- Test of 16.098(the value of the test is negative as pre- WTO period which has lower export was compared with post-WTO which had higher export) denotes the change that India adopted by following the policy of LPG (Liberalization, Privatization and Globalization) in the year 1993 helped India increase its export(as a % of GDP). Also, the test being significant at 5% help us prove our objective that liberalization increases the overall export of an economy. ($T=16.098$, $p<0.05$).

In Pair 2, we have the pre- WTO export (as a % of GDP) for Vietnam (1998-2007) and post-WTO export (as a % of GDP) for Vietnam (2008-2017). Here 2007 is taken as the mid-year as Vietnam became a member of the World Trade Organization on 11th January 2007. A high T- Test of 14.812 is because of the policy of renovation or “Doi-Moi” adopted by the Vietnamese government and also the various FTA’s that Vietnam entered after its accession to WTO which helped it maximizing its export. Also, the test being significant at 5% help us prove our objective that liberalization increases the overall export of an economy. ($T=14.812$, $p<0.05$).

Pair 3 is mainly for explanation purpose and help us study the comparative differences between the two countries. The T-score of 16.098 for India being higher than that of 14.812 for Vietnam indicates that liberalization benefited India more than that of Vietnam as the difference during the pre and post period is higher for India. But when we compare Vietnam’s liberalization period to that of India’s export (as a % of GDP) for the same years we find a contrasting result, the difference has fallen to just 3.476 indicating the reduction in export during the current decade for India. This is what being reflected in the graphical representation as well, where we see the gap between Vietnam and India has increased considerably and Vietnam performing really well during the recent years in terms of export (as a % of GDP).

Import of Goods and Services (% of GDP)

Due to the effect of Liberalization a country gets to decide the best country from which it can import goods. This will help the country get goods of the best quality at the most affordable price. And this is possible when Trade Agreement is made with countries which produce the best goods or those goods that one country does not have the resource to produce or produce of inferior quality.



Source: World Bank Report (2018).

From the above figure we find out that the import has been considerably more for Vietnam than India as a percentage of GDP. This proves the fact that the effect of liberalization and it effecting the import was felt more by Vietnam than India. As we move from 1985 to 2017, we see the gap between India and Vietnam has increased a lot thus reflecting the rise in import for Vietnam over India.

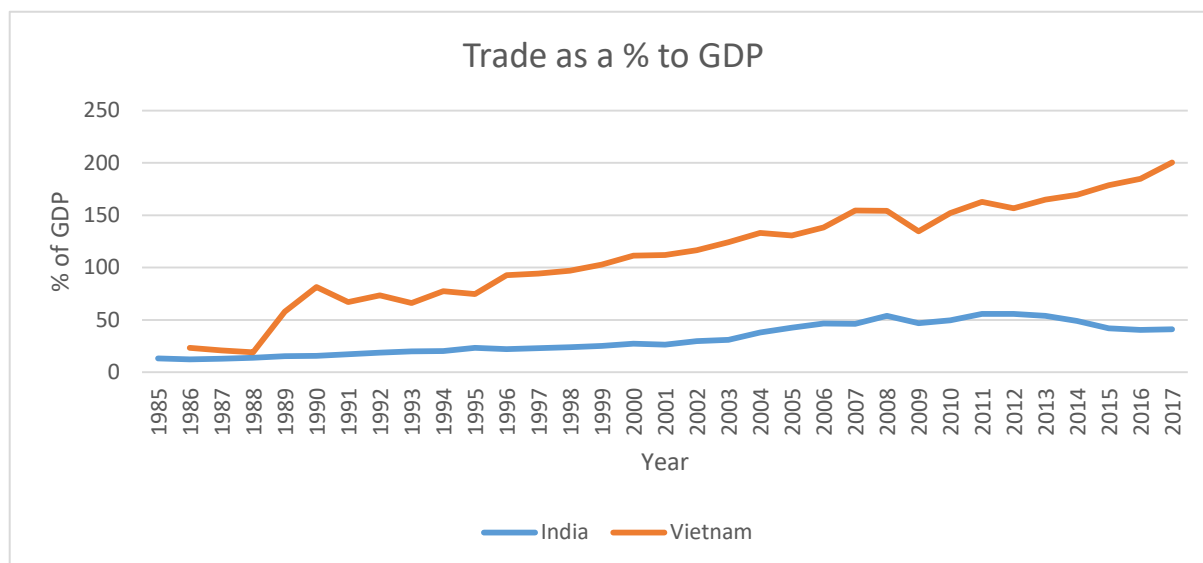
In Pair 1, we have the pre- WTO import (as a % of GDP) for India which was for the time period of ten years from 1985-1994 and post-WTO import (as a % of GDP) for India (1995-2004) and in Pair 2, we have the pre- WTO import (as a % of GDP) for Vietnam (1998-2007) and post-WTO import (as a % of GDP) for Vietnam (2008-2017). The T score from the first pair test is ($T=12.192$, $p<0.05$) which is much higher from the second pair having T score of ($T=9.370$, $p<0.05$). This signifies that the effect of Liberalization for import as a % of GDP was more for India during its liberalization period than that in Vietnam.

As we move on to Pair 3 which shows the comparative study of India for the liberalization period of Vietnam, we see the difference has fallen to 3.276 signifying the reduction in import for India during the recent years. This fall is also viewed in the graphical analysis where we see the rise in the gap of import as a percentage of GDP between Vietnam and India.

Trade as a percentage to GDP

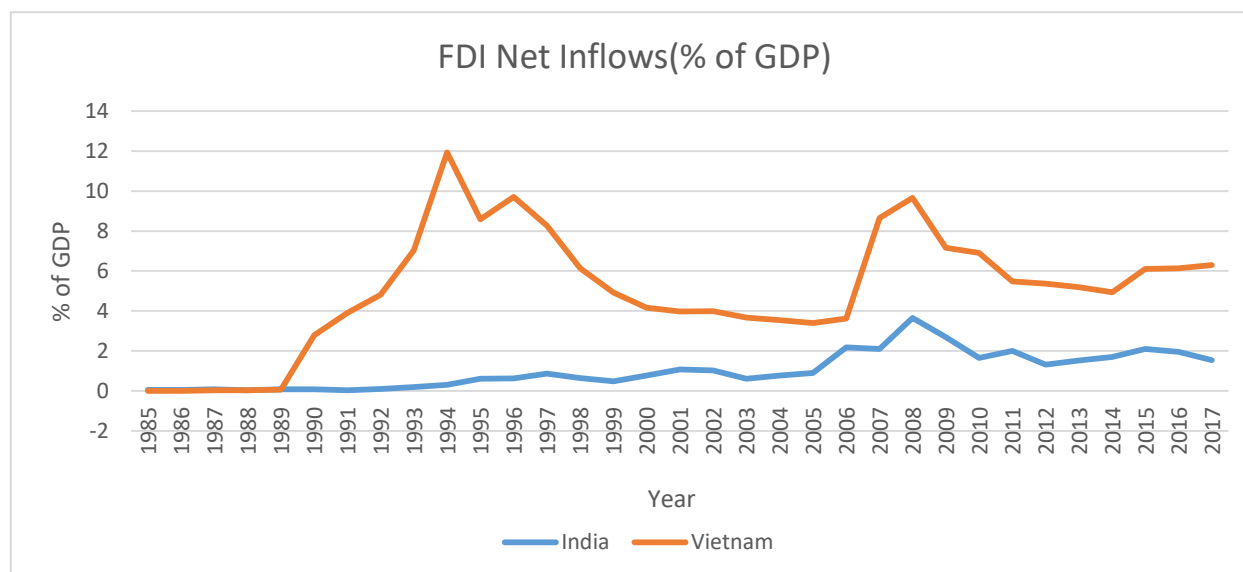
Trade as a percentage of GDP signifies the total trade taking place in a year as a percentage of the annual GDP.

The figure which denotes the Trade as a % of GDP shows that during the initial year Vietnam and India's Trade as a % of GDP was similar but as we move from the 1988 the percentage increased for Vietnam while it remains constant for India. The gap as we notice in the other figure has increased the maximum for the year 2017.



In Pair 1, we have the pre- WTO Trade (as a % of GDP) for India which was for the time period of ten years from 1985-1994 and post-WTO Trade (as a % of GDP) for India (1995-2004) and in Pair 2, we have the pre- WTO Trade (as a % of GDP) for Vietnam (1998-2007) and post-WTO Trade (as a % of GDP) for Vietnam (2008-2017). The T score for Pair 1 is ($T=14.461$, $p<0.05$), and the T score for Pair 2 is ($T=18.777$, $p<0.05$). This signifies that the effect of Liberalization was more in Vietnam as its difference in Trade as a % of GDP is higher than that of India's. This is also denoted by the T score of only 3.365 which signifies a very less difference in terms of Trade as a % GDP for India during the said period.

FDI Net Inflows (% of GDP)



Source: World Bank Report (2018).

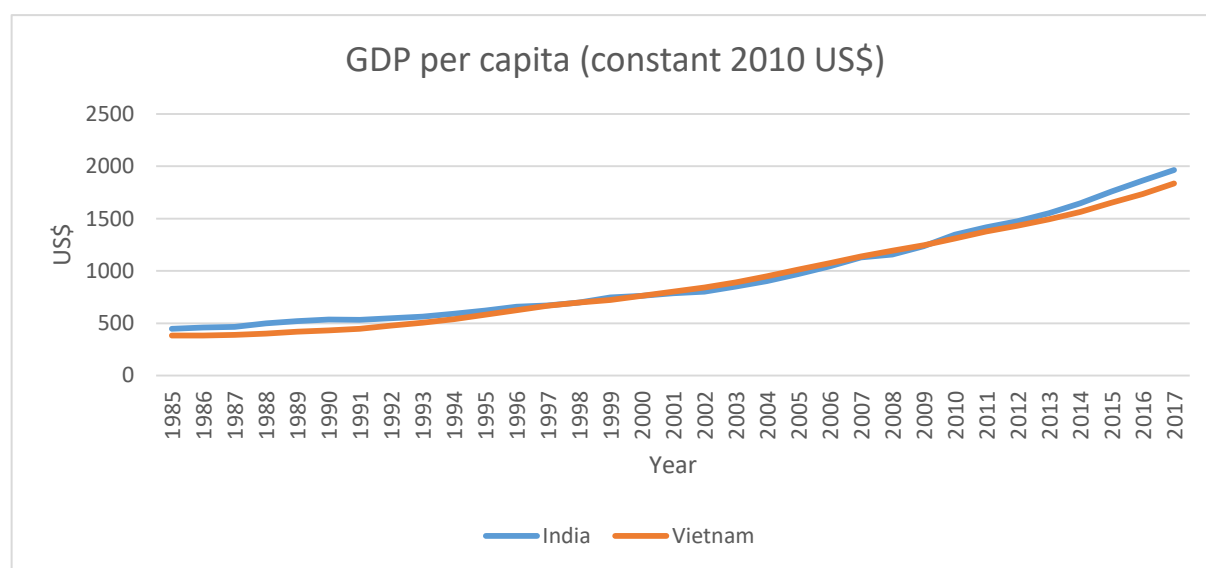
The above figure shows the FDI Net Inflows which help us denoting the Foreign Direct Investment inflows made by the foreign countries in the home country. It is one of the basic criteria to understand the effect of Liberalization since only after Liberalization a country will get Foreign investment as a result of the various FTA made by the home country with that of the foreign country.

The Figure indicates that the FDI received by Vietnam had a few ups and lows as we move from the period of 1994 to 1995, we see a formation of neckline this is because of the fact that Vietnam became a member of ASEAN during 1995 and it's FDI from various ASEAN countries increased during that period. Also, we see a rise during the year 2007 signifying the importance that accession to WTO had on Vietnam as in 2007 Vietnam joined WTO, which

allowed it to go into FTA's with USA and countries of European Union. We see the similar trend for India as we see in the other figure which is increasing FDI but not in the same rate as that of Vietnam.

In Pair 1, we have the pre- WTO FDI Inflows (as a % of GDP) for India which was for the time period of ten years from 1985-1994 and post-WTO FDI Inflows (as a % of GDP) for India (1995-2004) and in Pair 2, we have the pre- WTO FDI Inflows (as a % of GDP) for Vietnam (1998-2007) and post-WTO FDI Inflows (as a % of GDP) for Vietnam (2008-2017). The T score for Pair 1 is ($T=9.450, p<0.05$) and for pair 2 is ($T=3.395, p<0.05$) signifying that the effect of liberalization for FDI inflows as a % of GDP was more for India than that of Vietnam. But in pair 3 we see there is a fall in this difference as it falls to 2.861, which also signifies that the effect of FDI has reduced in India during the current period as compared to Vietnam.

GDP per capita (constant 2010 US\$)



Source: World Bank Report (2018).

Figure shows the per capita GDP for India and Vietnam as per constant 2010 US\$. From the above figure we can find out that the GDP growth per capita has been similar for both the countries. Liberalization which has acted differently in both the countries has been offset by other factors and as a result of that we see that the per capita income increasing as we move from 1985 to 2017 giving us an upward rising curve.

The above figure represents the GDP (constant 2010 US\$) for both India and Vietnam. Here we find one of the most important representation, the fact that India's overall GDP is far higher than that of Vietnam. So, as a result of which we can interpret that although liberalization had a better effect on Vietnam but as all the factors were based on % of GDP we can suggest that there was a biasedness for Vietnam. This biasedness was because of the fact that the overall GDP of Vietnam is much less compared to that of India, so if we compared overall export, import, trade and FDI we would have found that India had a much favorable outcome than that of Vietnam. So, a percentage of GDP was used which offset this biasedness and gave us the true indication of effect of liberalization on both the countries.

6. Conclusion

We can conclude that although Vietnam had a lower overall GDP as compared to India the effect of Liberalization was far more in Vietnam as compared to India. And this effect is growing on as Vietnam is increasing its FTA's and various policies with other countries, which was highlighted in the graphs showing the effect of Liberalization.

Thus, we see how the accession to the WTO helped these two countries in shaping up their economy in terms of the macroeconomic variables. Also, the steps that WTO takes to establish cooperation among its members must be stabilized so that every country must benefit equally as a result of the FTA's made by them.

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Transition to Ind AS and Profit Reporting of the Initial Adopters

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1. The Move Towards Uniformity - Introduction:

After the revolutionary decision of liberalisation, privatisation and globalisation in India, the Indian companies placed more importance on developing global acceptability and marketability. With the potentials of foreign investments, both the companies and the regulatory authorities focused on issues of transparency and disclosures. Companies registered under the Companies Act, 1956 had to comply with the requirements of preparing Financial Statements in accordance with the Generally Accepted Accounting Principles (GAAP) existing in India. The GAAP consisted of Accounting Standards issued by the Institute of Chartered Accountants of India (ICAI) and duly notified by the Ministry of Corporate Affairs (MCA). These standards were the guidelines of accounting treatments to be followed while preparing the financial statements.

A major barrier to global acceptability of companies was the readability of Financial Statements. The Financial Reporting Framework in countries differed from one another. With a goal to open up the investment market, a major headache of lawmakers was the difference in domestic accounting principles and reporting guidelines (Narayanswamy, 2007, Lakmal, 2014). On the other hand, foreign companies operating in India faced difficulty in restating their financials as per the existing Indian financial reporting framework which was not in line the framework of their respective countries of establishment. These differences in reporting frameworks were not just a problem for India, but it was actually a major setback to globalisation and felt worldwide.

This led the establishment of the International Accounting Standard Board and drafting of the International Financial Reporting Standards (IFRS). The primary objectives behind issuing the IFRS were to increase the reliability, readability and comparability of the financial statements worldwide and thereby facilitate cross-border trade and shareholding.

Since long, the ICAI, the NACAS and the MCA were considering revision of the existing GAAP in India due to the changing financial and investing patterns. However, the ministry and institute observed that the international standards may result in unwanted complexities and conflicts with existing laws and that may lead to inappropriate application and further, misinterpretation of financial information. Therefore, considering the **social, legal and economic aspects** of India, they opined for convergence with the IFRS rather than mere adoption. The Accounting Standards Board of the ICAI prepared the new Indian Accounting Standards (abbreviated as Ind AS) and till date, the ministry has notified forty-two Ind-AS. MCA decided to implement Ind-AS in India in a phased manner. Accordingly, adoption of Ind-AS for preparation of financial statement was made mandatory by the ministry from the Financial Year 2016-17 for all companies having a Net Worth exceeding Rs. 500 Crores (alternatively called the Phase I companies) for the immediately three preceding financial years and its holding, subsidiary, joint venture and associate companies. As a result, around 350 companies, falling within the definition of Phase I companies, reported their financial statements for the financial year 2016-17 as per the Ind AS. Moreover, these companies also re-stated the financial statements as on the date of transition (01.04.2015) and for the comparative period (2015-16) in accordance with Ind AS.

Phase	Year of Transition	Applicability
I	Accounting Period beginning on/after 01.04.2016	<ul style="list-style-type: none">Companies (listed or unlisted) having a Net Worth of 500 Crore or more;Holding/Subsidiary/Joint Venture/Associate thereof.
II	Accounting Period beginning on/after 01.04.2017	<ul style="list-style-type: none">Listed Companies and Companies under listing process.Unlisted Companies having a Net Worth of 250

		<p>Core or more.</p> <ul style="list-style-type: none"> • Holding/Subsidiary/Joint Venture/Associate thereof.
III	Accounting Period beginning on/after 01.04.2018	<ul style="list-style-type: none"> • Scheduled Banks • Insurance Companies • NBFCs having a Net Worth of 500 Crore or more. • Holding/Subsidiary/Joint Venture/Associate thereof.
IV	Accounting Period beginning on/after 01.04.2019	<ul style="list-style-type: none"> • Listed NBFCs having a Net Worth of less than 500 Crore. • Unlisted NBFCs having a Net Worth of 250 Crore or more. • Holding/Subsidiary/Joint Venture/Associate thereof.

Source: Ministry of Corporate Affairs, Government of India

However, the Reserve Bank of India recently deferred adoption of Ind AS by scheduled banks by one year (i.e. from accounting period beginning on or after 01.04.2019).

Even in this consumer-centric market, profit plays a very important role. Profit is still a major element towards wealth maximisation. Stock prices and market perception is heavily dependent on profit reporting. In recent years, many companies including Nestle, Idea Cellular, Kingfisher etc. witnessed a sudden down-trend in their share-prices after reporting loss in their financial statements. Therefore, management remain very conscious and tactful while reporting profits.

A change in the FRF, if causes a change in the reported profit, may turn-out to be a major head-ache for the corporates.

2. Literature Review:

Most of the works in the area of transition of accounting principles compared the IFRS with the local GAAP.

Trewavas et al. (2012) studied the effect of IFRS adoption in New Zealand on public sector entities. They observed that the adoption had a great impact on the reporting of liabilities since IFRS required additional disclosures and a stricter approach to report liabilities in the financial statements.

Tawiah and Benjamin (2015) used Grey's Index Conservatism and used Existing AS and IFRS (as a substitute of Ind AS) and concluded that Ind AS will provide more quality information. However, they assumed that reporting under IFRS and Ind AS will be absolutely similar.

Black and Maggina (2016) examined the effects of IFRS adoption on financial statement data in Greece. They found that, unlike most cases, the adoption did not result in any improvement of the statistical behaviour of the financial ratios and the usefulness of financial statement did not improve.

Silva and Nardi (2017) examined whether full adoption of IFRS increase conservatism, relevance, timeliness and reduce earning management and cost of capital for public companies in Brazil. They used various mathematical models, developed in prior researches, to show that earning quality and value relevance has increased due to full adoption of IFRS in Brazil. They further showed that the cost of capital has decreased in companies reporting under new principals.

Jones and Finley (2011) stressed on the effect of IFRS of financial reporting diversity among adopting countries, at domestic industry level and between large versus small companies. They used profitability and earnings, liquidity and solvency, cash flow and capital structure ratios and studied the changes thereon (from pre-IFRS to post-IFRS period) to identify the effect. The study revealed statistically significant reduction in the variability of various balance sheet, income statement and cash flow ratios in the European Union and Australia at inter-country, inter-industry levels as well as firms of different sizes.

Basu & Mitra (2019) studied the effects of transition to Ind AS on Public Sector Undertakings (PSU). They used statistical tests on the PSUs that applied Ind AS as 'mandatory adoption' and found out that unlike private companies, the solvency, profitability and liquidity of PSUs were not affected by this transition. They concluded that transition to the new financial reporting framework has a significant impact mostly on companies that enjoyed market incentives of financial reporting.

3. Research Objective and Hypothesis:

A rigorous review of the literatures reveals that effects of IFRS adoption is not uniform and differed from one nation to another. India moved for a convergence with IFRS through the introduction of Ind-AS and not by a straightway adoption. So, it is important to analyse the Indian Scenario independently, instead of relying upon the outcomes in other countries. In this paper, our primary attention is the aspect of profit reporting. The Reporting of profit is a major concern for corporates because this provides a clear-cut and simplistic idea of the company's performance and market viability to both its investors and creditors. However, the main point of debate might be whether the absolute figures give a better result or the comparative ratios? To avoid this conflict, we examine both the aspects, the absolute values as well as the relative values in form of profitability ratios. Here we seek answers of the following three questions –

1. Whether there is a significant change in the reported income due to transition to Ind AS?
2. Whether the Return to Equity (ROE) ratio witnesses a significant change due to the transition?
3. Whether the Return on Asset (ROA) ratio witnesses a significant change due to the transition?

Since companies prepared their financial statement as on 31st March 2016 as per the existing Indian GAAP and in the very next year, included restated financial statement as on the same date in accordance with Ind-AS in the comparative information for the first Ind-AS adoption year (2016-17), we use this financial information to check the impact of Ind-AS.

Accordingly, we form the following hypothesis.

H₀₁: Transition to Ind AS does not impact PAT of the reporting Entity;

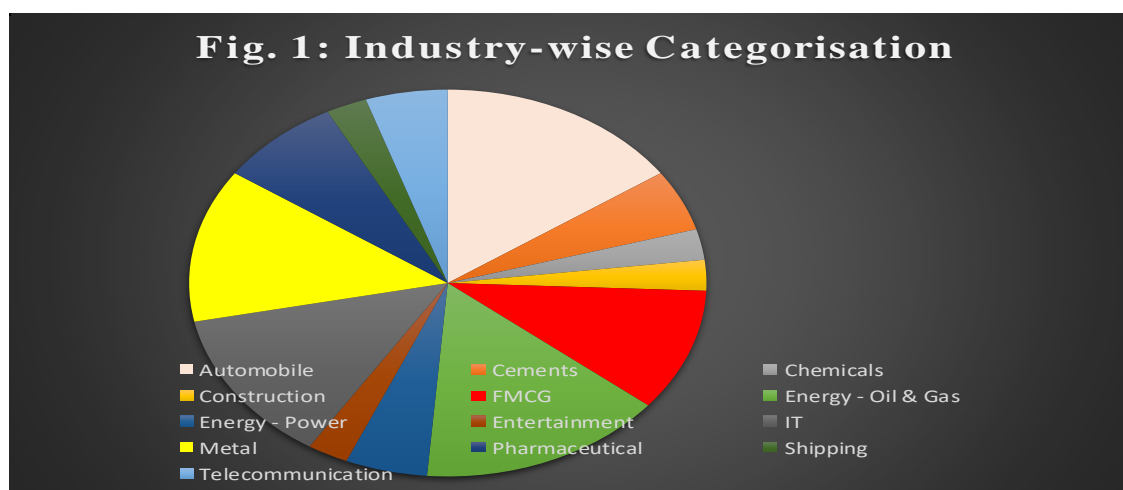
H₀₂: Transition to Ind AS does not impact ROA ratio of the reporting Entity;

H₀₃: Transition to Ind AS does not impact ROE ratio of the reporting Entity;

And their corresponding alternate hypothesis assume significant impact on respective variables.

4. Sample & Methodology:

We used purposive sampling and selected NIFTY 50 companies who were Phase I adopters of Ind AS. Since banks, insurance companies and NBFCs were not required no adopt IFRS in the first phase, they have been excluded from the sample. In addition, Financial data is manually collected from their annual reports of the Financial Year 2015-16 and 2016-17.



On examining the distribution of the parameters, it was found that neither of them (reported income, ROE ratio, ROA ratio) follows normality. Hence, non-parametric Wilcoxon Signed Rank Test will be used to measure the statistics.

5. Results:

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
PAT_IGAAP	39	5585.7096	6488.39123	-3498.28	27417.00
ROA_IGAAP	39	46.4065	78.48487	-19.92	354.34
ROE_IGAAP	39	21.3429	24.11401	-16.08	110.71
PAT_INDAS	39	5505.1185	6480.19991	-3529.67	27426.00
ROA_INDAS	39	44.4183	71.28294	-20.07	286.54
ROE_INDAS	39	19.3217	22.55725	-17.29	103.41

(PAT figure in Rs. crores)

Ranks

		N	Mean Rank	Sum of Ranks
PAT_INDAS - PAT_IGAAP	Negative Ranks	17 ^a	20.53	349.00
	Positive Ranks	22 ^b	19.59	431.00
	Ties	0 ^c		
	Total	39		
ROA_INDAS - ROA_IGAAP	Negative Ranks	21 ^d	19.05	400.00
	Positive Ranks	18 ^e	21.11	380.00
	Ties	0 ^f		
	Total	39		
ROE_INDAS - ROE_IGAAP	Negative Ranks	31 ^g	21.97	681.00
	Positive Ranks	8 ^h	12.38	99.00
	Ties	0 ⁱ		
	Total	39		

a. PAT_INDAS < PAT_IGAAP b. PAT_INDAS > PAT_IGAAP c. PAT_INDAS = PAT_IGAAP

d. ROA_INDAS < ROA_IGAAP e. ROA_INDAS > ROA_IGAAP f. ROA_INDAS = ROA_IGAAP

g. ROE_INDAS < ROE_IGAAP h. ROE_INDAS > ROE_IGAAP i. ROE_INDAS = ROE_IGAAP

Test Statistics^a

	PAT_INDAS - PAT_IGAAP	ROA_INDAS - ROA_IGAAP	ROE_INDAS - ROE_IGAAP
Z	-.572 ^b	-.140 ^c	-4.061 ^c
Asymp. Sig. (2-tailed)	.567	.889	.000

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

c. Based on positive ranks.

Source: Researcher's analysis on IBM SPSS Statistics v.25

6. Interpretation and Analysis:

All the sample 39 companies adopted Ind AS in the very first phase because all of them enjoy a net worth exceeding Rs 500 crore. However, the descriptive statistics proves that although they fall under the highest bracket in terms of net worth, their reported incomes tend to cover a huge range. However, all the mean values have decreased due to the transition to Ind AS. In other words, after application of Ind AS, profitability has decreased both in absolute and relative terms.

In Non-parametric Wilcoxon Signed Rank test, for the Reported Income in absolute terms, the computed z value is -0.572.

Since $|Z| = 0.572 < 1.96$ (tabulated z value), the H_{01} is accepted at 5% level of significance.

Again, in case of Return on Asset ratio, the computed z value is -0.14.

Since $|Z| = 0.14 < 1.96$ (tabulated z value), the H_{02} is accepted at 5% level of significance.

However, in case of Return on Equity ratio, the computed z value is 4.061.

Since $|Z| = 4.061 > 1.96 > 1.645$ (tabulated z value), the H_{03} is rejected at both 5% and 1% level of significance.

Therefore, our statistical examination reveals that while the reported income and ROA ratio of the reporting entities remained unaffected, the transition to Ind AS had a significant impact on the ROE ratio.

Reading the all the results together, it may be observed that although the reported income was decreased after adoption of Ind AS, it did not witness a statistically significant impact. This test is interesting in a way that it gives an opposite outcome if compared with Balance Sheet items. In simple words, our previous researches which undertook similar methodology to test the effect of transition to Ind AS, found that the transition had a significant impact on Balance Sheet items.

7. Conclusion:

In recent era, changing financial reporting frameworks dragged attention of the business world. The primary objective of this change is to bring uniformity in accounting standards and thereby increasing the readability of financial reporting. Since long, Companies enjoyed the liberalism provided by local accounting standards and tried to use this to the best interest of their goals. Since local accounting standard setting bodies are influenced by the national politics, laws and socio-economic policies, the local accounting standards were prepared taking care of all these sentiments. Countries where local accounting standards were far from the internationally accepted accounting treatments, were hit in the worst possible manner.

As mentioned earlier, we previously concluded that Balance Sheet items as well as ratios witness a significant change due to the transition to Ind AS. However, in this paper, we observed that the Statement of Profit and Loss does not follow the Balance Sheet trend. It is interesting to note that despite the reported income not being affected, the transition to Ind AS had a statistically significant impact on the return on equity ratio. Adding this result to the overall

works in this area, it is yet again observed that ‘equity’ value of the adopting companies faced the effect of the transition to a massive extent. On the other hand, unlike many other nations, the transition towards the IFRS-based standards did not actually affect the profitability of Indian corporates. The impact on ROE could therefore be more attributed towards the revaluation and reclassification of the equity and not towards the reported profit.

8. Limitations and Further Scope:

- This paper only takes up the absolute profit and two profitability ratios derived from the financial statements. However, since Ind AS were adopted as a financial reporting framework, a comprehensive application of the statistical tools over all the major aspects including solvency, liquidity etc. may bring a better understanding of the impact.
- The sample covers only 12% of the total population.
- Since profitability has a direct impact on stock prices, a reading of the post-adoption market behaviour is important, which may be addressed in future works.

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Green Iron Foundry – A projection towards higher sustainability

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1. Introduction

Avoidance and reduction of lean wastes are in practice in most foundries of India and abroad. Lean manufacturing practice leads to increased efficiency, higher throughput thereby ensuring compliance of production/delivery schedule. Objective of lean manufacturing is to eliminate non value- added activities and thus improve efficiency/effectiveness of all processes. Using this modern management tool, foundries can become economically and environmentally sustainable.

But material wastes in iron casting facilities are not eco-friendly and we should find ways for the reclamation or recycling or alternative uses of the foundry wastes. The future application possibilities of material wastes in turn reduce the production cost and thus increasing revenue from the same production. In addition to green sand molds, chemically bonded sand cast systems are also used. These systems involve the use of one or more organic binders (usually proprietary) in conjunction with catalysts and different hardening/setting procedures. Foundry sand makes up about 97 percent of this mixture. Chemically bonded systems are most often used for "cores" (used to produce cavities that are not practical to produce by normal molding operations).

Increasing environmental and economic pressure has increased demand for recovery of as much foundry waste sand as possible. Greensand foundries have traditionally used predominantly new sand in this area, resulting in large quantities of sand being sent for disposal. The paper investigates how this can be avoided, the equipment required and the potential performance characteristics of any sand recovered.

2. Literature Review

The foundry industry generates the largest volume of spent sand. Its main components are silica or olivine sand with residuals of phenolic resin, clay or no-bakebinders etc. There was increase in demand for aggregates from non-traditional sources like from industrial by-products, recycled construction, and demolition waste.

Spirutova and Jaroslav [1] studied the green sand system and the core sand (CS under annealed temperature (350°C). At this temperature, we can assume that thermal decomposition of the resin and the binding capacity of bentonite may be the mechanism of bentonite passivation. As a result, there is a reduction in active bentonite which is due to deactivation caused by the pyrolysis generated during exposure of the cores to heat. This shows the influence of the mechanical property of the mixer and the synthesis has been decreased by 20% to 40% on average. The deterioration of the Property (i.e. strength) can be achieved by extending the sample preparation time from 6min to 12min.

Charnnarong Saikaew and Makino [2] studied recycled moulding sand (RMS), which is optimised using a mixer experimental design RSM (Response Surface Method) and POE (Propagation of Error) in order to minimise the defect that appears on iron casting. They further studied the proportions of clay and water for the optimal property of the RMS. The proportion of the elements considerably influenced the property of the moulding sands and also the surface quality of the iron casting. The optimal proportion of components obtained was that 93.3% mass of one time recycled moulding sand, 5% of the mass of bentonite and 1.7% mass of water. This mixture yielded the optimum inexperienced compression strength of 53090 N/m². The optimal permeability is of 30 AFS permeability numbers and overall desirability of 72%.

Richardo Magnani [3] studied the Calcination process at moderate temperatures (450 - 5000C), i.e. increase in compressive strength of reuse foundry sand after 4500C of curing time (20hrs), either using inorganic Calcination additives or coupling additives are associated with the leaching process is effective in terms

of regenerating the initial properties of foundry sand. Observed that water, natural (process / natural action / action / activity) process is economical for the regeneration of initial properties of the antecedently calcinated sands. And utilisation of both silica anchoring additives based on amines silanes, and inorganic Calcination additives were shown to be efficient in the regeneration of the mechanical property of the foundry sand.

Fatai Olufemi et al [4] found that the sieve analysis results showed that the grain fineness index falls at appropriate intervals vary in keeping with AFS (American mill system commonplace as declared in mill sand 40330 average fineness is suitable for foundry application. The recycled green sand has an average fineness number of 50 and is therefore coarse in nature. The green sand strength increases in bentonite and dextrin in moulding sand by mixing the content of bentonite 24 grams and as increases in green sand strength by 90 kN/m². The recycled sand will still be reused by a minimum addition of binders. Optimum green strength and permeability of recycled sand were achieved when 2 grams of bentonite and 8 grams of dextrin, 12 cm³ of water were added to 200 grams of recycled sand.

Dushyant Ramesh [5] found the evaluation of used foundry sand for use as a replacement of fine aggregate material begins with the concrete testing with the control of concrete, i.e. 10%, half-hour, and five-hundredths of the fine combination is replaced with used metalworks sand.

3. Objectives of the study

- Reclamation of sand and the future application possibilities of material wastes.
- The extent to which it reduces the production cost and thus increasing revenue from the same production.

4. Relevance of the study

High volume green-sand foundries have traditionally used new sand for majority of core-making applications. The ever-escalating cost of raw materials, such as new silica sand, combined with environmental and economic pressure associated with disposal of waste streams has increased the demand for foundries to recycle and reclaim as much of their sand as possible.

The predominant binder system used in the core-shop is phenolic urethane cold box. Technical difficulties associated with using the cold box process with sands that are alkaline in nature, has led to many green-sand foundries taking the easy option of a new sand only for core-making application. When the volume of sand required for core making exceeds the level of losses in the green sand moulding line, large quantities of greensand need to be disposed of. The ever increasing financial and environmental impact associated with this practice has led to organisations seeking advances in reclamation and recycling technology to overcome the challenges associated with using reclaimed green sand in the core-shop.

5. Methodology

Combine proven reclamation processes and provide the greensand foundry with a process which not only allows the reuse of greensand in the core-shop, it can also improve the casting process overall. The challenge is to take a sand with high moisture, clay and volatile content and process the sand in such a way as to allow its re-use with a binder system that is well-known for its lack of tolerance to any of the properties associated with greensand. By combining pneumatic scrubbing and proven thermal reclamation process technology, a technical and economically viable process has been developed.

Critical stages of the Sand Reclamation Process:

Stage 1

Primary attrition – Green sand is reduced to grain size, including screening to remove any metallic.

Stage 2

Gas-fired drier – The typical moisture content above 3.0% is reduced to below 0.5%, with treatment temperature typically between 150 to 1200C.

Stage 3

Primary scrubbing – The majority of active clay is removed; coal dust is also removed. Active clay and coal dust can be recycled and returned to the greensand mill.

Stage 4

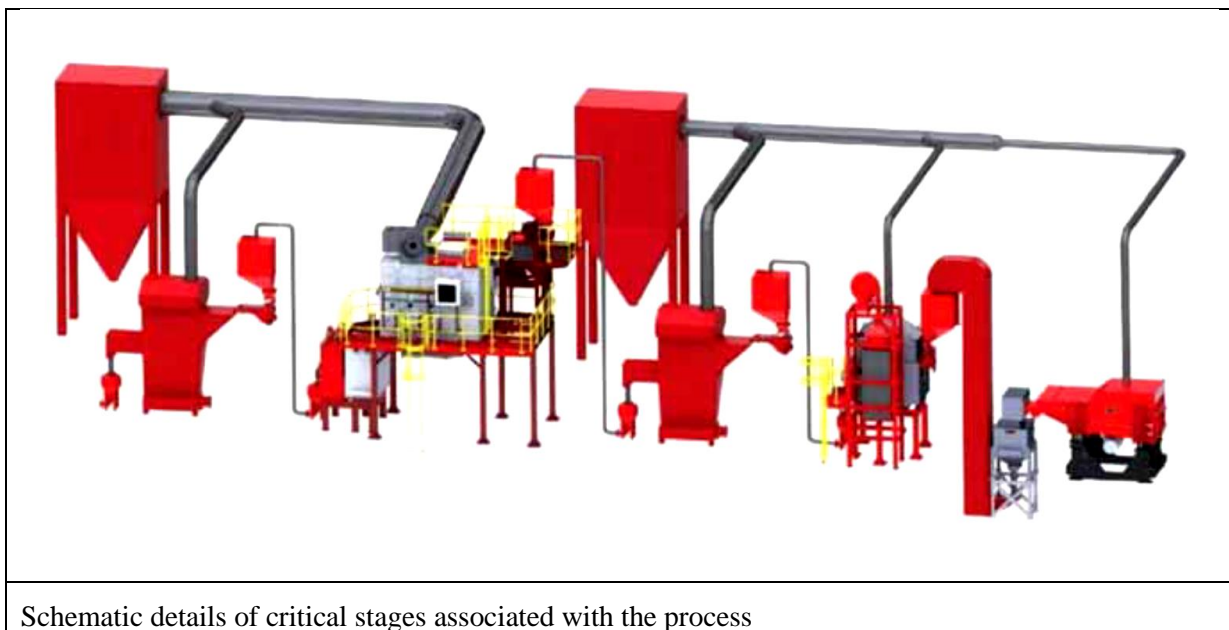
Thermal reclamation – Processing the sand at temperatures typically over 6500C removes all organic contaminants.

Stage 5

Final scrubbing – Removal of dead clay, and volatiles.

Stage 6

Final classification – Blending with new sand prior to re-use in core-shop.



Schematic details of critical stages associated with the process

Why Use Pneumatic Scrubbing?

The process utilises the principle of pneumatic sand scrubbing and can be adjusted to process at various production rates to achieve degrees of sand grain cleanliness.

Air is used as a motivating force and the sand grains themselves as the abrasive body to render:

- Intensive scrubbing action without sand grain degradation
- Effective removal of clay / chemical binders.

Controlled fines removal is achieved by utilising negative pressure control:

- Photohelic used in conjunction with the cell exhaust shroud controls fines removal
- Magnehelic used with dedusting chute.

Low operational cost:

- Low maintenance cost with no moving parts in contact with sand
- No operator required

Why Use Thermal Reclamation?

The design allows fast warm up times, leading to lower gas consumption. The modular low thermal mass furnace lining is guaranteed for 3 years. The system has fully automatic PLC operation with self-diagnostic controls.

A unique patented dead bed with stress-free fluid bed is contained. There are no main burners to maintain, while pilot burners again have a 3-year warranty. No after burners are required due to clean exhaust associated with sufficient dwell time. Volatile organic compound emission from the exhaust will be not more than 30 mg/m, with Integral cooling and classification as standard.

Thermal reclaimed sand

After thermal treatment, the organic binder shells are nearly completely burnt. In addition, there is the geometric change of the individual grains after the thermal treatment. Above a temperature of 573°C, the quartz leap ensures a reversible change in volume. Not only residual binders but also corners and edges flake off the grain. As a result, thermal reclaimed quartz grains have a specifically smaller surface area than many new sands and thus have a reducing effect on binder consumption.

An outlook on future application possibilities

In addition to the recycling of used sand, the disposal of filter dusts is also becoming more and more important in many companies. The reasons are the same as for the problem of used sand.

FAT's thermal reclamation plant is also a solution here. Filter dust from no-bake plants can be used as an energy source for combustion in the furnace. To analyse the behaviour of the dust during operation of the reclamation plant, the FAT test plant was extended by a dosing unit. A defined amount of dust was added to the used sand in the combustion chamber.

Results are promising, because during the thermal treatment in the furnace, the loss on ignition of the dust could be reduced by ~50% and the gas consumption could also be reduced because of the energy of the residual binder in the dust. Due to the fine sand content in the dust, which leaves the plant with the thermal reclaim, the amount of dust could also be halved.

Advantage over mechanical reclamation

The organic load in the resulting filter dust of the thermal regeneration plant is as follows:

~1 to 2% of the sand circulation volume and therefore explicitly below the high loaded dust content of approx. 5 to 15%, which occurs during purely mechanical regeneration.

The thermal reclamation plant leads to effective waste reduction with moderate energy consumption and can therefore be regarded as a contribution to environmental protection and resource conservation.

Especially viewed against the background of economic considerations, this solution is becoming more and more interesting for operators. Payback times of 1.5 to 2.5 years are realistic. With increase in plant size and sand throughput, this value decreases accordingly.

6. Conclusion

As fellow foundrymen can transform the foundry business from traditional mindset of hazardous, dirty and unpredictable business to a more Disruptive, Adaptive & Sustainable business model through laying a solid foundation of robust system base approach, cost competitiveness through frugal mindset, innovation-led transformation and leveraging human capital with total employee involvement which will steer the business towards achieving "Operational Excellence".



Typical Results

Sand analysis

Typical sand properties at critical stages in the process

	Green Sand as Supplied	Post Drier	Post 1 st Scrub	Post Thermal	Post Final Scrub
AFS	63.6	62.2	63.1	62.18	59.9
LOI%	7.03	/	1.08	0.04	0.02
Clay %	9	9	5	0.46	0
pH	9.8	9.65	8.3	7.64	7.3

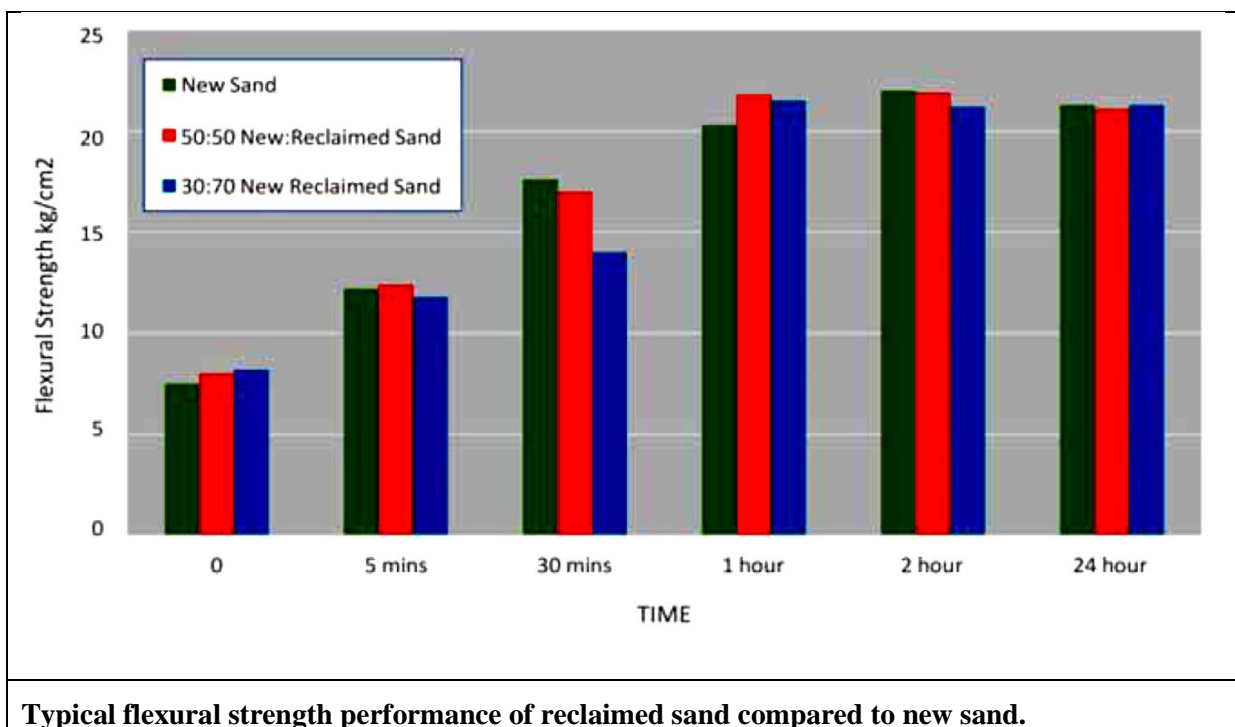
ADV (pH7)	19.4	19.31	0.5	0.22	0.14
Sand Yield%					70

	
Sand before reclamation	Sand after reclamation

Reclaimed sand strength performance

Urethane Cold Box - Flexural Strength Development

1.2% total Binder Addition 50/50 Ratio



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A Study on the perception of Wearable Fitness Devices (Fitness Bands) among the people of Kolkata

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1. Introduction

Growing awareness about health in recent days has created a demand for the wearable fitness devices. A wearable fitness device is a device used for monitoring and tracking fitness related metrics such as distance walked or run, quality of sleep, calorie consumption, heart rate, notifications etc. They are also known as Fitness Bands. There are more than 10 major players in India with Fitbit, Xiaomi (MI band, Amazefit), Huawei (Honor), Fastrack, Apple in the lead. A wearable fitness device is also used as a watch and many find it fashionable to wear it. The popularity of the fitness bands have increased in the present decade.

The present paper aims to consolidate and integrate some of the key empirical evidences that have emerged regarding the association between the fitness band brand preference and the cognitive and affective factors that are considered by the people of Kolkata while buying a wearable fitness device.

2. Objectives

- To determine awareness about the Wearable Fitness Bands among the students.
- To find out the most preferred brand of Wearable Fitness Bands by the students.
- To determine the factors affecting consumer buying behaviour using the Black Box Model.

3. Literature Review

A study conducted by Chan (2017) on 'An examination of wearable fitness devices used for tracking activity and considering the motivational impact from their use' found the relationship between users and wearable technologies. It supported that user attitudes and objective intentions determine the fitness tracker they may adopt, and furthermore, are very reflected in their actual use of certain devices. The research showed how fitness trackers offer a variety of means from which a user can draw motivation – the user's subjective view of them may prompt them to engage in additional activity. The paper concluded that fitness trackers were more than simply just the objective of tracking devices but powerful motivational tools in promoting physical activity.

A study conducted by Kaewkannate, Kim (2016) on 'A comparison of wearable fitness devices' found that Withings Pulse brand is the most friendly and satisfactory from the users' viewpoint. It was the most accurate and repeatable for step and distance tracking, which is the most important measurement of fitness tracking, followed by Fitbit Flex, Jawbone Up24, and Misfit Shine. In contrast, Misfit Shine has the highest score for design and hardware, which is also appreciated by users according to their research.

A study conducted by Cyr, Horn, Miao, Specter (2014) on 'Security analysis of wearable fitness device (Fitbit)' described an analysis of Fitbit Flex system. Our objectives were to describe the data Fitbit collected from its users, (2) the data Fitbit provided to its users, and (3) methods of recovering data not made available to device owners. They found evidence of per-minute activity data that was sent to the Fitbit web service but not provided to the owner. They also discovered that MAC addresses on Fitbit devices were never changed, enabling user correlation attacks. BTLE credentials were also exposed on the network during device pairing over TLS, which might be intercepted by MITM attacks. Finally, they demonstrated that actual user activity data was authenticated and not provided in plaintext on an end-to-end basis from the device to the Fitbit web service.

4. Research Methodology

The type of research adopted in the present study is descriptive in nature.

The respondents consist of people of Kolkata only. The aim of this study is to find the various factors that affect the preference and buying behaviour of the people in wearable fitness device market.

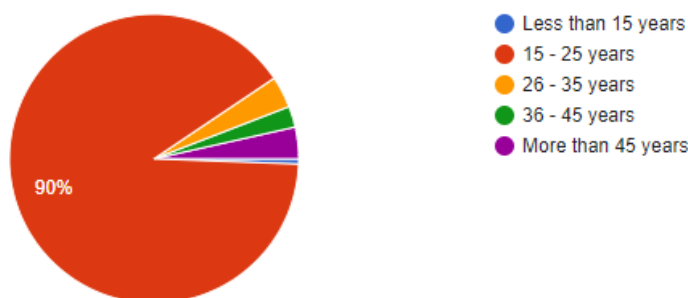
In order to reach the aim a structured questionnaire was sent to the people of Kolkata in the form of online survey. The questionnaire consisted of 14 questions. There were a total of 170 respondents aged between 15 and 45.

Primary data was collected by administering the above mentioned structured questionnaire whereas the Secondary Data collection was done through the Internet.

5. Data Analysis

Age of the respondents

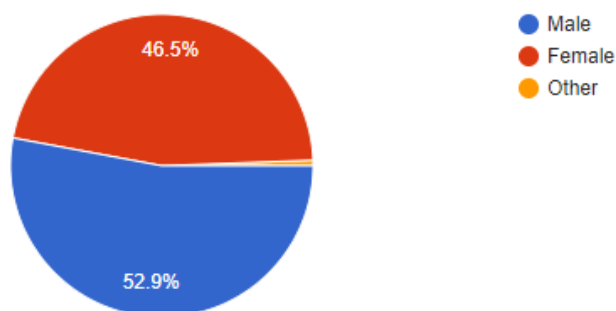
170 responses



Most of the respondents were aged between 15 and 25 years.

Gender of the respondents

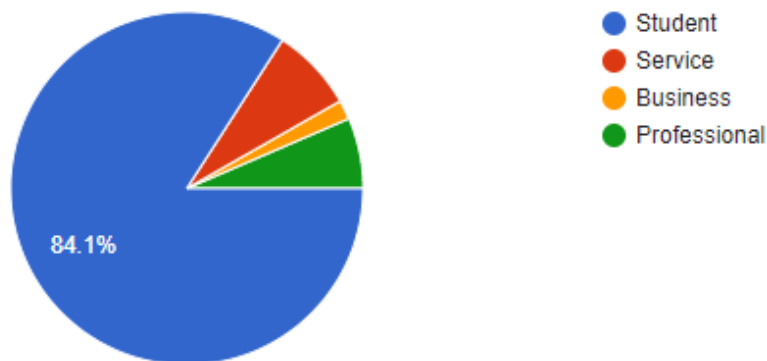
170 responses



Out of 170 respondents 46.5% were females, 52.9% were males and 0.6% belonged to the other gender.

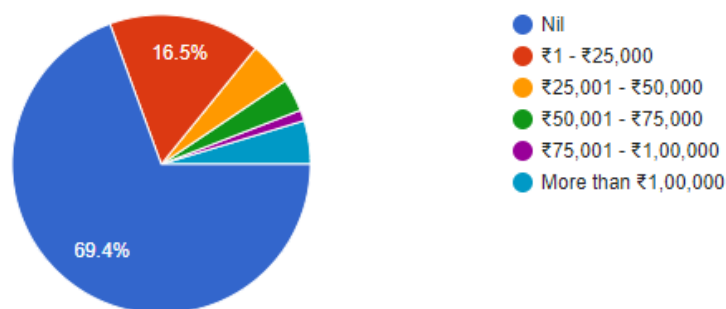
Most of the respondents were students followed by Service, Professionals and Business as their occupations.

170 responses



Income of the respondents

170 responses

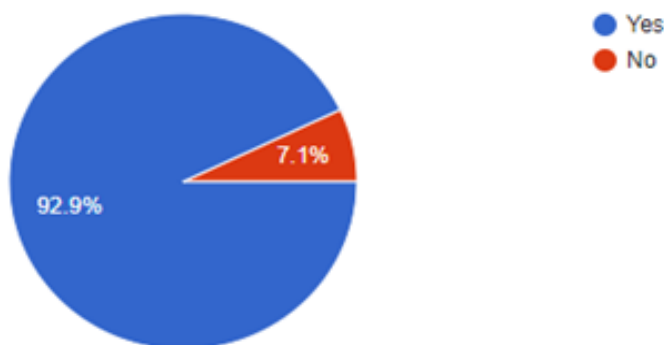


Most of the respondents income is nil as most of the respondents are students

Respondents were asked if they are aware of the wearable fitness devices

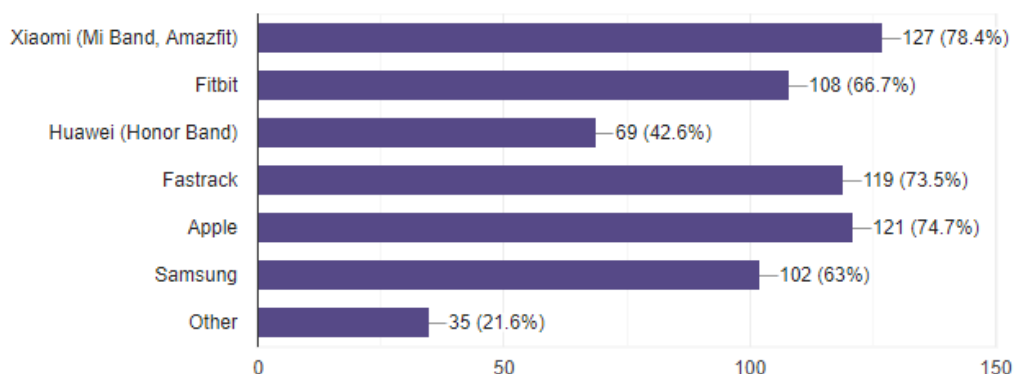
92.6% of the respondents said that they were aware about wearable fitness devices

170 responses



In continuation with the above question, if their answer is 'yes', then which are the brands that they are aware of:

162 responses



The awareness about Xiaomi wearable fitness devices is the highest followed by Apple and Fastrack.

The respondents were asked about the most attractive feature while thinking of a wearable fitness devices

54.1% of the respondents said that Accuracy is the most important feature that they look for followed by Price and Appearance in a wearable fitness device.

The respondents were asked about their willingness to spend for a wearable fitness devices

Most of the respondents said that they are willing to spend less than ₹5000 for a wearable fitness device.

The respondents were asked about the criterion which they associate themselves most with while thinking of a wearable fitness device: Fashion or Utility

Most of them associated themselves with utility but a significant percentage of respondents also said they associate themselves to Fashion.

The respondents were asked if they use a wearable fitness device

60.6% of respondents said that they use a wearable fitness device

In continuation with the above question, the respondents said they use a wearable fitness device, what is the brand that they use.

Most of them said that they use Xiaomi Fitness Band

The respondents were asked if they would want to wear a wearable fitness device as a watch

71.2% of the respondents said they will like to wear a wearable fitness device as a watch

The respondents were asked about the most preferred fitness band brand according to them.

Most of the respondents said that the most preferred fitness band brand according to them is Xiaomi followed by Fitbit and Apple.

6. Findings

1. The respondents' awareness about wearable fitness devices is extremely high.
2. The most preferred wearable fitness device brand among the people of Kolkata is Xiaomi.
3. The most important factor that affects the buying decision of a wearable fitness device among the people is the Accuracy of the device.
4. Also, most of the people are like to use their fitness bands as a watch.
5. Most of the people use their wearable fitness devices for utility but a significant percentage of people like to wear it as they find it fashionable.

7. Conclusion

Xiaomi is the most preferred wearable fitness device brand according to this research. Also, what we can make out from the research that the people are extremely aware about the wearable fitness devices. The reason can be the growing health consciousness among the people and their willingness to stay fit and disease-free.

The wearable fitness devices have a number of utilities from measuring the distance walked or run, quality of sleep, calorie consumption, heart rate, notifications etc. With the above findings, we can say that the brands should focus more on the accuracy of the measurements and also make the device fashionable as a significant percentage of people said that they look for fashion in a wearable fitness device.

8. Limitations of the Study

1. Due to time constraint only a small sample size of 170 respondents was taken and analyzed.
2. Consumer's perception changes from time to time with advancement in technology and availability of new brands in the market.
3. The area of the study is restricted to Kolkata only.

9. Scope for Future Research

There is a good scope of future research in this topic. I have surveyed and found out 'the most preferred wearable fitness device' among the people of Kolkata.

The next step would be to carry forward the suggestions by the respondents and make necessary up gradations and incorporate them in the wearable fitness device.

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Work Place Spirituality and Work-Life Balance: An Introspection of two major aspects among Female Faculty Members in Kolkata, West Bengal

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1. Introduction

From an identity confined to kitchen and daily household chores, to an identity in IT and other sectors of work, the role of women has changed drastically. But, the only difference between the two genders is that men are more accessible to concentrate only on work compared to women. For her, it's more challenging because of the traditional mind-set of handling both works inside and outside home. Hence, this is leading to an imbalance between the personal and professional life of women.

India is facing drastic change in its values and beliefs. As a developing country due to globalization traditional way of working shifting to modern way of working which creating work pressure ,problem like long working hours, unsupportive working environment. This in turn affecting work life of employees either it's a male or female. These problems have triggered in human kind a renewed search for peace that is essentially a spiritual journey. This approach recognizes that work of employee not only with their hands but also with their hearts or spirit.

The "myth of separate worlds" where work and life are kept as separate bordered entities no longer reigns to be true (Kanter, 1977). Hence, the capacity to bring one's whole-self or one's spirituality to the workplace has steadily ascended as a topic of concern amongst researchers. Today's organization seeks greater levels of commitment, production, and efficiency from employees, at the same time it is expected that they must begin to care for the whole person (Bell and Taylor, 2001).

WORK LIFE BALANCE:

The expression "work-life balance" was first used in the Era of 1970s to recount the footing between an individual's work and personal life. It is a Wide area concept which comprise that a proper positioning and prioritizing between career and aspiration on one hand and on the other side maintain every single phase with exacting roles. Clark (2000) defines balance as "Satisfaction and good functioning at work and at home with a minimum of role "conflict".

WORK PLACE SPIRITUALITY:

The research in spirituality at the workplace is moving towards the studies of its impact on various employee and organizational related variables. Duchon and Plowman (2005) observed that leader's spirituality affects spiritual level of employees and it also enhances the performance. Workplace spirituality was reported to be the precursor to relationship-oriented selling (Chawla & Guda, 2013).

Pandey and colleagues have shown the positive association of spiritual climate on learning (Pandey, Gupta, & Kumar, 2016) and innovative behaviour in teams (Pandey, Gupta, & Gupta, 2017).

India is a country of 1.32 billion people as of May 3, 2016 (Indian on line pages, 2016). According to the 2011 census female literacy rate was only 64.60 % where male literacy rate is 73.0 (Govt. of India, 2014). This indicates that that India is still conventional and conservative towards the female child. The rapid growth of educational scenario has been changed after globalization, where the massive and substantial number of girls is coming into the job market every year. The excessive amount of females are working in teaching profession only, where the average survey has been done which concluded the study that an standard teacher works around 8 hr. per day and 6 days a week which actually suggest that a women is working 48 hours per week.

Emotions and spirituality are often seen as “black boxes”. Emotional intelligence is a multifaceted concept which has several dimensions to it. Nowadays from emotional quotient to spiritual quotient organizations are focusing into. One behaviour is dependent upon many factors such factors are led by some quotient which human possess.

Tart(1990) and his colleagues have done an extensive work over the past four decades that demonstrates that having alternated states of consciousness especially spiritual realm has profound some lstring impact on one’s view of life the way others are feeling.

2. Literature Review:

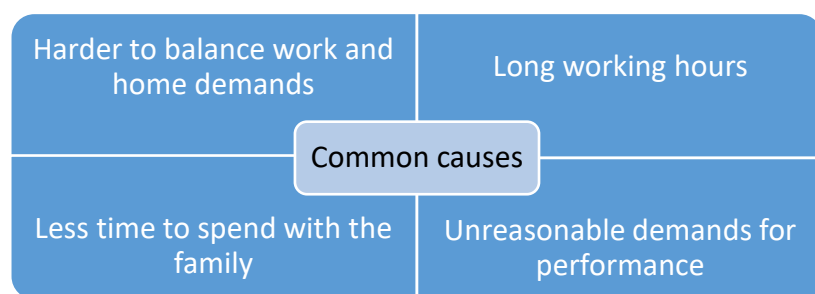
Pandey.A(2017) the study is a unique approach as it is an empirical study which focuses on the importance of workplace spirituality. The study depths into how the workplace spirituality has inspired the managers and the business leaders for long term sustainability and wholesomeness solution.

Miller.W and Ewest.T (2018) the authors have stated that workplace is a multidimensional concepts which blends both the spirituality and religion with extensive historical research. It has also labelled that spirituality has an application to the practice of management in the workplace. Such spirituality and religion also enhances the personal enrichment of employees.

Rajanish Ratna (2008) in his article “ Work Life Balance in IT Sector revealed that the work life of an employee has attracted a great concern because of a large number of problems related to employee health , monotony at work- place , declining levels of productivity and competence at the employee level

Hammig and Bauer (2009) investigated and discovered that when work-life imbalance and mental health issues developed in males as well as females, they tend to develop further issues such as negative emotions, depression, low energy, pessimism, fatigue and sleep disorders.

McDonald (1999) as the author suggests workplace spirituality is still at the assumptive level, is frequently equated with the dogmatic, proselytizing and ethereal machinations most of us abhor, rather than the serious study of a set of policies and practices that can advance both organizations and individuals. Understandably, it has thus been labeled the last corporate taboo which has created a buzz in the organizations.



Work stress makes the Work life imbalance and less Spirituality at the Work place

When women are faced with multiple roles and never ending demands, they face levels of stress that are high enough to contribute to health problems, missed work, and a diminished capacity to take on more. Women are multi-taskers by nature and enfold tasks within tasks.

Vijaya Lakshmi et al (2013) have studied and find the issues and problems of women faculty working in educational institutions. Also found that women faculty members underwent severe stress in the process of attaining Work Life Balance. Continued work pressure resulted in poor performance. The result revealed that many female teachers have neglected their health in the process of improving the life of their family members and their students.

G.Shiva (2013) studied that “Women professionals in high position in their office have return from office in correct time, cook, clean and look after their family affairs. This makes them more stress and leads to some health problems. All these studies have shown that it is hard for women to maintain a good healthy life at work place or

home. Working women are incessantly juggling the demands of a career and a personal life. Achieving the elusive work life balance with good quality of life can often feel like an impossible goal, especially for those who strive to give their best to everything they do. The above information shows that a working are incessantly juggling the demands of a career and a personal life.

Major reason for less Spirituality,

1. Less peace and Calm, because of less extended help from Family members which creates burnout and stress among female.
2. Extended deadlines and excessive work hour, creates health issues and physical problem.
3. Services toward others, are only at par level. Irritation and Frustration towards other Achievement.
4. Respect for others, but Manipulative and Diplomatic approach.
5. Hire and Fire norm always make them to do less team work.
6. Less salary with excessive work hours shows that there is no Propinquity towards vision and Mission.

3. Purpose and significance of the study:

Keeping the research gap into perspective with its expected positive result, the purpose of this study is to examine the correlation among the factors influencing workplace spirituality and work-life balance. As noticeable from the Present literature findings, this study is significant because there is still so much divergence, even controversy, in perceptions about the resultant phenomenon of work-life balance while fostering spirituality in the workplace. Therefore, this empirical or first-hand investigation will be a noteworthy contribution to research on studying the variables of both the concepts collectively with the relation of women. There are various factors which shows that women are falsifying in the work and as well as home, which makes them more stressful and less career oriented , the Spiritual zeal is getting deprived from this aristocrat profession.

4. Methodology:

Research Hypothesises:

All the statistical analyses were conducted via IBM SPSS Statistics 17 to test the following hypotheses below:

H1: There is a significant correlation between Work place spirituality and work-life balance.

H2: There is a significant relationship between Work life and spirituality.

Data Collection: An e-questionnaire was designed and made available through the internet. Invitations were sent by e-mail to participants. Respondents were asked to forward the invitation to others, however creating a snowball sample. 50 sample questionnaires were served among respondents. Out of 100 (50) has been taken for analysis.

Data Analysis and Findings

For the purpose of survey on Work place Spirituality, we have used spirituality competence scale proposed by Singh and Premrajan, (2007) composing of (6 items) measuring the factors on service towards human being, feeling of inner peace and calm, being vision and value led, interconnectedness, respect for others, self-awareness. The internal consistency reliability is found to be .59 (service towards human kind), .53(feeling of inner peace) and calm, .57(being vision and value led), .52 (interconnectedness), .60 (respect for others) and .50 (self-awareness).

To investigate the reliability of questionnaires, Cronbach's alpha was used which is shown in below:

Reliability Statistics

Cronbach's Alpha	No. of Items
0.822	6

Source: Reliability data

Table reflects that Cronbach's Alpha value for questionnaires was 0.822 which suggests good reliability.

Work-life (W-L) balance scale proposed by Pareek and Joshi, (2010) constituting of (6) items have been used for measuring the areas of personal needs, social needs, time management, team work, compensation and work itself. The internal consistency reliability through this pilot study has found to be .72 (social needs), .63 (personal needs), .69 (time management), .77 (team work), .71 (compensation and benefits), .79 (work). The reason for choosing these

scales is that they capture the seminal definition of work life balance index and work place spirituality of an individual professional which probably may develop interventions for improving the perspectives involved in it.

To investigate the reliability of questionnaires, Cronbach's alpha was used which is shown in below:

Reliability Statistics

Cronbach's Alpha	No. of Items
0.812	6

Source: Reliability data

Table reflects that Cronbach's Alpha value for questionnaires was 0.812 which suggests good reliability.

Level of Work-Life Balance and Work place Spirituality of Women Faculty- Chi-Square Test

Factor	Mean	Standard deviation	Rank
Both at individual level (maintain individual needs and being vision and value led	3.586	0.831	2
Compensation/ other Benefits and self -awareness	4.137	1.269	1
Social needs and services towards human being	3.106	1.093	4
Personal needs with feeling of inner peace and calm	2.881	1.237	5
Team work and interconnectedness	3.373	0.977	3

The study shows that women are not having a good peaceful life as by ranking one can understand that there is no inner life and peace. The less social need followed by less team work, one can understand that individual/Self need is necessity by looking at the personal growth and competing at a level to each individual vision. The above study indicated that keeping the healthy work life balance while maintains Spirituality at work place is next to impossible. The individual need is important, but even after fulfilling the individual need, there is no scope of peace and calmness. Women at one self-level is very much aware of their necessity .they are enlightened about their compensation and vision, but with very less team work and interconnectedness.

5. Scope for further study:

The study of work life balance of women employees of Pailan college of Management in Kolkata region can be further extended to a large sample size covering more institutions which give us the broader insights. Further, study can be extended to the whole organization itself with all teaching and non-teaching employees by whom their

commitment and productivity can be assessed. The study can also be extended to other graduate colleges in the region and a comparison can be made with the professional colleges.

The further area of the study can focus into the important spirituality quotient of the employees which affect their work life balance more such factors can be taken for the purpose of the studies.

6. Conclusion:

Human capital is the most important asset of the organization. Students as well teachers are the backbones of any institutions. For any institutional growth, the mental peace of both students as well teachers are equally responsible. For this fast growing expensive world, the women going for work becomes a necessity thereby resulting in personal growth of women which intern leads to the growth of the organization as well as the well-being of the family. They are the life blood. It is very important that women working in the organization must be happy, which otherwise will lead to negative impact on each and every family members, especially their kids, 'the future generation'. Even though the educational institutions were meant to be stress free, women employees are affected due to the work life imbalance and it is hard for them to maintain the spirituality. Women are more enthusiastic in terms of spirituality as there is notion that women cannot work as men so spirituality has directly or indirectly relate with women. To remove such notion womens should be given equal chances to remove their dissatisfactory element in the workplace so that fair wages, opportunities working position and working hour should be at par with men. Thus, it is required to be given little more consideration for them, in order to build up the organization. The study will help the employers/ colleges to rethink on flexible work schedules and providing more part time opportunities for the women employees, so as to improve their mental happiness together with their work performance by maintain the zeal of spirituality.

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18. WEBLINKS

<https://www.springer.com/gp/book/9781461452324/>

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Editor-In-Chief

Dr. Xavier Savarimuthu

Dr. Xavier Savarimuthu, SJ, is a Jesuit priest, Vice-Principal, Department of Commerce, and head of the department of Environmental studies at St. Xavier's college, Kolkata. He is involved in a dugwell program in India to provide arsenic-safe water to the poor villagers in the arsenic affected blocks. He has presented and published valuable papers on his work in arsenic both in India and abroad. His latest article was published in four different languages, namely, French, Spanish, Latin and English. He had been appointed as the director for ecological Missions in South Asia. He has attended and delivered invited lectures in Stockholm, Sweden, Manila, Philippines, Paris, France, Bonn, Germany and the University of Oxford. He is also a consultant in the arsenic research taking place at the bioengineering department of Santa Clara University and institute of Catholic Bioethics, Saint Joseph's University, Philadelphia, Pennsylvania. He was elected and appointed as a chair in the field of environmental studies by St. Joseph's University, Philadelphia, USA. He has indeed ignited the young minds in the field of environmental education, making them ecologically conscious citizens.

Guest Editors

Dr. Amitava Roy

Dr. Amitava Roy completed his Post-Graduation (Commerce) and PhD (Business Management) from University of Calcutta. He is a CMA (Institute of Cost Accountants of India). He joined St. Xavier's College, Kolkata, in 1997, and is presently the Dean, Department of Commerce. His research focus is on corporate governance and finance. He has published in peer reviewed journals and holds position on editorial board. His recent work has been selected as Outstanding Author Contribution in Emerald Literati Awards, 2019. He has completed several projects funded by UGC and ICSSR. He is also associated with University of Calcutta, St. Xavier's University, IEST and IIFT.

Dr. Samrat Roy

Dr. Samrat Roy is currently the Head of the Department of Economics in Commerce (Morning) of St. Xavier's College (Autonomous), Kolkata. He was awarded Ph.D. in Economics by University of Calcutta. His specialization was in Econometrics & Statistics with Operations Research. He has a teaching experience at UG and PG levels over ten years. He has been appointed as Ph.D. Program Coordinator by Ph.D. of St. Xavier's College. He had conducted theoretical and practical sessions on advanced time-series and panel data econometrics in the field of Applied Macro Economics at NIT Durgapur, Central University of Sikkim, Army Institute of Management and at Indo-German Chambers of Commerce. Dr. Roy has research interests in Macro Economics and Econometric Analysis. He has published papers on FDI and growth relationships in reputed journals.

Dr. Sumona Ghosh

Dr. Sumona Ghosh has been associated with St. Xavier's College Kolkata since 2002. Presently she is the Joint Coordinator of the Foundation Course. After completing her post-graduation in Commerce with rare distinction, Prof. Ghosh has been conferred with the Degree of Philosophy in Business Management by the

University of Calcutta on 31st of July 2014. Her area of research was on Corporate Social Responsibility (CSR). The title of her doctoral dissertation was “Pattern of participation of Public and Private sector companies in Corporate Social Responsibility Activities”.

She has published in journals of national and international repute. Dr. Ghosh has been highly acclaimed for her guest lectures on CSR in premier institutes of higher learning including the Indian Institute of Management (Calcutta), Indian Institute of Management (Shillong). She has taken sessions in Management Development Programmes conducted by premier institutes on CSR. She has presented papers on CSR at various national and international conferences.

Dr. Ghosh is also the recipient of the “Bharat Jyoti Award” for meritorious services, outstanding performance and remarkable role given by India International Friendship Society for the year 2012 given by Dr Bhishma Narain Singh, Former Governor of Tamil Nadu and Assam, on 20th of December 2012.

Dr. Ghosh is also a Certified Assessor for Sustainable Organizations (CASO), certification conferred upon her by UBB GmbH Germany.
