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Research Papers

HOME BUYERS BUYING BEHAVIOUR IN DIFFERENT REGIONS OF MUMBAI AND KEY INFLUENTIAL PARAMETERS – 2020

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ABSTRACT

Home buying phenomenon has been evolved since last few years worldwide and with increase in awareness, social media and internet penetration, India is too witnessing a growing demands of home buyers. Consumer buying behaviour is a widely researched area, however home buying behaviour is new study since it has lot of dynamics attached within recent years. Developers, sales representatives, channel partners and marketers are trying to research and understand growing demand of home buyers and trying to define the product before finalization to enhance sells and maximize the profitability and ease of selling.

This paper aims to identify the factors which are more influential particularly in different regions in Mumbai. Conventionally the home buying process was very simple, and it was more dependent on family decisions and acceptance of offering being sold by the developers. With very aggressive marketing of the residential properties across different part of the city has given scope of research for home buyers taste and choices. This researcher will help marketers to know the insights regarding the pattern of buying houses in the different segment and different regions.

An empirical study conducted via online google survey with set of 10 questionnaire on 20 homebuyers representing different regions and different business classes and corporate employees. The survey aims to identify the influential parameters of the home buying decision and to understand the personal preferences for home buying. The study has limitation as the sample size is too small to provide definite information for making marketing strategies. However, the study will give a direction for market researchers to carry out in depth research for larger population representation.

Key words: Consumer behaviour, Home Buyer in Mumbai, Luxury Homes, HNI and Ultra HNI Homes in Mumbai.

I.   INTRODUCTION

1.1 Overview - Mumbai

Mumbai, "City that Never Sleeps "or "City of Dreams" Or "Mayanagari" is the capital city of Maharashtra and Financial capital of the country. The city which has limitless and endless opportunities for the Indian Citizens across the state as well as across the borders. The city appeals to anyone in search of work and better career prospects. Migrants from different part of the country moves to be city for better and enhance life. The inherited charm and the cosmopolitan living are appealing to many youths to settle in Mumbai. The city has most glamourous world of Bollywood and the celebs style that youth follows. The city which is densely populated of about ~21000/Sq.KM 1 which is ranking as 2nd most densely city after Dhaka in the world but still preferred by the citizens to settle down. The city has population of 1.3 Million as per 2011 index and its increasing by +1.13%.

Mumbai has four regions mainly as

1.   South Mumbai

2.   South Central

3.   Central Mumbai

4.   Western Suburbs

The city is further expanded and connected with the satellite cities / towns and it comes Mumbai Metropolitan Region widely known as "MMR".

Real estate market in Mumbai is categorically classified among this region as they have their unique influencing factor during buying process. Real estate market cap in India is around ~180 Billion USD which

is around 7% of the GDP of the country. Mumbai's real estate market size is increasing day by day as the per sq. feet values are increasing from suburbs to south region.

1.2 Mumbai Real Estate Regions

a. **South Mumbai:** South Mumbai is considered as the most luxurious residential destination. This part of the city has most prominent localities which include Colaba, Cuffe Parade, Marine Drive, Malabar hill, Pedder Road, Tardeo, Mahalaxmi, Lower Parel, Prabhadevi, Worli and Matunga. As per ready reckoner rate 2 issued by Department of Registration and stamps for year 2020-21, the per sq. feet rate in this region is starting from 29,000 Rs. / Sq. Feet to approximately 80,000Rs/ Sq. Feet. However as per the leading property portals, the rate per Sq. Feet goes beyond 1,50,000 Rs. / Sq. Feet as per the mutual transactions between buyers and sellers.

b. **South Central:** This location includes sub localities such as Byculla, Parel, Sewri, Wadala and Sion. The area was originally lined up with textile mills hence neighbouring middle class neighbourhood working in the mills, government establishments, Mumbai port and Railways. This location is connected to different business districts such as Worli, Dadar, Lower parel, Fort. The property rates in this location are ranging from 12,000 Rs. /Sq. Feet To 49,000 Rs. /Sq. Feet as per reckoner rate 2 issued by Department of Registration and stamps for year 2020-21. However, the apartment cost in this region are sold at approximately 1Cr to 4 Cr.

c. **Central Mumbai:** The residential cluster of central Mumbai is considered as Island City which includes areas such as Kurla, Chembur, Ghatkopar, Powai, Kanjurmarg, Bhandup, Mulund. This region has connectivity to business districts such as Bandra – Kurla Complex, Ghatkopar, Powai. This area has been connected to suburban side via JVLR (Jogeshwari Vikhroli Link Road) and SCLR (Santacruz Chembur Link Road). The property rates in this location are ranging from 12,000 Rs. /Sq. Feet To 25,000 Rs. /Sq. Feet as per reckoner rate 2 issued by Department of Registration and stamps for year 2020-21. However, the apartment cost in this region are sold at approximately 0.80 Cr to 4 Cr.

d. **Western Suburbs:** This is west coast of the city extending B-2-B i.e. Bandra to Borivali which includes Bandra, Santacruz, Andheri, Juhu, Goregaon, Malad, Kandivali, Borivali. The sea shore side residential market attracts a huge potential of 1,00,000 Rs/ Sq. Feet and the other regions attracts from 10,000 to 25,000 Rs. Sq. Feet. People staying in this locality are attached to its neighbourhood and prefers to stay in this region or connected regions with upcoming projects with better enhanced life.

1.3 Key influential parameters of Home Buyers in Mumbai

Homebuyers in Mumbai are influential about different socio-economic factors and the key decisions are based on most of these factors. Preferences are set based on the living lifestyle of individuals. Few of the key parameters are listed as per region though there are many.

(A) Infrastructure Key Points

1. Renowned Address of locality

2. Surrounding Neighbourhood

3. Proximity to Business District / Clusters

4. Social Infrastructure

5. Night Life

6. Proximity to Hotel/Mall

7. Connectivity

8. Metro Connectivity

9. Proximity to Sea Shore

10. Quality of Life

11. Presence of Commercial Development

12. Proximity to Airport

13. Complex Amenities

(B) Individual Apartment Key Points

1. Arabian Sea View

2. Larger Balcony Decks

3. Living on Higher Altitudes

4. Iconic Project and Brand Name

5. Spacious Houses / compact house

6. Price Factors

7. Apartment Specification and Amenities

8. Vastu

9. Ready Possession

10. Building Facilities

11. Fire and Life Safety

12. Vertical Transportation

13. Club Houses

1.4 Home Buyers Behaviours in Mumbai Region for location preferences

a. **South Mumbai:** The USP of this locality are the extravagant view of Arabian sea from three sides and hence it is most preferred housing destinations of the top business tycoon of India. Few of the higher altitude's locations such as Malabar hill and Cumballa hill are known for its pleasant atmosphere and enthusiastic neighbourhood. Due to its connectivity to business districts Nariman Point, Churchgate, Fort, Worli and Lower Parel. This is most luxurious property market in Mumbai and has different attributes of consumer buying behaviour. This location is preferred due to its prestigious address because of the neighbourhood. The demand of houses in this region are by Ultra HNI individuals and business personalities. Hence the consumers choice is spacious apartments

b. **South Central:** This location is preferred by home buyers because of its connectivity to business districts. Accessibility to major shopping markets such as Dadar and Byculla is very important factor in consideration. The upcoming development in Parel and Sewri are being preferred by most corporate employees. Sewri and Wadala regions are widely known as Flamingo's park and it is most preferred by bird lovers.

c. **Central Mumbai:** This location is being preferred by most upper middle-class buyers and HNI's. Ghatkopar and Mulund is being preferred by business community and Guajarati community due to its social and food culture. Few redevelopment projects in chembur and Kurla region are rising due to

Infrastructural connectivity. Powai and Kanjurmarg are being preferred due to its connectivity to Powai Business District

d. **Western Suburbs:** Western suburbs have many different regions and this sub regions have their different influential parameters. The costal locations such as Bandra Pali Hill, Juhu, Versova are most prestigious since it has view of Arabian sea and most glamourous locations due to its preference by many Bollywood celebrities. The other locations such as Andheri, Goregaon and Malad are being preferred by middle class families and small screen connected people as there are more art, music studios located in this region.

II. OBJECTIVE

Main objective for this study is

a. To study the recent trends and pattern of home buyers in Mumbai

b. To study the various key influential parameters of home buyers in Mumbai

III. LITERATURE REVIEW

2.1 Consumer Behaviour and Home Buyers behavior: Consumer behaviour is a complex area, but marketers do need to try to find out as much as they can about who their customers are in order to identify their needs, how they behave, what influences them to make a decision to buy and what processes they follow when selecting a product/service/channel. This information is required so that marketers can target their marketing activities as precisely and cost effectively as possible. There are many influences on purchasing behaviour, including social (culture, sub-culture, social class, reference groups, and family), technological, political, economic, and personal factors (motivation, personality, self-image, perception, learning, beliefs and attitudes). (Stephen& Grant, 2005) 3. 4Kotler and Amstrong (2005), Mowen (1995) and Engel et al. (2005) suggest that there is a generic decision- making process. Rossi (1980), Law and Warnes (1982) and Livette (2006) have used the same model of decision-making process for evaluating housing options. The buying behaviour is influenced by both internal and external factors. Internal factors such as: motivation, perception, consumer resources, knowledge, attitudes, personality, values and lifestyle exercise significant effect. Cultural background, social class, personal influence, reference group and situation also influence the decision.

2.2 Mumbai Home Buyers Regional Influential parameters: (A)   Apartments with Sea View and For Ultra HNI (Colaba, South Mumbai, Juhu, Bandra, Andheri) - (Properties ranging from +10 Cr to +100 Cr)

India has 5,986 ultra-high net worth individual (UHNWI), each with over US$ 30 million (around Rs 215 crore) and it is globally ranked 12th on the list of countries with most such people. Approximately Around 40

% of Ultra HNI are based in Mumbai and nearly ~70- 80 % of them prefers to stay in South Mumbai. This region is being widely referred as Luxury Market or SoBo Properties (South Bombay). The buyers see their

homes as a calling card and want the homes to reflect their financial and social status. Till recent years, luxury was perceived to be the pin code or prime location but, in the last few years' luxury has seen a transition and advent of high-end technologies, international brand associations and boutique or customised homes. Mumbai is home to multinationals and HNI's who are willing to pay big bucks for a spacious apartment that comes with intelligent technology, landscaped terraced gardens and private lounges. Buyers in this segment are eying on advanced macro and micro factors before making final decisions.

1. **Bareshell Apartments:** The buyers prefer to acquire the properties with bare-shell structures. Any property right after the completion of the construction of the building with basic amenities installed and functional is called a bare shell property. These types of properties include basic cement plastered walls and tiled floors. Kitchen, pantry, and toilets may also be included in some units. Bare shell properties are also described as 'unfurnished' units. a "ready-to-fit-in property". This means the walls would be plastered, the bathrooms and the kitchen would be working, too. Basically, the developer has got the basic structure ready, and water outlet and electricity in-let facilities are in place. Bare shell properties acquisitions are easier for the buyers as customization can be done to cater to family's interior and aesthetic requirements. Interiors selections, imported marbles, imported bathroom ware and kitchen wares, imported furnishing, automation control is few of the items which buyers wants to have as per his personal and family wish list.

2. **Habitable spaces and Apartment Layout Review:** Buyers are looking for more spacious homes which will have a carpet area of 3500 Sq. feet to 10,000 Sq. Feet. Also, buyers hire their own interior and architect designers to review the efficiency of the layout of the apartment. The review covers following aspects; however, it is not limited to this and buyers may wish to go beyond this as well

a) Viewing Deck and Balcony areas in apartment to have full scenic view of Arabian sea.

b) Master Bedroom and other bedroom sizes and arrangement of dining room

c) Kitchen and utility layout planning

d) Maids and Servant's room entry to apartment and outside

e) Family room or Study Room Arrangements

f) Toilet Layout with 3 fixture and 4 fixture arrangements

g) Building Elevations which includes façade design of the entire tower and aesthetics of the building.

h) Space planning for Utilities such as AC Unit provisions

i) Entrance Lobby layout and the other amenities layouts in building such as Gymnasium, children play area, restaurants and reading halls, yoga centres

j) Size of swimming pool, Kids pool, jacuzzi, sauna centres, water gymnasiums, water play plaza

k) Club house amenities and multifunction hall layouts

3. Brand Names associated with the project: Luxury home buyers are also looking for brand name associated with the project from consultancy to contractors for execution.

1. Architects associated: For example , one of the properties in south Mumbai has appointed Architect Skidmore, Owings & Merrill for their project for concept design for brand association and to add value to the property to achieve efficient and enhanced liveable space. The association with the premier institutes also offers world class façade designs. The brand association of world class renowned architects will also help developer to build trust and customer confidence during the invitation sell and marketing.

2. Landscape Designs: Landscape design and association of international Architects also plays a vital and important role for project as the landscaping is the key to social status and social infrastructure

3. Contractors, Vendors Association: Renowned contractors who can build quality construction and execution. Branded specifications suppliers such as Hitachi or Schindler make lifts for the building.

(B) Apartments for HNI and Higher Income Group - (Properties ranging from +2 Cr to +10 Cr) Buyers in this segment spreading over from south central to Borivali depending on the location and project offerings. The buyers in this segment are Looking for factors like Ultra HNI but few of them are limited to and may have additional influential factors.

1. Warm shell Apartments: While these also do not quite fit the parameter to be called ready-to-move-in units, warn-shell properties are certainly the upgraded version of bare-shell ones. In this case, the developer offers the consumer certain other facilities, apart from proving the basic structure, making them habitable. Apart from basic flooring and paints, etc., however, no other interior work or furnishing would be in place in a warm-shell unit, also referred to as a vanilla-shell property.

2. Habitable spaces and Apartment Layout Review: Buyers in this segment are looking for spacious flat layout and plans to carry out customization of apartment as per their wish list and preferential choices. However certain prefers to install move-in furniture instead of customization as to get rental yield.

3. Investment and ROI (Return on Investment): Few Buyers in this segment are looking for investment in Residential properties in this region and segment as the investment will fetch good returns due to upcoming connectivity of Metro, Coastal Roads connectivity from suburbs to South. Consumer in this segment are mainly investors. (C) Apartments for Upper Middle class and Small Entrepreneurs Group - (Properties ranging from +0.8 Cr to +2 Cr) Buyers in this segment spreading over from Central Mumbai and western suburbs depending on the location and project offerings. The buyers in this segment are Looking for factors are not like Ultra HNI and HNI but are possess completely different view for residential investment. This property are not located in prime areas but conveniently connected with the neighbouring prime areas.

1. Finished Apartments: Home Buyers in this segment are looking for finishing apartment and mainly aimed for moving in with family. Family who wish to upgrade as per living standard but would like to live in the same geographical areas due to its attachment and family sentiments.

2. **Compact Homes and Value for Money Approach:** Consumers in this segment and regions are looking mainly for value for money approach and give weightage to apartment specifications rather than spacious living and bedrooms. Hence compact homes are more widely being sold to the consumers. Value for Money approach defines more of 2 BHK or 1 BHK flat with correct dimensions to suit the need of the furniture and habitable spaces. Buyers also look for developers offering such as Tiles, Toilet and Kitchen DADO, Bathroom Fittings, and gated community features such as security, club house etc.

3. **Finance options:** Buyers may be of first or second investment in homes hence mostly looking for finance options. First time buyers are mostly looking for living spaces, however the second time buyers are looking for investment which will help them to fetch returns as well as compliant about the income tax returns.

4. **Co- Living Spaces Solutions:** More and more people migrate to the city for employment are looking for rental properties. As well as new co-living spaces are new concept in country which is emerging in Mumbai because of its costly rental properties. Co-living is a modern form of communal living in which residents get a private bedroom in a furnished home with shared common areas. Co-living is popular in major cities as a means of affordable living for students, workers, digital nomads, or individuals relocating. Because of Bollywood and small screen industry, many aspirants and associated peoples are looking for co-living spaces in western suburbs and central Mumbai. Hence second time buyers would like to turn the apartment into co-living spaces and earn maximum rental to trade between monthly EMI's against the borrowings.

IV. RESEARCH METHODOLOGY

The report is an empirical research on consumer buying behaviour of home buyers in Mumbai's different regions.

1. To know the perception/ attitudes of home buyers towards purchase decisions.

2. To identify key factors influencing home buying in different regions.

3. To understand impact of social infrastructure and different living assessments and key factors influencing it.

This research has followed exploratory research design. Exploratory research is a form of research conducted for a problem that has not been clearly defined. This research relies on secondary research such as reviewing available literature, data, qualitative approaches focus groups interview and online survey.

In this research convenient sampling was used because the population is bigger and hence the research is limited to few sample representations. The study was conducted on 20 home buyers. Questionnaire is prepared with 10 sets of questions based on the different selection parameters for home buying and Google Form is used carry out survey amongst 20 home buyers.

Limitations:

The limitation of convenience sampling is its lack of representativeness. However, this study was exploratory and limited to the home buyers in Mumbai region, finding can only be used as a guide for further research into this area. The purpose of the next stage in the research is to extend it to all representation of home buyers in this area. The study has been done on few parameters which are common amongst the home buyers however the purchase decision has deciding factor of individual and family preferences.

Scope for Further Research:

Based on the findings, quantitative and qualitative research should be undertaken to allow the generalisation of results in relation to the population of home buyers, thus enabling more definitive conclusions to be drawn.

V. DATA ANALYSIS AND INTERPRETATION

Primary data was collected through questionnaires.

Secondary data was collected through internet, articles, and journals.

1. Budget of Home Buyer
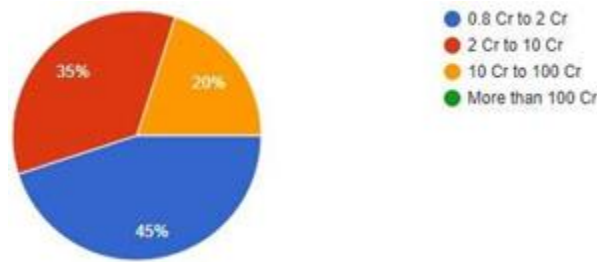
Key Findings: 20 % of Home Buyers are looking for 10 Cr to 100 Cr | 35% of Home Buyers are looking for 2 Cr to 10 Cr | 45% of Home Buyers are looking for 0.8 Cr to 2 Cr

2. Occupation of the Home – Buyers
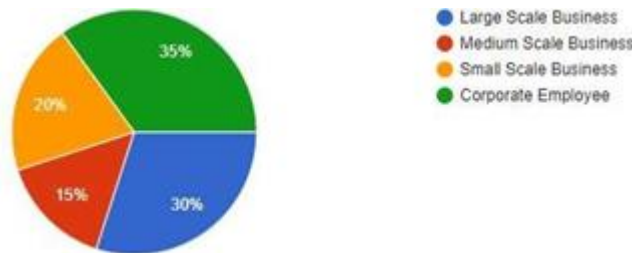
Key Findings: 35 % of Home Buyers are Corporate Employee | 30% are having Large Scale Business | 20% Small and 15 % are having medium scale business

3. Type of Apartment opting for
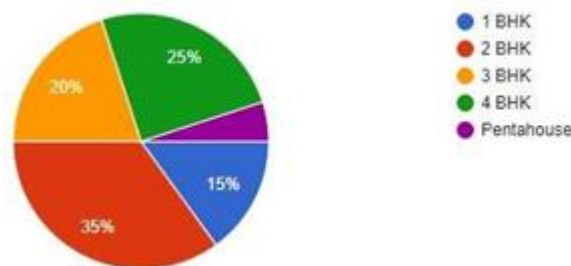
Key Findings: 35 % - 2 BHK | 25% - 4 BHK| 20% - 3 BHK | 15% - 1 BHK| 5% - Penthouse

4. Region Preferences
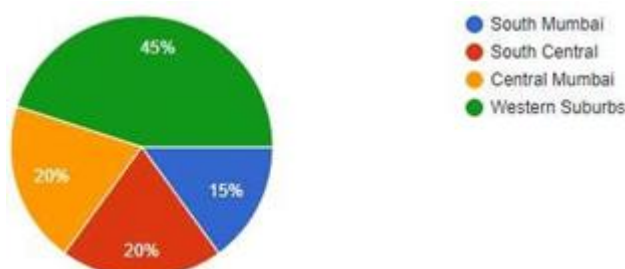
Key Findings: 45 % - Western Suburbs | 20% - Central Mumbai | 20% - South Central | 15% - South Mumbai

5. Carpet Area

Key Findings: 5% - More than 4000 Sq. feet |25 % - 1500 to 4000 Sq. Feet | 35% - 700 to 1500 Sq. feet | 20% - 400 to 700 Sq. Feet | 15% - Less than 400 Sq. feet

6.   Reason for purchasing the flat?
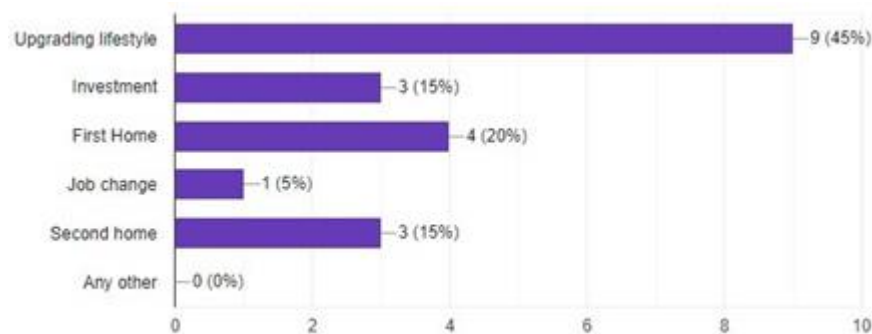
Key Findings: 45% - wants to upgrade Lifestyle |15 % - are looking for Investment | 20% - are looking for personal Living | 5% - are because of relocation | 15% - are looking for Job Change

7.   Infrastructure Points – Influential Factors

Average Value of the Selections in Survey

Infrastructure	Average Value of the Selections in Survey		
	10 Cr to 100 Cr	2 Cr to 10 Cr	0.8 Cr to 2 Cr
Renowned Address of locality	1	2.14	6.33
Proximity to Business District / Clusters	2.25	3.43	2.67
Night Life	3.5	2.14	5.33
Metro Connectivity	2.25	3.43	2.33
Proximity to Sea Shore	1	2.00	6.56
Quality of Life	1	2.14	4.56
Presence of Commercial Development	6.75	3.43	2.78
Proximity to Airport	6	4.57	4.00
Complex Amenities	1.5	2.29	2.89

(Linkert Scale: 1 means most important, 2 is next important and 9 being Very Least Important). For Average value review, please consider it to the nearest round off value.

Key Findings: For Example: For home buyer whose budget is 10 Cr to 100 Cr, the proximity to seashore and quality of life is most important where in not important for buyer whose budget is 0.8 to 2 Cr.

8.   Individual Apartment Key Points– Influential Factors

Individual Apartment Key Points	Average Value of the Selections in Survey		
	10 Cr to 100 Cr	2 Cr to 10 Cr	0.8 Cr to 2 Cr
Arabian Sea View	1	2.29	7.44
Larger Balcony Decks	1	2.29	7.89
Living on Higher Altitudes	2	2.14	6.00
Iconic Project and Brand Name	1.25	2.00	6.56
Spacious Houses	1	1.86	6.78
Price Factors	1	1.43	1.22
Compact house	8.5	7.43	2.11
Apartment Specification and Amenities	1	2.14	1.56
Vastu	1.25	2.57	6.22
Ready Possession	4.25	4.14	2.33
Building Facilities	1	2.86	2.67
Fire and Life Safety	1	1.43	1.67
Vertical Transportation	1	1.57	1.67
Club Houses	1	2.14	2.56

(Linkert Scale: 1 means most important, 2 is next important and 9 being Very Least Important). For Average value review , please consider it to the nearest round off value.

Key Findings: For Example: For home buyer whose budget is 10 Cr to 100 Cr, Larger Balcony and Deck area is most important where in not important for buyer whose budget is 0.8 to 2 Cr.

9. Add- ON Preferences– Influential Factors

Add- ON Preferences	Average Value of the Selections in Survey		
	10 Cr to 100 Cr	2 Cr to 10 Cr	0.8 Cr to 2 Cr
Bareshell Apartments	1.25	2.43	7.89
Habitable spaces and Apartment LayoutReview	1	1.86	5.89
Brand Names associated with the project	1	2.00	6.56
Warm shell Apartments	6.25	5.86	6.44
Spacious Houses	1.25	2.00	6.67
Investment and ROI (Return on Investment)	3.5	3.29	1.78
Compact house	9	6.86	2.33
Finished Apartments	6.25	6.00	1.67
Finance options	7	5.14	2.00
Co- Living Spaces Solutions	8.75	7.14	4.44

(Linkert Scale: 1 means most important, 2 is next important and 9 being Very Least Important). For Average value review, please consider it to the nearest round off value.

Key Findings: For Example: For home buyer whose budget is 10 Cr to 100 Cr, Bareshell Apartments are most important due to its allowance of customization as per interior Wishlist where in not important for buyer whose budget is 0.8 to 2 Cr since the buyer posses finished apartment for ready to move in furniture.

V. CONCLUSION

The dynamics and changing aspects of city, residents and home buyers have their own sets of preferences while selecting residential properties. Concentrations of different business communities in different regions are driving the key decisions in selection of the houses / apartments. South Mumbai is predominantly the hub of luxury homes where in the price is factor for calling card and reflection of financial and social status of the individual. The business and celebrities Ultra HNI's are also looking for western suburbs coastal belt of the city for extension of luxury home regions as to have undisturbed Arabian sea view and cool breezes. This category of homes buyers is starving for posh and imported interiors to have more urban living and more

spacious lifestyle. The south central is upcoming market for home buyers and it is to upgrade the lifestyle of the mid and small scale businessmen's who wish to strike a balance between the luxury home and the connected to major business districts. This cluster is more towards bareshell apartments and customization as well as the gated community lifestyles. This home is between spacious and value to homes category where in average demand of carpet area is 700 Sq. Feet to 1500 Sq. Feet. Western Suburbs and Central Mumbai regions has a pocket area and it find its strike between corporate employees and business communities. The home seekers demand in this regions are for 1 BHK to 2 BHK with carpet area of 400 Sq. Feet to 1500 Sq. Feet , however few pockets where the business community neighbourhood is living demands for luxury homes with 3 to 4 BHK apartments with carpet area of 1500 to 4000 Sq. feet. Due to increase demand of co-living spaces and solution, few businesses are looking to invest here to obtain more and more investment returns as well.

Research Indicates that there are multiple attributes and aspects of home buying purchase decisions in four regions of Mumbai and it is completely and exclusively depending on individual preferences and too few extents to infrastructural development around the homes.

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A STUDY ON THE INFLUENCE OF SERVICE QUALITY ON THE PROFITABILITY MEASURED AS ECONOMIC RETURN- RETURN ON INVESTMENT (ROI) OF INDIAN AIRLINE COMPANIES

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ABSTRACT
The airport business is complex in nature. It requires capex at periodic intervals for expansion of existing infrastructure and has a high level of fixed costs with variable costs being rather low. The airport business is complex in nature. It requires capex at periodic intervals for expansion of existing infrastructure and has a high level of fixed costs with variable costs being rather low this sector has been the only one where the public-private partnership (PPP) model has fared well. Moreover, the airport industry has benefited stakeholders across the board – lenders, private equity investors, the government and developers. In all, the airport sector has yielded fairly good returns to investors and sponsors alike. The recent aggressive bidding for six airports – Ahmedabad, Jaipur, Lucknow, Guwahati, Thiruvananthapuram and Mangaluru – is also reflective of the bullish sentiment among stakeholders. Despite the crunched timelines due to the elections, there were 10 bidders, including three international bidders, for these airports. Emboldened by the positive bidding response, the government is looking at divesting stakes in another 20 airports in Tier II and Tier III cities. Current study attempts to investigate the influence of service quality on the profitability measured as Economic return (ROI, or return on investment) of Indian Airline companies.

Keywords: Airline companies.ROI, ASQ, Airport, profitability, economic return, passengers

INTRODUCTION
Airport Service Quality (ASQ) is the world renowned and globally established global benchmarking programme measuring passengers' satisfaction whilst they are travelling through an airport conducted by the Airports Council International (ACI). It is an index that is domestically and internationally accepted and acknowledged by the airline industry.

ACI, a global non-profit organization of Airport Operators, is an independent agency which carries out international bench marking of airport through its participative program known as Airport Service Quality (ASQ) Survey which covers 34 key service areas which includes 8 major categories such as access, check-in, security, airport facilities, food and beverage, retail and more. ACI-ASQ survey is carried out at around 356 airports across North America, Latin America and Caribbean, Africa, Europe, Middle East and Asia Pacific. The ASQ survey results are also monitored by AERA, NITI Aayog and MoCA.

REVIEW OF LITERATURE
Tirimba O. Manani, Richard B. Nyaoga, Robert M. Bosire, Thomas O. Ombati, Tom O. Kongere (2013) in this study an attempt was made to know the "Service Quality and Customer Satisfaction at Kenya Airways Ltd". This study explored the key determinants of customer satisfaction for passengers at Kenya Airways. The study used a descriptive survey method. The sample of this study consisted of one hundred (100) passengers. The data collected was analyzed using mean, frequency, percentage and Factor Analysis. The findings indicate that among the key determinants of customer satisfaction related to luggage security, safety and proper communication with customers updating them on status of their flights, provision of food variety and ability of the airline to communicate to passengers about the weather on arrival destinations. Compassion by airline crew toward any disabled persons onboard was particularly noted to increase significantly the level of customer satisfaction. Archana.R, M.V.Subha (2012) have analysed "A Study on Service Quality and Passengers' Satisfaction on Indian Airlines". It also examines which dimensions have a positive influence on service quality and which dimensions have the most and least important impact on service quality in international air travel, as perceived by airline passengers. The study is based on the analysis of a sample of 270 respondents. The data was analyzed from passengers of three classes, economy, business and premium. The results suggest that there are different factors of in-flight service quality that are important according to the customer class. Service quality in international air travel was explored and three dimensions were identified. These dimensions include in-flight service, in-flight digital service and backoffice operations. The findings reveal that these three dimensions are positively related to perceive service quality in international air travel. Of these dimensions,

cuisines provided, seat comfort, safety are the most important dimension in in-flight service quality. Personal entertainment is the most important dimension as perceived by airline passengers in In-flight digital service quality. Online ticket booking is another dimension in back-office operations. In addition, the findings indicate that passengers' satisfaction on different airline companies depends on basis of the services delivered.

METHODOLOGY

Quarterly data of Indian Airports from published sources for the last 10 years (2010-2020) was analysed using statistical tools.

Objective of the study – to find the factors that affect the profitability of the airports in India, as well as to investigate the parameters that maximize their revenue and facilitate airports' management.

NEED FOR THE STUDY

The quickest and extensive growth in demand for airlines services this have a positive influence on customers' satisfaction which has to be addressed seriously.

INDICATORS

RPM=Revenue Passenger Kilometers/Miles is a demand indicator that measures the number of airline seats sold. Therefore, the number of revenue-paying passengers onboard has to be multiplied by the distance traveled being the relationship between revenue per miles (RPM)

Control Variables

Passenger Load Factor (LF), and as well logarithmic number of total employees (LOGempl) of the airlines this will be taken as a proxy for the size of the company. The control variables allow us to consider the effect of other variables which are not related to the quality may also affect the profitability of the industry.

The hypotheses are as follows:

H1: Quality, measured through the AQR affects significantly the Indian airlines' profitability;

HYPOTHESIS ; the better the services provided by the airlines the higher will be the revenue provided by the through the passenger revenue (RPM)

RESULTS AND DISCUSSION

Table 1

Variable	Mean	Std. Dev.	Min	Max
Revenue	12099.81	1743.124	9284.98	14132.96
ROI	127.1283	35.02571	88.04	177.65
Number of Passenger	11.68719	.2889273	11.27587	11.97536
ASQ	4.408333	.1919809	4.21	4.64
Number of Employers	9.767145	.0039669	9.762155	9.772011

Table 2 Correlation Matrix

	PAX	ASQ	EMPLOY	ROI
PAX	1			
ASQ	-0.1828	1		
EMPLOY	0.0997	0.3095	1	
ROI	0.9206	-0.4988	-0.0586	1

There is high correlation between logarithmic number of total passengers and returns on investments ROI (0.9206). There is no correlation between the control factors EMPLOY and PAX.

$$ROI_{it} = \beta_1 ASQ_{it} 1 + \beta_2 PAX_{it} + \beta_3 EMPLOY_{it} + \varepsilon_{it}$$

<div align="center">

Table 3 Regression Analysis

</div>

Structural	Coef.	Std.Err	z	P>|z|	95% conf inter	
ASQ	<-					
PAK	-0.14342	0.252537	-0.57	0.57	-0.63839	0.351543
EMPLOY	16.02024	18.39327	0.87	0.384	-20.0299	52.07039
CONSTANT	-150.388	179.3796	-0.84	0.402	-501.965	201.19
ROI	<-					
ASQ	-59.682	15.64011	-3.82	0.00	-90.336	-29.0279
PAK	104.8769	9.93141	10.56	0.00	85.41172	124.3421
EMPLOY	-384.994	747.8724	-0.51	0.607	-1850.8	1080.809
CONSTANT	2924.8	7263.455	0.4	0.687	-11311.3	17160.91
var(e.ASQ)|	0.026355	0.015216	0.0085	0.081715		
var(e.ROI)|	38.68046	22.33217	12.47528	119.9314		

The impact on the customer service quality ASQ to that of number of passenger will have negative impact and to that of number of employer will show a positive effect. The results depicts the same impact but has insignificant result this may be due to small sample.

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Figure 1

</div>
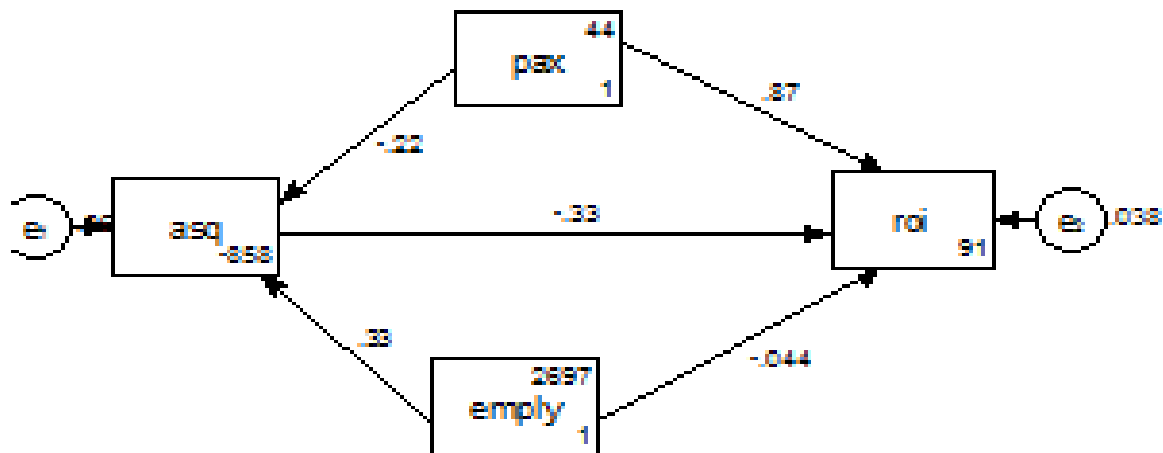
The main findings is to find the influence of service quality on the profitability measured as Economic return (ROI, or return on investment) of indian airline companies. The standard estimation model shows a significant effect for quality on airlines profitability (returns on investment) measured through the ASQ index and the hypothesis of positive impact is not supported. Additionally, the effects of the control variable PAX are significant with a positive sign, demonstrating the influence of the PAX on the airlines' ROI, while a non-significant effect is shown for the EMPLOYvariable, measured through the variable LOGempl.

CONCLUSION

In conclusion,the standard estimation model, fit on the datat set shows a significant effect for quality on airlines profitability (returns on investment) measured through the ASQ index and the hypothesis of positive impact is not supported. Additionally, the effects of the control variable PAX are significant with a positive sign, demonstrating the influence of the PAX on the airlines' ROI.

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IMPROVING THE PUBLIC TRANSPORTATION NETWORK FOR A SMART CITY

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ABSTRACT:

Congestion reduces transport infrastructure efficiency, increases journey times, air pollution, fuel consumption. Building new transportation infrastructure is expensive, can be detrimental to the environment and cannot practically catch up with the increasing transportation demand. The great opportunity is to turn awareness about transport networks into genuinely intelligent transport systems for sustainable growth. Intelligent Transportation Systems (ITS) provides a large and increasing suite of technologies and technical applications to enhance transportation system safety and efficiency. ITS aims to improve the transport system to make it more efficient and secure.

In this paper, an attempt to describe the key components and technologies of ITS, evaluate case studies of APTS (one of the key categories of ITS) as well as bring out an APTS proposal for a key urban metro in India is done.

Keywords: Intelligent Transportation System (ITS), Advanced Public Transport System (APTS), Sustainable Development, Smart City.

1. INTRODUCTION

Traffic congestion and its associated problems is a global phenomena. The congestion decreases transport infrastructure efficiency, increases travel time, air pollution, and fuel consumption.

Many think that improving the transportation system of a country simply means building new roads or repairing the aging infrastructure. But transportation's future lies not only in concrete and steel, but also in technology implementation, specifically a network of sensors, microchips, and communication devices that gather and disseminate information about the transportation system's functioning. The ITS tools are focused on three core features- Information, Communication, and Integration- which help operators and travelers make better and more organized decisions. ITS interfaces with other roles (such as police, collectors of tolls, public transport operators, operators of traffic signals, i.e. local authorities). ITS serves a wide range of applications ranging from automated traffic control systems to electronic ticket payment systems, ramp meters and collision warning systems. At the heart of ITS is the ITS Centre. It operates 24 hours a day, ensuring the smooth flow of traffic as well as respond in a timely fashion to emergencies. In the world's leading nations, ITS significantly improves the efficiency of the transport system, including decreased congestion and improved safety and convenience for travelers [1].

This paper introduces the technologies and applications of Intelligent Transportation System (ITS) and elaborates on one of the major ITS categories - Advanced Public Transportation System (APTS). Understanding their benefits and challenges will help us to evaluate and implement mega-scale public transportation infrastructure projects and to propose meaningful and suitable APTS solutions to our traffic problems.

2. OBJECTIVES

The broad objectives of this paper are:

1. Understand the technologies of Intelligent Transportation Systems (wireless communication, computational technologies, sensing technologies, video detection, etc.)

2. Study the various ITS applications like vehicle notification systems, warning systems, GPS etc

3. Explore Advanced Public Transportation System with the help of case studies.

4. Come up with an APTS proposal for an urban metro.

3. OVERVIEW OF ITS AND APTS

3.1 Key Categories of ITS: Intelligent Transport Systems (ITS) comprise a broad and growing suite of technologies and applications. [1]

Table 1. ITS Categories/Applications

ITS Category	Specific ITS applications
Advanced Traveler Information Systems (ATIS)	➢ Real-time Traffic Information Provision ➢ Route Guidance/Navigation Systems ➢ Parking information ➢ Roadside Weather Information Systems
Advanced Transportation Management Systems (ATMS)	➢ Traffic Operations Centers (TOCs) ➢ Adaptive Traffic Signal Control ➢ Dynamic Message Signs (or "Variable" Message Signs) ➢ Ramp Metering
ITS-Enabled Transportation Pricing Systems	➢ Electronic Toll Collection (ETC) ➢ Congestion Pricing/Electronic Road Pricing (ERP) ➢ Fee-Based Express (HOT) Lanes ➢ Vehicle-Miles Traveled Usage Fees ➢ Variable Parking Fees
Advanced Public Transportation Systems (APTS)	➢ Real time Public Transit System Status Data (e.g. Bus, Subway, Rail) ➢ Automatic positioning of the vehicles (AVL) ➢ Electronic Fare Payments (Smart Cards, for example)
Vehicle- to- Infrastructure Integration (VII) and Vehicle-to-Vehicle Integration (V2V)	➢ Cooperative framework for preventing collisions (CICAS) ➢ Smart Adaptation to Velocity (ISA)

3.2 Key Benefits

• Increase in Safety

• Improve Operational Performance, particularly by reducing congestion

• Improving Mobility and Comfort

• Offers environmental benefits

• Strengthening productivity and increasing economic and employment growth

Figure 1. Examples of technologies for real-time traffic information systems

3.3 ITS Technologies and Applications

Transit Management

• Automatic Vehicle Location (AVL) technology and computer-aided dispatch systems help to keep buses on track.

• Integrate the bus transport system with increase in green light times

Traveler Information Services

• Services allow passengers to access pre-trip and route details.

• Most contact networks, such as twitter, TV, kiosks, pagers.

Video vehicle detection

• Measuring the traffic flow and automated identification of accidents using video cameras.

Electronic Fare Payment Technologies
- A common electronic means of payment for the various modes of transport.

Emergency Management Services
- Continuously monitor roadway conditions
- Alert drivers using complex message signs

3.4 Advanced Public Transportation System (APTS)

APTS is one of the most important components of the public transport system. It helps to make public transportation an attractive option for travelers by improving their visibility of arrival and departure. Provides passengers with public transport services that are safer, more comfortable and more convenient, and that will encourage more public transportation to relieve traffic jams with greater social and economic benefits [5]

Need for APTS:

1. To enhance the mobility and achieve benefits for both the transit operator and the users
2. Helps to improve transit and ridesharing services
3. Planners use this information for positioning stops, planning routes and to evaluate accuracy of the system
4. To develop long-term plans in terms of capacity and system enhancement.

Applications include:
- Priority techniques in advanced control systems for buses, including targeted identification, bus advance zones, relocation of queues and congestion management
- Automatic Vehicle Location (AVL) systems for passenger information, priority bus and fleet management[12]
- Automatic camera enforcement systems for incidents which affect bus operations
- Automatic Ticketing system.

Table 2. APTS Applications/Technologies

TRANSIT APPLICATION	APTS TECHNOLOGIES
Fleet Management Systems	➤ Automatic Vehicle Location Systems ➤ Transit Operations Software ➤ Communications Systems ➤ Geographic Information Systems ➤ Automatic Passenger Counters ➤ Traffic Signal Priority Systems
Traveller Information Systems	➤ Pre-Trip Transit and Multimodal Traveller Information Systems ➤ In-Terminal/Wayside Transit Information Systems ➤ In-Vehicle Transit Information Systems
Electronic Payment Systems	➤ Smart Cards ➤ Fare Distribution Systems ➤ Clearinghouse
Transportation Demand Management	➤ Dynamic Ridesharing ➤ Automated Service Coordination ➤ Transportation Management Centres
The Transit Intelligent Vehicle Initiative	➤ Lane Change and Merge Collision Avoidance ➤ Forward Collision Avoidance

4. LITERATURE CASE STUDY - APTS IN SINGAPORE

4.1 Why Singapore was chosen: Public transportation in Singapore covers a variety of modes of transport including buses, trains and taxis. This is the consequence of the Singapore Government's great focus on encouraging the use of public transport in Singapore. According to the Population 2000 Singapore Census, about 52.4 per cent of Singaporeans (excluding foreigners) work in public transport. 41.5 per cent of school-going residents go to Transit Link, built by SBS. Transit, SMRT Trains and SMRT Buses help to

create an integrated multi-modal system with a single ticketing interface, an information channel and a physical network with no duplication of services. Gradually, air conditioned buses are phased out. Bus and MRT fares are paid using a contactless smartcard called the EZ-link card. All taxis are fitted with meters; all are air-conditioned; most taxis are 5-seater; about 90 percent of taxis have radio; call bookings are made through GPS or digital voice dispatch. Law requires that all passengers fasten their seat belts. These taxis run mostly on diesel fuel.

4.2 **Public transport infrastructure and challenges:** In 1967, the urban planners projected the need for an urban rail transport system. Following lengthy debates, the Parliament agreed that a bus-only network would not be adequate, as it would have to fight for road space in a land-scarce country. MRT construction began in 1983 (it was the largest public works project in Singapore at the time) at $5 billion. The network was built in stages, with priority being given to high demand areas. The MRT network was launched in 1988 and further extensions have taken place later with the introduction of 21 more stations, and are still in progress. The idea of rail transporting people to their homes led to the creation of LRT lines connecting with the MRT network. LRT went into operation in 1999.

4.3 Current Transport Scenario in Singapore:

* Transit Connection helps to develop an integrated multi-modal system without duplication of services with a fare payment mode, information portal and physical network.

* Bus and MRT fares are charged using a contactless smartcard called the EZ-link card [3].

* The station has General Ticketing Machines (GTMs), a Passenger Service Centre, LED screens and plasma displays, displaying train service information and updates [2].

* The ticketing system uses contactless EZ-Link and NETS FlashPay smart cards based on the Singapore Contactless ePurse Application Standard (CEPAS) system, based on the public transit system, Symphony for e-Payment (SeP).

* Additional Credit can be purchased from General Ticketing Machine as well as Add Value Machine.
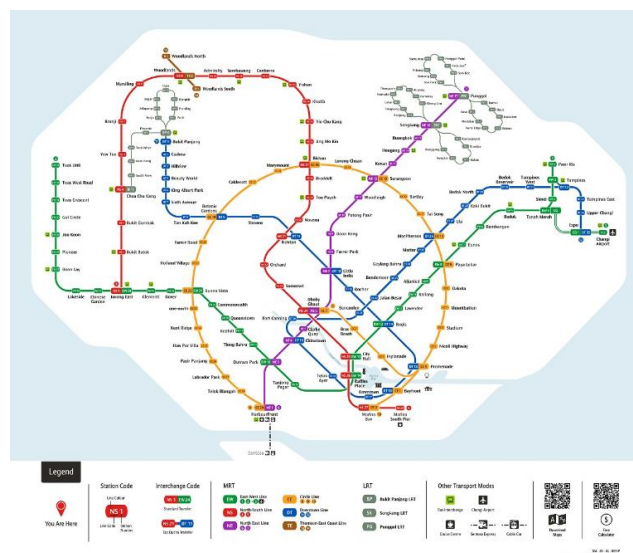
Singapore MRT Map – Jan 2020

Figure 2. MRT and LRT in Singapore

4.4 Fares and Ticketing

* Stations are split into paid and unpaid areas that allow rail operators to collect tariffs by restricting entry only via ticket gates, often referred to as access control gates.

* These gates, linked to a computer network, can read and update data, store electronic tickets and store information such as the initial stations and destinations and the duration of each journey.

* GTM's sell single-trip tickets or allow customers to purchase additional value for stored tickets.

* As Transit Link has integrated the ticket system, commuters must pay one fare only and pass through two ticket gates (once they enter, once they exit) for the entire journey, even when transferring between lines

operated by different companies.

• Passengers can choose to prolong a mid-term trip and pay the difference when they leave their destination

Figure 3. General Ticketing Machines (GTM) at Expo Station

5. BENEFITS OF APTS SYSTEMS

US Department of Transportation conducted an extensive research on 265 APTS system deployments done globally, and identified the key benefits these systems may bring in.

• 265 APTS system deployments were evaluated

• These include running, being introduced or expected to be implemented within a few years

• Table shows millions of dollars in benefits. Also indicates the expected annualized profits for the next 10 years.

• Gross benefits (over 10 years) of the research programs will range from $3.8 billion to as high as $7.4 billion.

• Approximately 44% of the overall estimated APTS benefits are from fleet management system implementations, 34% from electronic ticket payment system applications, 21% from traveler information system deployments.
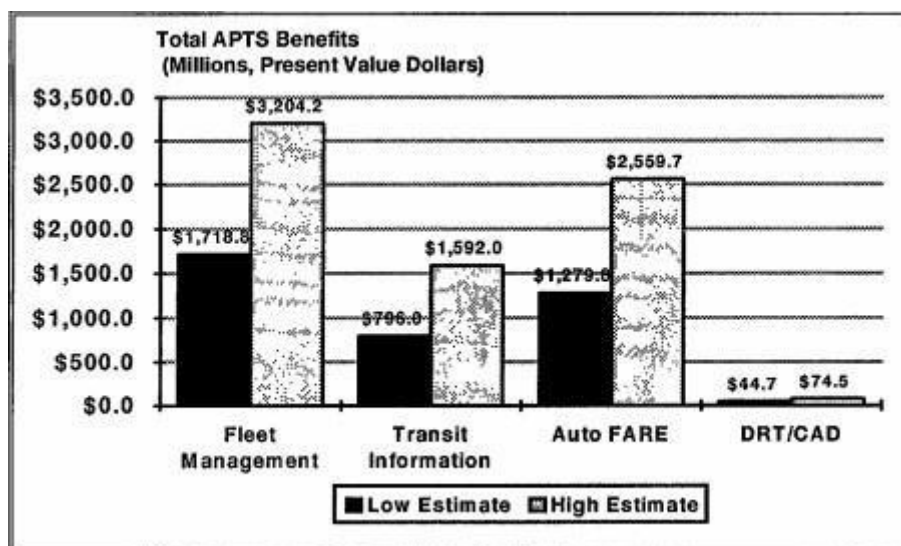
Table 3: Benefits estimated from APTS

Benefits

▸ Transit Management System benefits

• Improved safety and security of transit for drivers and users of transit

• Improved operating efficiency, reduced fleet requirements and non-revenue vehicle miles

• More standard and efficient transit service, promoting increased riding

- Enhanced route planning details and vehicle/driver scheduling systems

- Better response to interruptions in transit service

- Enhanced oversight of vehicle and driver operations, and functions of fleet dispatch

- Reduced cost of procurement of a transport fleet

- Reduced transit fleet operating costs

▸ Automated Traveler Information System (ATIS) benefits

- Increases transport ridership and sales

- Better bus quality and public visibility

- Greater comfort for customers

▸ Transportation Demand Management System benefits [10]

- Improved transit operating efficiency

- Better transit quality and better customer satisfaction

- Increased adherence to ADA transit requirements

- Reduced transit fleet operating costs

6. APTS FOR TRIVANDRUM – A PROPOSAL

Trivandrum district stretches 78kms along the shores of Arabian sea and mainly comprises of three regions, Highlands, midlands and lowlands. Nedumangad taluk in mid/highland, Chirayinkeezhu and Trivandrum taluk in mid/lowland, Neyyattinkara taluk stretches across all 3 regions.

The city has a highly mix land use. The central zone has a high intensity of different uses and recreational centers occupies the central city zone. The peripheral zones were predominantly residential in nature. Linkages is through a series of parallel roads and this got converted into a system of radial and circumferential roads towards the peripheral zones. Land Use changed overtime from residential to public/semi public and commercial land use.

The various factors that emphasize the growth prospects in Trivandrum city are:

1. Demographic Aspects

2. Land Use

3. Economy

4. Pilgrim Town

5. Medical Tourism

6. Academic Hub

7. Growth of Automobiles

6.1 Road Transportation Network

City has a partial ring and radial type of road network. They include

1. Major radial roads.

2. Major arterial roads.

3. Sub Arterial roads

4. Local through roads

5. Access roads.

6.2 Population Projection for Trivandrum Urban Agglomeration (TUA): The population projection for TUA as well as the municipal corporation was found out till the year 2031. It was observed that there is a considerable increase in the population.

Table 4: Population details of TUA

Sl. No.	Name	Year					
		1981	1991	2001	2011	2021	2031
1	Thiruvananthapuram MC	633481	704375	744983	770448	795913	850130
2	Kazhakkuttam	24895	29469	34131	38837	43543	48770
3	Kudappanakunnu	27118	33534	38175	41929	45682	49340
4	Sreekariyam	34551	42050	49145	56038	62931	70480
5	Vattiyoorkavu	24249	33653	41890	49544	57197	65780
6	Vizhinjam	37298	42402	47170	51770	56370	60880
	Total	781592	885483	955494	1008566	1061636	1145380
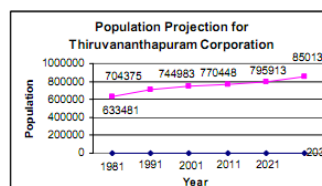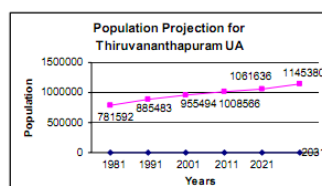
Source: Census Report

6.3 Transport Development Plan for Trivandrum Urban Agglomeration (TUA): The report was published in the year 2011 by NATPAC and this forms the basis for future Development Plans. The plan was prepared considering the existing traffic scenario as well as evaluating future traffic. All the available modes of travel will be covered. Focuses on the area comprising of Trivandrum Corporation and five neighboring panchayats viz. Sreekaryam, Kazhakuttom, Vattiyoorkavu, Kudappanakunnu, Vizhinjam.
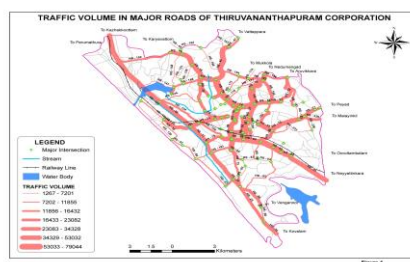
Figure 4. Traffic volume in major roads of Trivandrum

(Source-Comprehensive traffic studies, NATPAC 2011)

6.4 Prime Issues and Problems of Study Area (TUA): The prime issue was inadequate road width and the road geometry leading to traffic bottlenecks and congestion. The design of intersections was not proper. Absence of adequate parking facilities will lead to on-street parking which again adds to the problem. Another issue is the absence of adequate by-pass or ring roads and pedestrian facilities. Even the transport terminals are located at vulnerable points on the major roads. The hawker zones are not delineated.

6.5 Recommended Development Strategy: Considering the above issues of the area, development strategies were put forth. The influence of the study region over the entire state is taken into account. Adequate connectivity with satellite towns was ensured. As a result regional transport system plan linking the major

settlements needs to be evolved.

Table 5: Projected Trip Share of different modes – With Project Scenario

YEAR	2021		2031		2041	
Mode Share	Trips	% share	Trips	% share	Trips	% share
2 wheeler	32195	28%	35954	27%	36976	24%
Car	16933	15%	23469	17%	29567	19%
Auto	11006	9%	15307	11%	23527	15%
PTS	55939	48%	60772	45%	66947	43%
TOTAL	116073	100%	135502	100%	157017	100%
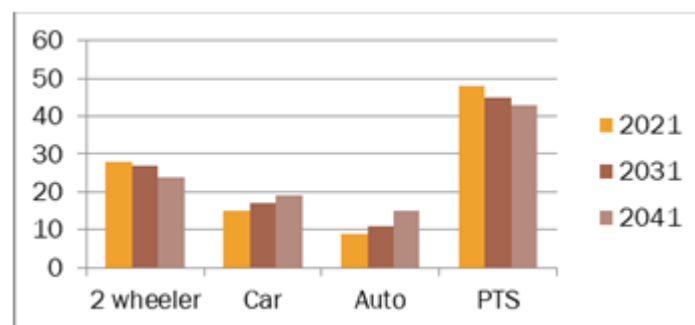
With APTS project implementation share of Public Transport System could be maintained somewhat at a constant rate.

Proposal for Transport Terminals in TUA

Bus transport satisfies 60% of inter-city motorized passenger demand. Owing to acute problems of space and amenities it is suggested to decentralize the city services by locating eight bus depots all around the city.

Proposal include shifting of inter-city bus stand to Eanchakkal on NH Bypass.

The location for the proposed terminals are at Technopark, Sreekaryam, Mannanthala, Peroorkada, Vattiyoorkavu, Nemom, Vizhinjam and Eanchakkal.

Figure 5. Location of proposed bus terminal

Key Strategies

1. To develop alternative links to divert the traffic through Central Business District (CBD)

2. Relocating traffic generating facilities like bus terminals

3. Provide efficient PTS for the city incorporating Intelligent Transportation System (ITS)

4. Improve pedestrian facilities and off-street parking lots

5.   Adequate rail and air connectivity

7.   CONCLUSION

The transportation challenges faced by developing countries, especially the emerging economies are manifold. Rapid population explosion, lack of infrastructure and significant growth in the number of vehicles implies that radical approaches are needed in transportation planning.

APTS and associated technologies provide some solutions to tackle these challenges. Benefits include improved safety, convenience, accessibility and reliability for public transit services enabling effective fleet management.

This paper looked at the overall value proposition that APTS brings in. Research was done on how an APTS system was successfully implemented in Singapore. The study then focused on a key urban metro in India (Trivandrum), and assessed the feasibility of implementing an APTS system. It called out the key development strategies to put in place, as well as identified the benefits that will result from an APTS deployment.

More due diligence is needed from a cost and practical implementation perspective before adopting these strategies for the selected urban metro region.

AUTHOR CONTRIBUTION

Sobha.P: Literature Study, Secondary Data Collection and Manuscript Writing

Dr.J.Prakash Arul Jose: Reviewed the research manuscript.

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MILES FOR SMILES - AN EXPEDITION AGAINST HUNGER (CASE STUDY)

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ABSTRACT

Change is something initiated not created, one can initiate a change for better future. We may not able to create but can initiate a change. You can be the reason behind a child's smile and bright future! Make a donation to our Unlock Smiles campaign and help us feed delicious, wholesome meals to school children. Let us build a world that helps them grow healthy and happy and make their lives joyous. Akshaya Patra is devoted to the cause of 'unlimited food for education' and as a part of this endeavor. This was the campaign of TAPF (The Akshaya Patra Foundation), this story reveals the inner happiness, inner beauty, inner joy where one became 100, 100 to 1000, 1000 to 10000, 10000 to million[1].

ORIGIN AND AREAS OF WORK:

- The seed of (TAPF) The Akshaya Patra Foundation philosophy was planted on a hot summer day in Mayapur, West Bengal when A.C. Bhaktivedanta Swami Prabhupada saw children fighting with street dogs over scraps of food[2]

- Srila Prabhupada took a solemn vow that no one within 10 miles of his centre would go hungry. Inspired by this, Akshaya Patra was born in June 2000 in Bangalore, Karnataka.

- The organisation provides mid-day meals to 1.58 million children in 11,360 Government schools across India.

- Its philosophy is to provide wholesome, nutritious food to schoolchildren and help keep them in school since many children in India discontinue school due to financial difficulties and malnutrition among them too is a common concern.

- The organisation works on a Public-Private Partnership model, with state and central governments, with centralised and decentralised kitchens along with a small kitchen in Chennai that feeds children of a private school[3].

- Other feeding initiatives of (TAPF) The Akshaya Patra Foundation include *anganwadi* feeding, feeding expecting and lactating mothers, feeding in special schools, subsidised lunch for the economically backward, feeding runaway children, the homeless and residents at old-age homes, and disaster relief.

- (TAPF) The Akshaya Patra Foundation and Community Service in India[4].

Expansion of TAPF:

- Back when it was founded in 2000, the Foundation served 1,500 children in five schools in Bangalore.

- By 2004, Akshaya Patra was present in three Indian states – Karnataka, Rajasthan and Uttar Pradesh.

- By 2005, it now had presence in 10 states, with 26 kitchens at 25 locations[5].

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[1] *(TAPF) The Akshaya Patra Foundation conducted a charity event in Bangalore in connection with raising funds.*

[2] *It is unfortunate that in India several children were entering in to the clutches of death because of hunger. Almost every corner of the country is having this kind of issue.*

[3] *Several state Goverments and Central Government had collaborated with TAPF "Food for Education" Recently State Government of Andhra Pradesh signed MoU with TAPF in connection with Anna Canteens "Food for Poor"*

[4] *Akshaya Patra undertakes social initiatives like after-class tuitions, life skills programme, community health camps, scholarship programmes and health check-up camps.*

[5] *These kitchens are Centralized Kitchens with automated equipments, apart from this TAPF also had Decentralized Kitchen in and around India.*

- The Uttar Pradesh kitchens were in operational at Vrindavan and Lucknow. In 2006, (TAPF) The Akshaya Patra Foundation established itself in Odisha. It now feeds children in Puri, Nayagarh, Rourkela and Bhubaneswar.

- In 2007, it started feeding children in Gujarat. Its operational presence in the state was at Ahmedabad, Vadodara and Surat.

- In 2008, (TAPF) The Akshaya Patra Foundation inaugurated kitchens in Andhra Pradesh and Telangana. It currently had kitchens at Visakhapatnam, Mangalagiri and Kakinada in Andhra Pradesh, and at Hyderabad in Telangana.

- In 2009, the Bhilai kitchen in Chhattisgarh was launched.

- In 2010, Assam had an Akshaya Patra kitchen of its own at Guwahati.

- In 2011, (TAPF) The Akshaya Patra Foundation set up a small kitchen at Chennai in Tamil Nadu to feed the children of a single private school.

- By 2015 Schools and Hospitals were covered in 12 states of India[1].

- By 2016, New Technology had introduced in Operations and Distribution.

- By 2018, Anna Canteens managing by (TAPF) The Akshaya Patra Foundation.

TAPF Awards and Recognitions:

- (TAPF) The Akshaya Patra Foundation had been recognised by numerous national and international organisations and prominent world leaders for its impressive work.

- (TAPF) The Akshaya Patra Foundation received the Nikkei Asia Prize 2016 for noteworthy achievements in the Economic and Business Innovation category.

- TAPF was felicitated by CNN-News18 and Infosys, as part of its Innovating for a Better Tomorrow show, for positively impacting over a million Indian lives[2].

- The World Economic Forum invited Akshaya Patra at The Project Hunger in Africa to share its experiences.

- Barack Obama, President of The United States of America, sent a letter of appreciation to The Akshaya Patra Foundation, thanking it for its efforts.

- Akshaya Patra was chosen as a recipient organisation for The Mickey Leland International Hunger Fellows Programme. This programme pairs upcoming leaders with effective organisations that address the primary causes of hunger across the world.

- In 2009, (TAPF) The Akshaya Patra Foundation entered the Limca Book of Records for running the largest mid-day meal programme in the world.

- Akshaya Patra was also included in the India Book of Records for operating the largest school meal programme.

- Giving every Dream a Chance, a video by Akshaya Patra, received the Platinum award at the AVA Digital Awards 2016 in the Online Video category.

- At the League of American Communications Professionals LLC (LACP) 2014/15 Vision Awards, Akshaya Patra was awarded Gold in the Annual Reports Competition in the Non-Profits category.

- The ABP News Positive Award 2015 was awarded to Akshaya Patra for being a symbol of positive change in society.

- The Foundation won the Best NGO award at Mother Teresa Awards 2014.

- At the ARC Awards 2015, the biggest international competition honoring outstanding achievements in annual reports, Akshaya Patra received the Silver for its Annual Report 2013-2014, titled The Fab Five Superheroes, under the Foundation category of Non-Traditional Annual Reports[1].

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[1] *Here in Visakhapatnam TAPF serving the food for King George Hospital patients in after noon and evening.*

[2] *TAPF equally recognized in Abroad like United State of America, United Kingdom etc.,*

- (TAPF) The Akshaya Patra Foundation also received the Grand Award Winner position for the Best of International segment at the ARC Awards 2015.

- (TAPF) The Akshaya Patra Foundation's Annual Report 2013-2014 received the Platinum award at the 2015 Hermes Creative Awards.

- (TAPF) The Akshaya Patra Foundation scored a double victory at the Summit Creative Awards 2015, where its film – The Possibilities – received Gold, and its Annual Report 2013-2015 received Silver.

- Confederation of Indian Industry (CII) awarded the 2014 Asian MAKE (Most Admired Knowledge Enterprise) award to the Foundation.

- At the Public Relations Council of India (PRCI) Collateral Awards, 2016, Akshaya Patra won big, with four awards – Gold, Silver and two Bronzes in different categories.

- PRCI also conferred the Chanakya award upon Akshaya Patra for NGO of the year 2015.

- The Quality Mark Award for Achievement and Excellence 2015 in the NGO category was awarded to (TAPF) The Akshaya Patra Foundation.

- At the 21st Annual Communicator Awards, (TAPF) The Akshaya Patra Foundation received the Award For Excellence in the Print not-for-profit category for its Annual Report 2013-2014 and for its film The Possibilities in the Video not-for-profit category.

- The Foundation is a five-time winner of the South Asian Federation of Accountants (SAFA) Awards.

- Akshaya Patra's Annual Report 2012-2013 won the Gold at 44th Creativity International Awards.

TAPF's Few Strategic partnerships:
- (TAPF) The Akshaya Patra Foundation had forged a successful strategic partnership with the prominent Indian philanthropic organisation Jamsetji Tata Trust.

- (TAPF) The Akshaya Patra Foundation has also entered collaborations with State governments in India and with companies like Kellogg's, Microsoft, Monsanto, GE Healthcare, Toms, Huawei, HPCL, Infosys, VSP, VPT, L&T, RPG, CNBC, Blue Dart, Novartis, and a lot of other prominent organisations[2].

(TAPF) Kitchens and its processes:
- The centralised kitchen template was adopted at urban and semi-urban locations.

- Centralised kitchens had the capacity to produce up to whopping one million meals. There were mechanised cooking units, where the cooking process requires minimal human intervention[3].

- Areas that were difficult to access by road were n't conducive to the construction of centralised kitchens and hence use the decentralised kitchen format.

- The decentralised units were operated by Women Self Help Groups (SHGs), supervised by the Foundation's kitchen process and operations module.

- The decentralised units can cook meals for one to two schools in the area.

- Hygiene was of paramount importance at the (TAPF) The Akshaya Patra Foundation kitchens at every stage. Only quality suppliers were associated with the programme, using Supplier Quality Management Systems (SQMS)[4].

- The First In First Out method ensures that the organisation makes effective use of perishable items.

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[1] *Several Public and Private organizations recognized the services of TAPF.*

[2] *TAPF collaborated with several orgainsations in and around India.*

[3] *Especially at cutting of vegetables, raw rice preparations, Roti making these kitchens are totally automated with high end equipments.*

[4] *TAPF practices Six Sigma in all its activities and maintaining the quality at 360 degree level from beginning to end. In order to optimize time and output, (TAPF) The Akshaya Patra Foundation kitchen has adopted Six Sigma methodology, and has witnessed 40% reduction in cooking time in its pilot study*

- Akshaya Patra was very particular about its safety protocol, so the staff makes sure to wear face masks, gloves, hair caps, gum boots and other protective gear.

- Charts placed around the kitchen also encourage people to take showers daily and wash hands frequently, among others.

- Improvement measures like Kaizen, Six Sigma and Continual Improvement projects were implemented after receiving feedback from schools about the quality of food[1].

- (TAPF) The Akshaya Patra Foundation had started implementing a vehicle tracking system by installing GPS devices in 72 vehicles first which was totally successful as a test run. The initial report suggests effective management of the fleet.

- A new vegetable cutting machine had been tailored in Hill kitchen, Bangalore, to save on time and retain freshness of cut vegetables.

- A modified version of Chapatti making machine was in the making which will increase the capacity by 50%, with an hourly output of 60,000 chapattis.

- As an initiative to give its recipes a natural color blend, (TAPF) The Akshaya Patra Foundation had recently formulated liquid form of cardamom. This had added a fresh flavor to 'sweet Pongal'- a popular South Indian dessert.

- Increasing its presence, (TAPF) The Akshaya Patra Foundation had started its centralized kitchen in Nathdwara. This will help feed 75,000 students of Government schools in this location.

- The VK Hill kitchen in Bangalore recently introduced an eco-friendly initiative of smokeless stoves known as Oorja runs on briquettes. This smokeless stove had helped in minimizing fuel cost by 50%. The day starts for them in Mid Night immediately after 12 with common goal No one should deprive education because of hunger, No one should sleep with hunger. Richness was not in wealth but Richness was donating to right people in right time[2]. Unfortunately in our India richness deals with how much wealth one possesses. Several people in country like India by having limited wealth doing priceless service and charity to the society; these people were unsung heroes, real rich in community service dimensions. India was very rich country with large portion of poor, huge outlay of budgets; Government had very good programmes, so many NGOs which contribute lot for society, but the challenge in our country was delivery in right time, right place to right person that's the sad part of it. How to deliver these good programmes, initiatives up to the last mile, was a million dollar question[3]. Food for Education was one of the most appreciated community service activity by (TAPF) The Akshaya Patra Foundation [4]. As far as Delivery of nutrition food was concerned, and it was aimed to reach 5 million people by 2020. (TAPF) The Akshaya Patra Foundation serves its mid-day meals in several parts of Andhra Pradesh also through its centralized kitchens. The menu had been adapted to the local palate and includes rice, dal (a soup made with dried pulses) and nutritious vegetable dishes. The nutrition values were most important and high priority for (TAPF) The Akshaya Patra Foundation. Cooking in the De centralized units begins in the early morning. All kitchens run by the organization follow a scheduled menu. All these de centralized and Centralized kitchens were equipped with cauldrons, trolleys, rice chutes, daal/sambar tanks, cutting boards, knives and other similar equipment that were well sanitized before usage. Like in other parts of the country where the food habits varied, the North Indian kitchens were equipped with rice cauldrons and dal cauldrons. Each

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[1] *10 of (TAPF) The Akshaya Patra Foundation kitchens have successfully passed the ISO recertification audit by conforming to the standard requirements of ISO 22000-2005.*

[2] *Millions of children have a smile of victory against hunger not only because of TAPF soldiers, in fact you are the force behind them. Millions of smiles with joy is only possible because of you, not me sincere words of TAPF.*

[3] IVRS (Interactive Voice Response System) and Route-Simulation are two other initiatives employed in Akshaya Patra kitchens to help improve the operations and services.

[4] *(TAPF) The Akshaya Patra Foundation defeated the challenge with its unique and priceless efforts by reaching out to over 1.7 million children in 14,314 schools across India but exploration continues to distribute the smiles at every corner of the country with single objective that No child should leave education because of hunger.*

rice cauldron had a capacity of at least 500 liters; and each dal cauldron had the capacity to cook 1200 liters to 3000 liters of dal. As roti was an integral part of the North Indian menu, the kitchens were equipped with roti making machines, which have the capacity to roll out up to 200,000 rotis from 6000 kgs of wheat flour. The South Indian kitchens were equipped with rice cauldrons and sambar cauldrons. Each rice cauldron had a capacity of at least 500 litres; each sambar cauldron had the capacity to cook 1200 liters to 3000 liters of sambar. All the vessels were of stainless steel 304 food grade material. (TAPF) The Akshaya Patra Foundation operates in 39 kitchens across 12 States in India. Centralized kitchens were large kitchen units that had the capacity to typically cook up to 100,000 meals. These kitchens serve a set of schools located around the unit. They were automated and thus ensure hygiene during the cooking processes. On the other hand, in locations where factors like difficult geographical terrain and improper road connectivity do not support the construction of large infrastructure, the decentralized kitchen format was the ideal solution. These kitchens are run by the women Self-Help Groups (SHGs) under the guidance and supervision of Akshaya Patra's kitchen process and operations module[1]. Now project was undertaken by "On an average three chapatis per head, they have to prepare three lakh chapatis by 9 a.m. and deliver them on time by noon. "The machine available at that time can prepare 1,000 per hour. After consulting with the manufacturer, it was suggested a new design to produce 6,000 chapatis per hour[2]." At Visakhapatnam, Andhra Pradesh TAPF (The Akshaya Patra Foundation) had laid the foundation for a centralised hi-tech kitchen with a capacity to prepare 10,000 meals per hour at Gambhiram village of Anandhapuram mandal. Divis Laboratories had contributed Rs 7.5 crore to the TAPF for setting up the first-of-its kind kitchen in the state. Free Polio Surgical and Research Foundation of Prema Hospital donated one-acre land. The new vast capacity kitchen was established at Kancherapalem which covers the demand of 1, 00,000 meals and it is utilizing now for schools, KGH, and Anna Canteens. The new hitech kitchen will be operational by 2019 January, and was expected to help the NGO prepare mid-day meals for more beneficiaries. (TAPF) The Akshaya Patra Foundation SQMS (supplier quality and Maintenance system) TQM (Total Quality Management) process covers sub processes like Supplier Selection, Supplier Qualification, and Supplier Rating etc. to ensure that the right and best raw materials were procured. Quality Control process ensures that raw materials were accepted only after thorough Quality Inspection in order to meet all the requirements of our Raw Material Specifications, which was generally taken and adapted from (FSSA) Food Safety Standards Act 2006. Fresh vegetables were procured on a daily basis. After procurement, sorting of vegetables was done to retain the best quality. All the vegetables are cleaned with potable water and sanitized before the cutting process. Cold storage was used to store ready-to-cook cut vegetables to retain freshness. Rice is supplied by the Food Corporation of India (FCI). Before the cooking process, the rice is machine-cleaned and washed thoroughly. In order to ensure all the raw materials are fresh, all the kitchens follow the FIFO (First in First Out) and FEFO (First Expiry First Out) methods while issuing the raw material for production. The Purchasing totally based on the ABC analysis (Always Better Control), and VED Matrix (Vital, Essential, Desirable) system. By doing so, the kitchens were able to properly identify, store and retrieve the raw materials in an appropriate manner. Optimum utilization and quality control was utmost priority in foundation services. (TAPF) The Akshaya Patra Foundation, in all its kitchens follows a standard process for preparing the mid-day meals. This process was charted out to ensure hygiene and quality of the cooked meal and also to adhere to the food safety standards[3]. The vessels used in the kitchens were made of stainless steel of 304 grades and was best for cooking and handling food. The sequencing and scheduling of activities in Kitchen operation was utmost priority. The safety and welfare of the workers in kitchen maintains high standards prescribed by the Factories Act 1948. The decentralized kitchen units were equipped with necessary cooking equipment like chapati pans, cooking vessels for rice and daal and vessels for transporting the cooked mid-day meals to the schools. Personal hygiene and Food Safety training were provided regularly to the kitchen staff to ensure hygiene standards were met. All the kitchens had well trained Cooks and Production Supervisors to

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[1] *TAPF Decentralized kitchen around city to meet the demand and serve with in time, TAPF is following here the Just in time and Six Sigma practices for proper delivery of the food for needy people. The kitchen spread over 65,000 sft has a capacity to prepare 1.5 lakh meals. Recalling one of their biggest challenges they had faced, they had been mandated to serve one lakh mid-day meals in Rajasthan.*

[2] *In Rajastan still there is a difficulty to deliver the demand established due to the consistent and quality of service.*

[3] *All the cooking equipment like cauldrons, trolleys, rice chutes and sambar/daal tanks, cutting boards, knives etc. is sterilized using steam before the cooking process begins.*

manage and supervise the production. Critical Control Points (CCPs) like cooking temperature were checked and recorded at periodic intervals to ensure the right quality of the meal. To ensure food quality was maintained, Quality Check was done by the Quality Officers in each kitchen. (TAPF) The Akshaya Patra Foundation never compromises in nutrition and quality food, the cooked food was packed in steam sterilized vessels[1]. (TAPF) The Akshaya Patra Foundation uses specially designed and customized transport vehicles to deliver food which was packed in stainless steel 304 grade vessels. These vehicles were steam sterilized before the loading process. These vehicles use a puffed body to reduce the temperature loss and a honeycomb structure to hold the vessels upright and keep the freshness of the cooked meal intact till it is served to the children. The vehicles in corporate by GPS and GPRS system, which can be monitor at the Central processing unit, it records all the information on daily basis for better improvement. (TAPF) The Akshaya Patra Foundation using methods like Logistic charting for route optimization, GPRS to track the delivery vehicles for safety and on-time delivery were gradually being adopted and implemented in the kitchens. In western countries the cameras were adapted by the TAPF where whenever the vehicle stops due to any reason cameras will be automatically operated and record the events happening during that time. If this system adapts at (TAPF) The Akshaya Patra Foundation in Visakhapatnam we can control the misusing activities, but till now no misusing activities were noticed why because the employees were well dedicated and give high priority for service. The Quality Officers in the kitchens review the feedback and initiate or trigger appropriate corrective or improvement actions to improve the quality and delivery of food. We also circulate 'Do's and Don'ts' pamphlets to all schools on a regular basis for creating awareness on food safety and hygiene while serving the mid-day meals[2]. Audit & Review mechanisms play a key role in monitoring the key processes & systems and their performance. So, we had institutionalized Good Manufacturing Process (GMP) Monthly Audits, Surprise Audits on Food Safety & Quality, to name a few. Quality Metrics Performance was reviewed on a monthly basis. Detailed Customer Satisfaction Surveys were done by the Quality Staff at periodic intervals apart from the day-to-day feedback was taken during the delivery of food. In certified kitchens, ISO 22000 Internal Audits were done twice a year by qualified Internal Auditors led by Quality & FSMS (Food Service and maintenance system) Managers, and the Certification body does the surveillance audits twice a year[3]. Quality control teams were established to do continual improvement. (TAPF) The Akshaya Patra Foundation well known for Trust and faith both were the essential and main assets of Akshaya Patra, but at the same time it was only a major problem to meet the expectations of millions of the people. People more perceive Akshaya Patra as it was religious and fundamental organization but (TAPF) The Akshaya Patra Foundation was providing its benefits to all the parts of the communities irrespective of their religion, cast. This was one of the advantage and as well as disadvantage some times. The people who were associated with work endorse by AKP were less paid due to this (TAPF) The Akshaya Patra Foundation cannot afford highly qualified and well trained people to execute its objectives in community services. Training was one of the important burdens and expenditure area, implementing the technology was an issue several times because of this. State Government of Andhra Pradesh entrusted the Anna canteen project to Akshaya Patra which was the major challenge in funding and operations as per as capacity urilisation and Resource allocation is concerned. Logistics is the life line of (TAPF) The Akshaya Patra Foundation, sometimes due to poor logistics system and negative circumstances create hurdles in service. The solutions were used in four key areas like (I) to collect school feedback, (ii) to track food delivery, (iii) to measure the quantity of food and supplies to be purchased, and (IV) to monitor meal production. (TAPF) The Akshaya Patra Foundation aims to maintain and better services by sustaining the quality of the mid-day meals it provide; there was a need for continual improvement[4]. (TAPF) The Akshaya Patra Foundation adopted a holistic approach and designed a programme called 'Akshaya Pragathi'. As a part of the programme they were adopting and implementing Kaizen and Six Sigma methodologies to ensure and make every member a part of these

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[1] *(TAPF) The Akshaya Patra Foundation in order to consistently maintain the quality of the meal, it takes feedback from schools on a daily basis while delivering the meal.*

[2] *The school management plays very vital role in delivery of food, their coordination definitely to be appreciated.*

[3] *The data from all the respective audits are reviewed and appropriate improvement or corrective actions are taken. All actions are further monitored till effective implementation.*

[4] *TAPF needs to advance the performance of various processes continuously so that every cycle of improvement leads to the next level of achievement.*

initiatives. They continuously monitor the Vehicles by tracking system, Purchasing of Raw materials by specific method and maintenance system. Training was an integral part of the Continual Improvement Programme. The Financial Year 2016-17 saw training on 5S framework, 7s framework, Lean and Kaizen, and ISO 22000 Awareness for kitchen employees across all locations for more than 6,000 man hours[1]. (TAPF) The Akshaya Patra Foundation collaborates with several public and private corporate, organizations for raising the fund and serves the food. Accenture Corporate Labs and Akshaya Patra Use Disruptive Technologies to Enhance Efficiency in Mid-Day Meal Program for School Children. BENGALURU, India; April 20, 2017 – Accenture (NYSE: ACN) and Akshaya Patra, the world's largest NGO-run Mid-Day Meal Program, collaborated on an innovative project that used disruptive technologies to exponentially increase the number of meals served to children in schools in India that were run and aided by the government. In Visakhapatnam AKP was funded by HPCL, Visakhapatnam Steel Plant, Visakhpatnam Port Trust, RPG Spencer's, Divis Labs, The "Million Meals" project revolutionized Akshaya Patra's supply chain and operations, resulting in improved food quality and expanded service reach. Rooted in a vision to eliminate child hunger, the "Million Meals" project demonstrated how disruptive technologies such as artificial intelligence (AI), the Internet of Things (IoT) and blockchain can help address significant challenges in mass meal production and delivery. Accenture Labs, the research and development arm of Accenture, executed the project over a period of six months in (TAPF) The Akshaya Patra Foundation's Bengaluru kitchen. An analysis of the project indicated a potential to improve efficiency by 20 percent, which could boost the number of meals served by millions. Sanjay Podder, managing director, Accenture Labs, Bengaluru, said, "The Accenture Labs 'Tech for Good' program specializes in solving complex social problems through the use of innovative technologies. Accenture Labs was excited to take up the challenge that every paisa saved in producing a single meal can result in additional meals being served to children. They thought this was an ideal proving ground to put the combined power of AI, IoT and block chain to use."Akshaya Patra's goal was to continue to optimize and streamline the program. Similarly AKP associated with various educational institutions in Visakhapatnam[2], like AU, Gayatri, Anits, GITAM Institute of Management etc., these institutions were associating with TAPF in distribution of benefits to the society. As a result of these process enhancements, (TAPF) The Akshaya Patra Foundation improved their audit capabilities, attendance recording, invoice processing and payment, order and data collection, and food preparation operations, allowing for expanded production capabilities and establishing a blueprint for operating other kitchens. An example of Akshaya Patra's transformation was its move from manual collection of feedback from children and schools to a more efficient technology-based solution. Using block chain and sensor-enabled devices, the technical team gathered feedback digitally, leveraging AI technologies to predict the next day's meal requirements. The team tracked the timeliness of food delivered to each school involved in the initiative and collected the data using mobile devices and an Accenture-built system. The team also used IoT sensors to monitor and sequence the cooking process to ensure optimum energy consumption and consistent food quality[3]. In addition to this, it also helped Akshaya Patra collecting feedback from schools and reduces the cycle time for collation of meal indents for the next day. Further, the solutions enabled optimizing the kitchen process and use of resources and ensured the product was consistent on various quality parameters. Akshaya Patra had always been a tech-driven NGO, and had engaged with data to streamline workflow and drive operational excellence. This was not the organization's first brush with data and analytics. Moving beyond Tally and Microsoft Excel, Akshaya Patra uses Microsoft Dynamics for enterprise resource planning (ERP). "All analytical data was taken from ERP for analysis purpose. It was a centrally managed solution which helps us keep a track of various aspects of the operations and distribution process, thus facilitating optimum use of resources. (TAPF) The Akshaya Patra Foundation completely depended on ERP data for analytics and ably supported by SA Global technologies Bengaluru. But this time, the foundation went a step ahead in leveraging new age technologies such as IoT, AI, and Block chain. Venkat Chief Technology Officer - (TAPF) The Akshaya Patra Foundation explains how these technologies helped deliver better outcomes. "IoT helps us in real-time monitoring of the cooking process, which means, if there is a

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[1] *The Quality Department aims to conduct 15,000 man hours of training on similar topics in the Financial Year 2018-19.*

[2] *GITAM Institute of Management is associated with TAPF in executing it's services to the society through NSS (National Service Scheme).*

[3] *This system not only aided in tracking kitchen performance but also provided accurate, real-time data to identify trends, make better informed decisions and save valuable time and effort.*

deviation, they can identify it and take immediate decisions[1]. Meanwhile, AI paved the way for automatic data prediction by reviewing all the historical transactions and helped in decision making. As for Block chain, it lends authenticity and transparency. "Block chain helps in gathering real-time feedback from schools[2]. This ensures its authenticity and authentic feedback, as it was known vitally when it comes to service industry," The IoT-based sensors installed in cookers record the temperature data and exchange it with the data on cloud every 1-2 minute. The supervisor updates the sequence of activities for which the time and temperature gets recorded. If the required temperature was not met, it waits till the same was attained and only then the next step was followed. In this manner, IoT helps us monitor time and temperature in real time during the cooking process and take necessary measures in case there was a deviation. (TAPF) The Akshaya Patra Foundation had received the credit of being the World's largest mid-day meal programme, Akshaya Patra had always been in the look-out to better its kitchen infrastructure In an effort to realize their future goals, (TAPF) The Akshaya Patra Foundation had already started conducting pilot runs of various initiatives like eco-friendly methods of cooking, vehicle tracking system, vegetable cutting and chapatti making machine, IVRS and Route Simulation methods. These introductions had significantly sped up the cooking process, keeping intact the quality and hygiene of the cooked food. It had also helped in better tracking of the delivery fleet ensuring timely service on all locations[3]. Apart from advancements in process and service, there had been significant improvement in the taste and recipes too. Its continuous effort of several hands may not be recognized as well as deserves but effort continuous with smile, patience, confidence that we are doing something for the best of society. This expedition cannot be possible without public participation in large level and equally believed and trusted that the people who are benefiting from this secret and valuable programme will endeavor this till last child who was depriving education because of hunger.

Exhibit: 1

NUTRITIONAL VALUE OF MID-DAY MEALS

Ingredients Protein Energy

Rice P-6.8 E-345
Toor Dal P-22.3 E-335
Yellow Peas P-19.7 E-315
Jaggery P-0.4 E-383
Salt P-0 E-0
Oil P-0 E-900
Dry Chilly P-15.9 E-246
Jeera P-18.7 E-356
Mustard P-20 E-541
Turmeric P-6.3 E-349

AKSHAYA PATRA — Unlimited food for education

*P - Protein (g) I *Energy (Kcal) I *Nutrition Value is Per 100 gm
The Akshaya Patra Foundation — Operating the World's Largest NGO-run Mid-Day Meal Programme in 11 States in India

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[1] *The information collected from it can be reviewed to identify any gap in the system and necessary corrective measures can be initiated. In this manner, it helps TAPF optimize its resources."*

[2] *This feedback is received directly on an application, so no one can meddle with it.*

[3] *In tune with this motive, it has seen many improvements and introductions to optimize operational and economic efficiency. (TAPF) The Akshaya Patra's kitchens are witnessing newer technological uplifts; thereby maximizing its potential by many folds.*

Exhibit: 2

Some key information

SI.	Items	Quantity per day/Child	
		Primary	Upper Primary
1	Food-grains	100 gr	150 gr
2	Pulses	20 gr	30 gr
3	Vegetables (leafy also)	50 gr	75 gr
4	Oil & fat	5 gr	7.5 gr
5	Salt & condiments	As per need	As per need

Exhibit: 3

AKSHAYA PATRA

Create Fund Raise Campaign

Create Campaign
Customise a campaign to raise funds for your personal or charity cause

Share
Share your campaign by email and across multiple social networks

Fund
Receive donations and messages to your cause from friends, family and workmates

Give
Assist an ongoing campaign or make a donation towards the cause.

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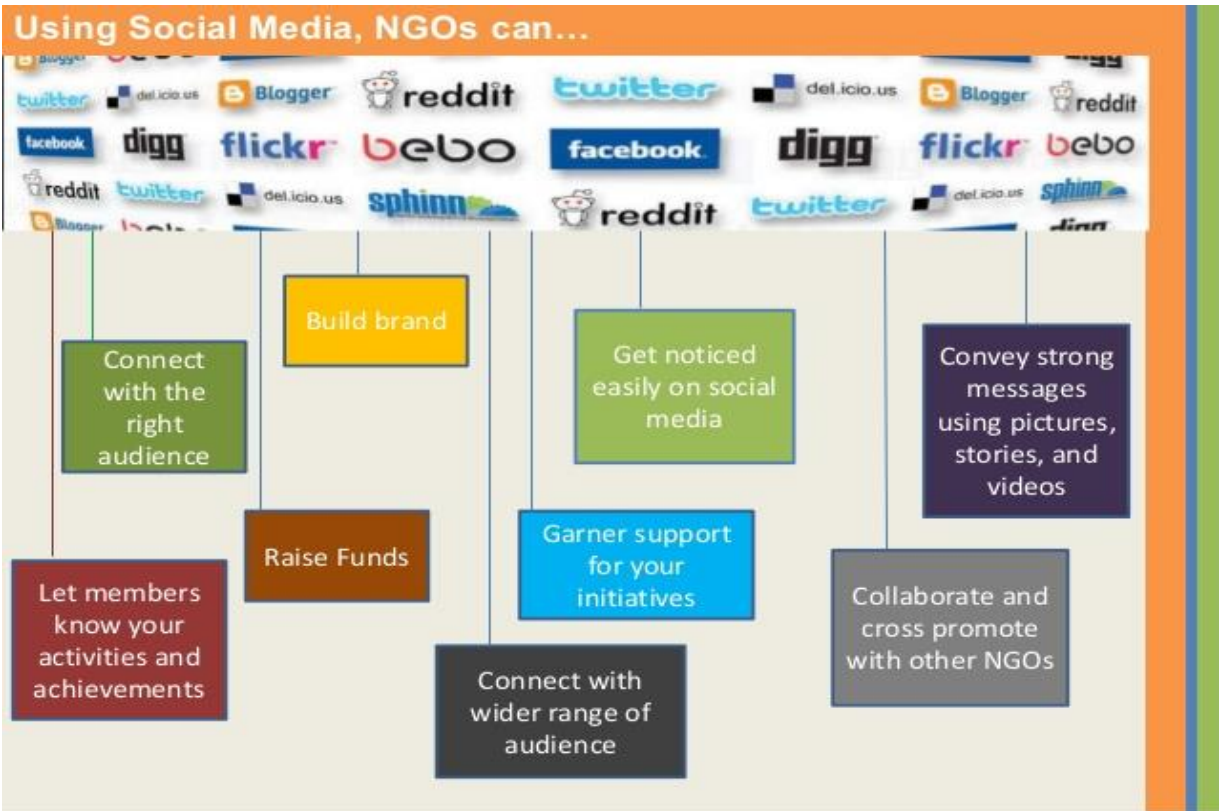
Exhibit: 4

Exhibit: 5

Exhibit: 6
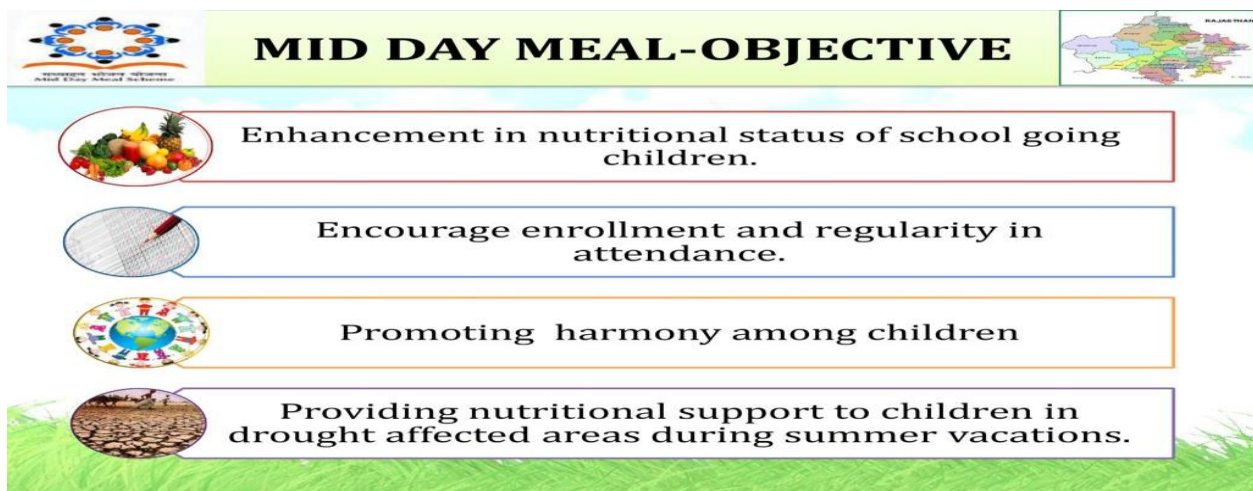
Exhibit: 7 - TAPF - 2017
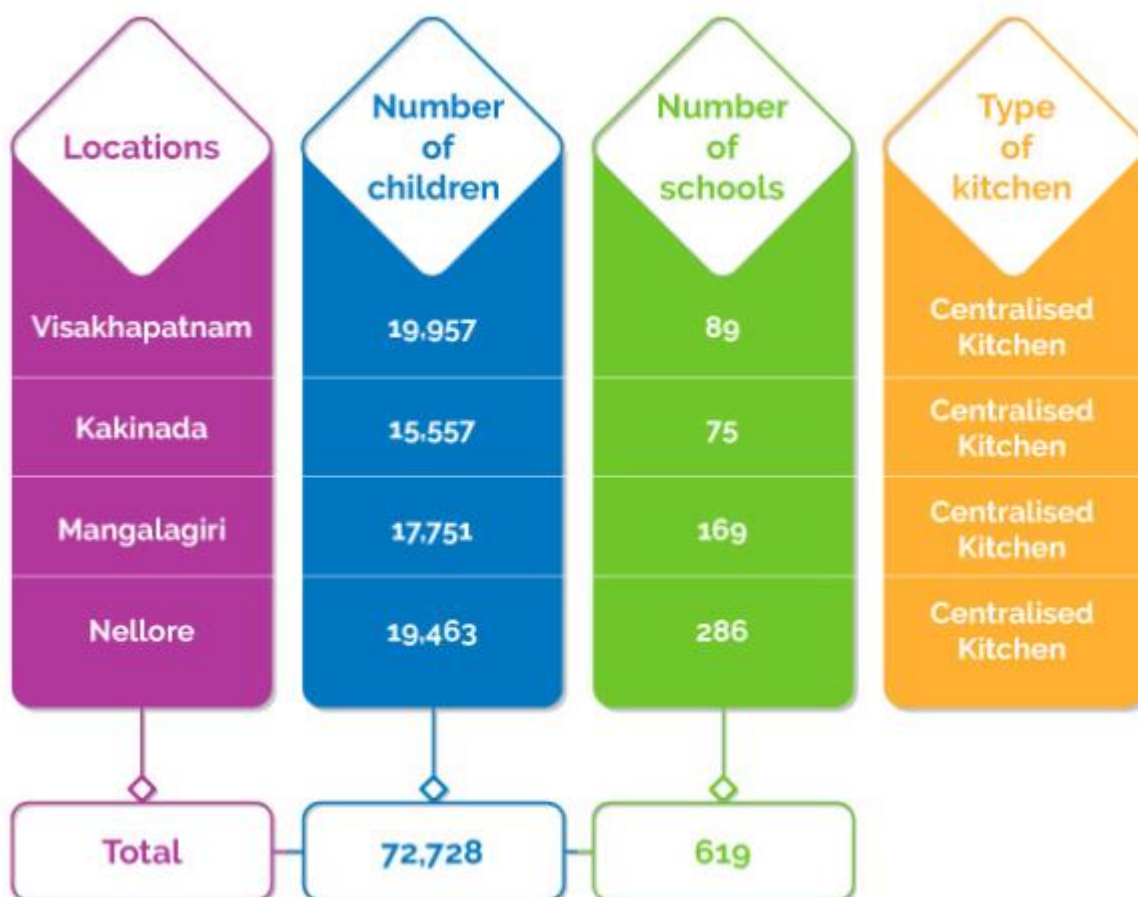
Exhibit: 8 Mileage report (AP31TH1437) from 01/10/2018 to 31/10/2018

S.No	Vehicle	Date	Mileage	Stay (Times)	Overspread	Fuel
1	AP31TH1437	01/10/2018	42	16	0	3.36
2	AP31TH1437	02/10/2018	44	22	0	3.82
3	AP31TH1437	03/10/2018	0	0	0	0
4	AP31TH1437	04/10/2018	42	21	0	3.28
5	AP31TH1437	05/10/2018	41	16	0	3.04
6	AP31TH1437	06/10/2018	42	16	0	3.30
7	AP31TH1437	07/10/2018	42	19	0	3.82

8	AP31TH1437	08/10/2018	42	18	0	3.82
9	AP31TH1437	09/10/2018	45	25	0	3.04
10	AP31TH1437	10/10/2018	42	17	0	3.36
11	AP31TH1437	11/10/2018	42	16	0	3.36
12	AP31TH1437	12/10/2018	46	16	0	3.36
13	AP31TH1437	13/10/2018	42	16	0	3.36
14	AP31TH1437	14/10/2018	42	16	0	3.56
15	AP31TH1437	15/10/2018	42	18	0	3.36
16	AP31TH1437	16/10/2018	43	16	0	3.36
17	AP31TH1437	17/10/2018	42	21	0	3.36
18	AP31TH1437	18/10/2018	45	0	0	3.82
19	AP31TH1437	19/10/2018	42	19	1	3.82
20	AP31TH1437	20/10/2018	42	17	0	3.04
21	AP31TH1437	21/10/2018	44	21	0	3.87
22	AP31TH1437	22/10/2018	0	0	0	0
23	AP31TH1437	23/10/2018	44	21	0	3.72
24	AP31TH1437	24/10/2018	42	18	0	3.36
25	AP31TH1437	25/10/2018	42	16	0	3.98
26	AP31TH1437	26/10/2018	42	16	0	3.36
27	AP31TH1437	27/10/2018	44	16	0	3.36
28	AP31TH1437	28/10/2018	42	19	0	3.78
29	AP31TH1437	29/10/2018	42	21	0	3.82
30	AP31TH1437	30/10/2018	44	20	1	3.82
31	AP31TH1437	31/10/2018	42	18	0	3.72

Exhibit: 9 Mileage report (AP31Th0651) from 01/10/2018 to 31/10/2018

S.No	Vehicle	Date	Mileage	Stay (Times)	Overspread	Fuel
1	AP31TH0651	01/10/2018	38	20	0	3.24
2	AP31TH0651	02/10/2018	0	0	1	0
3	AP31TH0651	03/10/2018	38	21	0	3.24
4	AP31TH0651	04/10/2018	38	21	0	3.28
5	AP31TH0651	05/10/2018	41	21	0	3.04
6	AP31TH0651	06/10/2018	38	19	0	3.30
7	AP31TH0651	07/10/2018	38	24	0	3.24
8	AP31TH0651	08/10/2018	44	18	0	3.24
9	AP31TH0651	09/10/2018	38	25	0	3.24
10	AP31TH0651	10/10/2018	38	18	0	3.24
11	AP31TH0651	11/10/2018	42	23	0	3.24
12	AP31TH0651	12/10/2018	38	23	0	3.04
13	AP31TH0651	13/10/2018	38	21	1	3.04
14	AP31TH0651	14/10/2018	0	0	0	0
15	AP31TH0651	15/10/2018	38	23	0	2.96
16	AP31TH0651	16/10/2018	38	23	1	3.24
17	AP31TH0651	17/10/2018	38	21	0	2.98
18	AP31TH0651	18/10/2018	38	0	0	3.04
19	AP31TH0651	19/10/2018	42	19	0	3.04
20	AP31TH0651	20/10/2018	38	17	0	3.04
21	AP31TH0651	21/10/2018	38	21	0	3.87
22	AP31TH0651	22/10/2018	0	0	0	0
23	AP31TH0651	23/10/2018	0	0	2	0
24	AP31TH0651	24/10/2018	38	22	0	3.24
25	AP31TH0651	25/10/2018	36	21	0	3.24
26	AP31TH0651	26/10/2018	35	18	0	3.24
27	AP31TH0651	27/10/2018	38	23	0	3.04

28	AP31TH0651	28/10/2018	44	20	0	2.89
29	AP31TH0651	29/10/2018	38	21	0	3.04
30	AP31TH0651	30/10/2018	41	20	1	3.24
31	AP31TH0651	31/10/2018	44	18	0	3.24

Exhibit: 10 Mileage report (AP31TE5365) from 01/10/2018 to 31/10/2018

S.No	Vehicle	Date	Mileage	Stay (Times)	Overspread	Fuel
1	Ap31TE5365	01/10/2018	38	20	0	3.72
2	Ap31TE5365	02/10/2018	0	0	1	0
3	Ap31TE5365	03/10/2018	38	21	0	3.72
4	Ap31TE5365	04/10/2018	38	21	0	3.28
5	Ap31TE5365	05/10/2018	41	21	0	3.72
6	Ap31TE5365	06/10/2018	38	19	0	3.30
7	Ap31TE5365	07/10/2018	38	24	0	3.72
8	Ap31TE5365	08/10/2018	44	18	0	3.24
9	Ap31TE5365	09/10/2018	38	25	0	3.72
10	Ap31TE5365	10/10/2018	38	18	0	3.72
11	Ap31TE5365	11/10/2018	42	23	0	3.72
12	Ap31TE5365	12/10/2018	38	23	0	3.72
13	Ap31TE5365	13/10/2018	38	21	1	3.04
14	Ap31TE5365	14/10/2018	0	0	0	0
15	Ap31TE5365	15/10/2018	38	23	0	2.96
16	Ap31TE5365	16/10/2018	38	23	1	3.04
17	Ap31TE5365	17/10/2018	38	21	0	2.98
18	Ap31TE5365	18/10/2018	38	0	0	3.04
19	Ap31TE5365	19/10/2018	42	19	0	3.04
20	Ap31TE5365	20/10/2018	38	17	0	3.04
21	Ap31TE5365	21/10/2018	38	21	0	3.87
22	Ap31TE5365	22/10/2018	0	0	0	0
23	Ap31TE5365	23/10/2018	0	0	2	0
24	Ap31TE5365	24/10/2018	38	22	0	3.72
25	Ap31TE5365	25/10/2018	36	21	0	3.72
26	Ap31TE5365	26/10/2018	35	18	0	3.04
27	Ap31TE5365	27/10/2018	38	23	0	3.72
28	Ap31TE5365	28/10/2018	44	20	0	2.89
29	Ap31TE5365	29/10/2018	38	21	0	3.72
30	Ap31TE5365	30/10/2018	41	20	1	3.72
31	Ap31TE5365	31/10/2018	44	18	0	3.72

Exhibit: 11 Mileage report (AP31TE5365) from 01/10/2018 to 31/10/2018

S.No	Vehicle	Date	Mileage	Stay (Times)	Fuel	Over speed
1	Ap31TE4155	01/10/2018	16	0	3.36	0
2	Ap31TE4155	02/10/2018	22	0	3.82	0
3	Ap31TE4155	03/10/2018	0	0	0	0
4	Ap31TE4155	04/10/2018	21	0	3.28	0
5	Ap31TE4155	05/10/2018	16	0	3.04	0
6	Ap31TE4155	06/10/2018	16	0	3.30	0
7	Ap31TE4155	07/10/2018	19	0	3.82	1
8	Ap31TE4155	08/10/2018	18	0	3.82	0
9	Ap31TE4155	09/10/2018	25	0	3.04	0
10	Ap31TE4155	10/10/2018	17	0	3.36	0
11	Ap31TE4155	11/10/2018	16	0	3.36	0
12	Ap31TE4155	12/10/2018	16	0	3.36	0

13	Ap31TE4155	13/10/2018	16	0	3.36	0
14	Ap31TE4155	14/10/2018	16	0	3.56	0
15	Ap31TE4155	15/10/2018	18	0	3.36	0
16	Ap31TE4155	16/10/2018	16	0	3.36	0
17	Ap31TE4155	17/10/2018	21	0	3.36	0
18	Ap31TE4155	18/10/2018	0	0	3.82	0
19	Ap31TE4155	19/10/2018	19	1	3.82	0
20	Ap31TE4155	20/10/2018	17	0	3.04	0
21	Ap31TE4155	21/10/2018	21	0	3.87	0
22	Ap31TE4155	22/10/2018	0	0	0	0
23	Ap31TE4155	23/10/2018	21	0	3.72	0
24	Ap31TE4155	24/10/2018	18	0	3.36	0
25	Ap31TE4155	25/10/2018	16	0	3.98	0
26	Ap31TE4155	26/10/2018	16	0	3.36	0
27	Ap31TE4155	27/10/2018	16	0	3.36	0
28	Ap31TE4155	28/10/2018	19	0	3.78	0
29	Ap31TE4155	29/10/2018	21	0	3.82	0
30	Ap31TE4155	30/10/2018	20	1	3.82	1
31	Ap31TE4155	31/10/2018	18	0	3.72	0

Exhibit: 12 Mileage report (AP31TE5365) from 01/10/2018 to 31/10/2018

S.No	Vehicle	Date	Mileage	Stay (Times)	Overspread	Fuel
1	Ap31TH1537	01/10/2018	38	20	0	4.18
2	Ap31TH1537	02/10/2018	0	0	1	0
3	Ap31TH1537	03/10/2018	38	21	0	4.05
4	Ap31TH1537	04/10/2018	38	21	0	3.28
5	Ap31TH1537	05/10/2018	41	21	0	4.18
6	Ap31TH1537	06/10/2018	38	19	0	3.30
7	Ap31TH1537	07/10/2018	38	24	0	3.04
8	Ap31TH1537	08/10/2018	44	18	0	4.18
9	Ap31TH1537	09/10/2018	38	25	0	4.18
10	Ap31TH1537	10/10/2018	38	18	0	4.18
11	Ap31TH1537	11/10/2018	42	23	0	4.18
12	Ap31TH1537	12/10/2018	38	23	0	3.32
13	Ap31TH1537	13/10/2018	38	21	1	3.32
14	Ap31TH1537	14/10/2018	0	0	0	0
15	Ap31TH1537	15/10/2018	38	23	0	3.32
16	Ap31TH1537	16/10/2018	38	23	1	3.32
17	Ap31TH1537	17/10/2018	38	21	0	3.32
18	Ap31TH1537	18/10/2018	38	0	0	3.32
19	Ap31TH1537	19/10/2018	42	19	0	3.32
20	Ap31TH1537	20/10/2018	38	17	0	3.04
21	Ap31TH1537	21/10/2018	38	21	0	3.87
22	Ap31TH1537	22/10/2018	0	0	0	0
23	Ap31TH1537	23/10/2018	0	0	0	0
24	Ap31TH1537	24/10/2018	38	22	0	4.05
25	Ap31TH1537	25/10/2018	36	21	0	4.05
26	Ap31TH1537	26/10/2018	35	18	0	4.05
27	Ap31TH1537	27/10/2018	38	23	0	3.32
28	Ap31TH1537	28/10/2018	44	20	0	2.89
29	Ap31TH1537	29/10/2018	38	21	0	4.05
30	Ap31TH1537	30/10/2018	41	20	0	3.32
31	Ap31TH1537	31/10/2018	44	18	0	3.32

Exhibit: 13 Kitchen-1: Groceries Kitchen for every 1000 meals between 01/10/2018 & 31/10/2018

S.No	Fuel (Rs)	Date	Daal Kg)	Veg (Rs)	Others (Rs)	Time (mts)
1	4000	01/10/2018	250 Kg	2000	3000	6
2	4500	02/10/2018	200 Kg	1900	3000	6
3	5000	03/10/2018	250 Kg	1800	2800	6
4	4600	04/10/2018	250 Kg	2000	3000	9
5	4000	05/10/2018	250 Kg	2000	3000	6
6	4000	06/10/2018	250 Kg	2000	3000	6
7	4000	07/10/2018	250 Kg	2000	2700	7
8	4300	08/10/2018	250 Kg	2000	3000	6
9	4900	09/10/2018	300 Kg	1900	3000	6
10	4000	10/10/2018	200 Kg	1900	3000	8
11	3900	11/10/2018	200 Kg	1900	3000	6
12	3600	12/10/2018	200 Kg	1900	3000	6
13	2900	13/10/2018	250 Kg	2100	2800	8
14	4000	14/10/2018	250 Kg	2000	2800	8
15	2800	15/10/2018	250 Kg	2000	2800	9
16	4000	16/10/2018	200 Kg	2000	2800	9
17	3600	17/10/2018	200 Kg	2000	2700	7
18	4200	18/10/2018	200 Kg	1800	2700	9
19	5000	19/10/2018	200 Kg	1800	3000	9
20	4000	20/10/2018	200 Kg	1800	3000	6
21	4700	21/10/2018	250 Kg	1800	3000	6
22	4700	22/10/2018	200 Kg	1800	2700	8
23	4800	23/10/2018	200 Kg	2000	2700	8
24	4000	24/10/2018	200 Kg	2000	2700	8
25	4000	25/10/2018	250 Kg	2000	2700	6
26	3000	26/10/2018	250 Kg	2100	2700	6
27	3000	27/10/2018	250 Kg	2100	3000	6
28	3000	28/10/2018	250 Kg	2100	3000	6
29	4000	29/10/2018	250 Kg	2100	2700	7
30	4000	30/10/2018	250 Kg	2000	2700	7
31	4000	31/10/2018	250 Kg	2000	3000	6

Exhibit: 14 Kitchen-2: Groceries Kitchen for every 1000 meals between 01/10/2018 & 31/10/2018

S.No	Fuel (Rs)	Date	Daal Kg)	Veg (Rs)	Others (Rs)	Time (mts)
1	4000	01/10/2018	250 Kg	2000	3000	6
2	4500	02/10/2018	200 Kg	1900	3000	6
3	5000	03/10/2018	250 Kg	1800	2800	6
4	4600	04/10/2018	250 Kg	2000	3000	9
5	3900	05/10/2018	250 Kg	2000	3000	6
6	3900	06/10/2018	250 Kg	2000	3000	6
7	3900	07/10/2018	250 Kg	2000	2700	7
8	4300	08/10/2018	250 Kg	2000	3000	6
9	4900	09/10/2018	300 Kg	1900	3000	6
10	4000	10/10/2018	200 Kg	1900	3000	8
11	3900	11/10/2018	200 Kg	1900	3000	6
12	3600	12/10/2018	200 Kg	1900	3000	6
13	2900	13/10/2018	250 Kg	2100	2800	8
14	4000	14/10/2018	250 Kg	2000	2800	8
15	2800	15/10/2018	250 Kg	2000	2800	9
16	4000	16/10/2018	200 Kg	2000	2800	9
17	3600	17/10/2018	200 Kg	2000	2700	7
18	3900	18/10/2018	200 Kg	1800	2700	9

19	5000	19/10/2018	200 Kg	1800	3000	9
20	4000	20/10/2018	200 Kg	1800	3000	6
21	4700	21/10/2018	250 Kg	1800	3000	6
22	4700	22/10/2018	200 Kg	1800	2700	8
23	4800	23/10/2018	200 Kg	2000	2700	8
24	4000	24/10/2018	200 Kg	2000	2700	8
25	4000	25/10/2018	250 Kg	2000	2700	6
26	3000	26/10/2018	250 Kg	2100	2700	6
27	3000	27/10/2018	250 Kg	2100	3000	7
28	3000	28/10/2018	250 Kg	2100	3000	7
29	3900	29/10/2018	250 Kg	2100	2700	7
30	3900	30/10/2018	250 Kg	2000	2700	7
31	3900	31/10/2018	250 Kg	2000	3000	6

Exhibit: 15 Kitchen-3: Groceries Kitchen for every 1000 meals between 01/10/2018 & 31/10/2018

S.No	Fuel (Rs)	Date	Daal Kg)	Veg (Rs)	Others (Rs)	Time (mts)
1	4000	01/10/2018	250 Kg	2000	3000	6
2	4500	02/10/2018	200 Kg	1900	3000	6
3	4000	03/10/2018	200 Kg	1800	2800	6
4	4600	04/10/2018	250 Kg	2000	3000	9
5	4000	05/10/2018	250 Kg	2000	2900	6
6	4000	06/10/2018	240 Kg	2000	3000	6
7	3500	07/10/2018	250 Kg	2000	2700	7
8	4300	08/10/2018	250 Kg	2000	3000	6
9	4900	09/10/2018	210 Kg	1900	3000	6
10	4000	10/10/2018	200 Kg	1900	3000	8
11	3900	11/10/2018	200 Kg	1900	3000	6
12	3600	12/10/2018	200 Kg	1900	3000	6
13	2900	13/10/2018	200 Kg	2100	2800	8
14	4000	14/10/2018	200 Kg	2000	2800	8
15	2800	15/10/2018	210 Kg	2000	2800	6
16	4000	16/10/2018	200 Kg	2000	2800	6
17	4000	17/10/2018	200 Kg	2000	2700	6
18	3500	18/10/2018	200 Kg	1800	2700	6
19	3500	19/10/2018	200 Kg	1800	3000	9
20	3500	20/10/2018	240 Kg	1800	3000	6
21	3500	21/10/2018	250 Kg	1800	3000	6
22	4700	22/10/2018	200 Kg	1800	2900	8
23	4800	23/10/2018	200 Kg	2000	2900	8
24	4000	24/10/2018	200 Kg	2000	2900	8
25	4000	25/10/2018	200 Kg	2000	2900	6
26	3000	26/10/2018	200 Kg	2100	2700	6
27	3000	27/10/2018	250 Kg	2100	3000	6
28	3000	28/10/2018	250 Kg	2100	2900	6
29	3500	29/10/2018	250 Kg	2100	2900	9
30	3500	30/10/2018	230 Kg	2000	2900	9
31	3500	31/10/2018	220 Kg	2000	2900	9

Exhibit: 16 Kitchen-4: Groceries Kitchen for every 1000 meals between 01/10/2018 & 31/10/2018

S.No	Fuel (Rs)	Date	Daal Kg)	Veg (Rs)	Others (Rs)	Time (mts)
1	4000	01/10/2018	250 Kg	2000	3000	6
2	4500	02/10/2018	200 Kg	1900	3000	6
3	5000	03/10/2018	250 Kg	1800	2800	6
4	4600	04/10/2018	250 Kg	2000	3000	9
5	4000	05/10/2018	250 Kg	2000	3000	6

6	4000	06/10/2018	250 Kg	2000	3000	8
7	4000	07/10/2018	250 Kg	2000	2700	7
8	4300	08/10/2018	250 Kg	2000	3000	6
9	4900	09/10/2018	300 Kg	1900	3000	6
10	4000	10/10/2018	200 Kg	1900	3000	8
11	3900	11/10/2018	200 Kg	1900	3000	6
12	3600	12/10/2018	200 Kg	1900	3000	6
13	2900	13/10/2018	250 Kg	2100	2800	8
14	4000	14/10/2018	250 Kg	2000	2800	8
15	2800	15/10/2018	230 Kg	2000	2800	9
16	4000	16/10/2018	200 Kg	2000	2800	9
17	3600	17/10/2018	200 Kg	2000	2700	7
18	4200	18/10/2018	200 Kg	1800	2700	8
19	5000	19/10/2018	200 Kg	1800	2700	8
20	4000	20/10/2018	200 Kg	1800	2700	8
21	4700	21/10/2018	230 Kg	1800	2700	8
22	4700	22/10/2018	230 Kg	1800	2700	8
23	4800	23/10/2018	230 Kg	2000	2700	8
24	4000	24/10/2018	230 Kg	1900	2700	8
25	4000	25/10/2018	250 Kg	1900	2700	6
26	3000	26/10/2018	250 Kg	1900	2700	6
27	3000	27/10/2018	250 Kg	2100	3000	7
28	3000	28/10/2018	250 Kg	2100	3000	8
29	4000	29/10/2018	250 Kg	2100	2700	8
30	4000	30/10/2018	250 Kg	2000	2700	7
31	4000	31/10/2018	250 Kg	2000	3000	6

Exhibit: 17 Kitchen-5: Groceries Kitchen for every 1000 meals between 01/10/2018 & 31/10/2018

S.No	Fuel (Rs)	Date	Daal Kg)	Veg (Rs)	Others (Rs)	Time (mts)
1	4000	01/10/2018	250 Kg	2000	3000	6
2	4500	02/10/2018	200 Kg	1900	3000	6
3	4000	03/10/2018	200 Kg	1800	2800	6
4	4600	04/10/2018	250 Kg	2000	3000	9
5	4000	05/10/2018	250 Kg	2000	2900	6
6	4000	06/10/2018	240 Kg	2000	3000	6
7	4000	07/10/2018	250 Kg	2000	2700	7
8	4300	08/10/2018	250 Kg	2000	3000	6
9	4900	09/10/2018	210 Kg	1900	3000	6
10	4000	10/10/2018	200 Kg	1900	3000	8
11	3900	11/10/2018	200 Kg	1900	3000	6
12	3600	12/10/2018	200 Kg	1900	3000	6
13	2900	13/10/2018	200 Kg	2100	2800	8
14	4000	14/10/2018	200 Kg	2000	2800	8
15	2800	15/10/2018	210 Kg	2000	2800	9
16	4000	16/10/2018	200 Kg	2000	2800	9
17	4000	17/10/2018	200 Kg	2000	2700	7
18	4000	18/10/2018	200 Kg	1800	2700	9
19	4000	19/10/2018	200 Kg	1800	3000	9
20	4000	20/10/2018	240 Kg	1800	3000	6
21	4700	21/10/2018	250 Kg	1800	3000	6
22	4700	22/10/2018	200 Kg	1800	2900	8
23	4800	23/10/2018	200 Kg	2000	2900	8
24	4000	24/10/2018	200 Kg	2000	2900	8
25	4000	25/10/2018	200 Kg	2000	2900	6
26	3000	26/10/2018	200 Kg	2100	2700	6

27	3000	27/10/2018	250 Kg	2100	3000	7
28	3000	28/10/2018	250 Kg	2100	2900	7
29	3600	29/10/2018	250 Kg	2100	2900	7
30	3600	30/10/2018	230 Kg	2000	2900	7
31	3600	31/10/2018	220 Kg	2000	2900	6

Exhibit: 18 State of AP Centralized Kitchens

S.No	Number of Schools	Number of Children	Area	Type of Kitchen	Number of Kitchens	Capacity (Lacs)
1.	97	88,988	Visakhapatnam	Centralized	3	2.5
2.	57	22,958	Kakinada	Centralized	1	1.0
3.	45	25,458	Mangalagiri	Centralized	1	1.0
4.	78	24,967	Nellore	Centralized	1	1.0

De Centralized Kitchens in Visakhapatnam for Food Distribution

S.No	Number of Schools	Number of Children	Area	Zone	Distributed Kitchen	Food Supplied (Daily)
1.	22	19,000	Visakhapatnam	Zone – 1	1	16,000
2.	15	17,564	Visakhapatnam	Zone – 2	1	13,000
3.	9	9,454	Visakhapatnam	Zone - 3	1	8,000
4.	17	10,456	Visakhapatnam	Zone - 4	1	16,000
5.	10	12,456	Visakhapatnam	Zone – 5	1	12,000
6.	24	20,058	Visakhapatnam	Zone - 6	1	18,000

Exhibit: 19

Financials of Akshaya Patra Foundation

Income and Expenditure in 2016-2017

Income & Expenditure Account	For the year ended 31-Mar-17		For the year ended 31-Mar-16		Fiscal 2017 Vs. 2016
	₹ (In Lakhs)	% of Income	₹ (In Lakhs)	% of Income	% Increase/ (Decrease)
Income from:					
Donations	15,672.38	44.81%	12,113.39	40.97%	29.38%
Subsidies	18,017.41	51.51%	16,525.97	55.90%	9.02%
Others	1,285.77	3.68%	924.03	3.13%	39.15%
Total Income	34,975.56	100.00%	29,563.39	100.00%	18.31%
Expenditure towards:					
Materials and utilities consumed	16,981.97	48.55%	14,445.14	48.86%	17.56%
Personnel cost	8,070.48	23.07%	6,615.29	22.38%	22.00%
Other operating expenses	5,308.05	15.18%	4,210.22	14.24%	26.08%
Total Expenditure	30,360.50	86.80%	25,270.65	85.48%	20.14%
Operating Results	4,615.06	13.20%	4,292.74	14.52%	7.51%
Depreciation	3,154.98	9.02%	2,610.09	8.83%	20.88%
Excess of Income over Expenditure	1,460.08	4.17%	1,682.65	5.69%	(13.23%)

RVCE - Marching Ahead   November 2017

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CONCEPTUAL DESIGN AND DEVELOPMENT OF 360-DEGREE DRILLING MACHINE

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ABSTRACT

In basic drilling machines there is problem in movement of drilling machine where it is constrained to move only in unilateral direction. Drilling operations which are most frequently used in small- and large-scale industries. Most of the industries uses the conventional method such as hand tapping, drilling, boring. Some parts cannot be drilled due to small workspace between drill bit and work piece. So, hand drills are used in such cases but it causes alignment problems. To make it possible for easy drilling in even complicated parts and surfaces in materials like wood, plastic and light metals can be drilled with this machine. As it is a compact machine, it can be carried anywhere without much effort. So it is proposed to have a 360-degree drilling machine that can be mounted on a table or wall and can be used to drill holes in all direction say (horizontal, vertical, upside-down).

Keywords: 360degree, drilling, tapping, drill bit, boring.

INTRODCTION

In 360-degree drilling machine drill can be done at any desired orientation and angle without using any kind of clamping or using different machine for drilling. This machine also reduces the clamping time and productivity time. It is designed to produce a cylindrical hole of required diameter and depth on metal work pieces. Though holes can be made by different machine tools in a shop, drilling machine is designed specifically to perform the operation of drilling and similar operations. The rotating drill is pressed at the location and is fed into the work. The hole is made up to a required depth. Drilled holes are characterized by their sharp edge on the entrance side and the presence of burrs on the exit side (unless they have been removed). Also, inside the hole usually has helical feed marks. Thus rotating hinges, connectors and supporting structure to design a 360° drilling machine for easy drilling operations were used.

LITERATURE SURVEY

Pratik Maheshwari discussed the Servo mechanism motor and embedded system in whole drilling operation, So it can be made automatic. The arm rotates at 360 degree and moves anywhere. Nandewalia Prajal and et.al., has designed the Drill machine can drill graphically in all directions, it can rotate radially on X-axis and Z-axis. Machine have a thick base plate and vertical column to which is mounted a horizontal arm. Prof. Arpit,G. Mahure, Mr. Sumit S. Bijwe, Mr. Praful R. Bangade, Mr. Ayush G. Borade had made upgradations on 360 degree drilling machine by incorporating Rotating hinges and connectors with motor mount and supporting structure to design. Arm can move freely and screws are locked for operation.

R. Arjunraj had stated that Pneumatic power is converted into rotational power. It can be even fixed to lathe carriage. So drilling operation can be achieved simultaneously while late operation. Tejas Yakkundi, Murtaza Dawoodi, Uddhav Bagade, Aditya Deokate, Prasad Gawande, Hrishikesh Bhavale had designed the structure helps to design and fabricate a 360 degree drilling machine. This ensures perfect and well aligned drilling. Lookesh kumar sahu[1], Pranesh mohan Mishra, Deepak kumar singh, Vijay kumar yadu, Sandeep kumar kansari had used DC motor for drilling operation. Hinges and Fasteners are used to mount the motor and supporting column that adds stability to the structure.

U. Hema Nikhitha had used Brad point drill bit is used. Due to this, only wooden piece operations are done. G.Prasanth Kumar, P.Guna Sekhar, P.Nadeem Khan. P.Rajesh, B.V.Krishnaiah had designed shafts holding the drills are adjusted depending upon the locations of the holes to be made on the job. Aluminum arms are used. Kamli Harsh, Parth Mistry, Patel Akashr, Patel Ankit, Patel Hemik, Priyang A. Mistry had used bars instead of beams for the structure. The drill is held in tailstock and the work is held by the chuck. B. B. Farande, R. S. Power, M. K. Tike, A. R. Karadage, S. M. Kavchale, M.J. Kumbhar, P. S. Magdum had made small 360 degree drilling machine for PCB. Sometimes Printed Circuit Board vary small, at that time drilling is complicated and not possible to drill. Also sometimes hand drill were used but alignment of hand drill not properly working so our 360° drill on Printed Circuit Board.

MATERIAL DESCRIPTION
Base Plate
The entire structure is mounted on the base plate. It provides a firm support to the whole mechanism and for bearing the weight of the drill bit. The main function of this base plate is to transmit the structure stresses to the concrete footing surface and to link the column bottom end to the footing.

Fig.1 Base plate

Supporting Bridge
This component holds the entire structure. It evenly transfers the load during operation. It connects the C-bracket and base plate. The supporting bridge and the C-bracket is locked with a cotter pin and they are not fixed so they can be rotated in all direction.

Fig.2 Supporting bridge

C-bracket
C bracket is the intermediate component for fixing one part to another. This is done by folding the MS steel plate of thickness 3mm. This bracket is used here to reduce weight when compared to the usage of full solid metal block.

Fig.3 C-Bracket

Roller Bearing
Drawn cup needle roller Bearing is similar to ball bearings, they are designed to carry a load while minimizing friction. However, roller bearings transmit loads using cylinder rolling elements, rather than balls, to maintain the separation between moving parts of the bearing. Here roller bearing is fixed over the shaft of the hinge part.

Fig.4 Roller bearing

Hinge arrangement

A hinge is a mechanical component that connects two solid objects, typically allowing only a limited angle of rotation between them. Hinges may be made of flexible material or of moving components. It support frames and connecting rods to each other by joining together. It used to constraint one axis movement. The plate of 3mm thickness is bent in U-shape and pipe of inner diameter 1.8cm is welded. Hinge is inserted on the shaft of the C bracket.

Fig.5 Hinge

Telescopic Arm

The telescopic arm comprising of the outer arm and inner arm for increasing and decreasing the length of the arm. Through this telescopic arm extra work space is achieved for operation. Numerous slotting operation are performed to reduce the weight of both inner and outer arms.

Fig.6 Telescopic arm

Motor

It is an electrical device which converts electrical energy to mechanical energy. It rotates shaft which is supported by bush in it when power is supplied through rectifier. It is of high torque capable which required for drilling. Most electric motors operate through the interaction between an electric motor's magnetic field and winding currents to generate force.12V DC Motor is attached to the fork of the inner arm.

Fig.7 Motor

Design Process

To achieve a detailed design of 360 degree drilling machine, we sketched the concepts initially. Then several attempts were made to get the results. In between designing, we added few additional features such as telescopic arm, bearing, Slotting operation had done on arms ,So that the weight of structure is considerably reduced . As a result of multiple trials, we have achieved the finalized model of the 360 degree drilling machine.
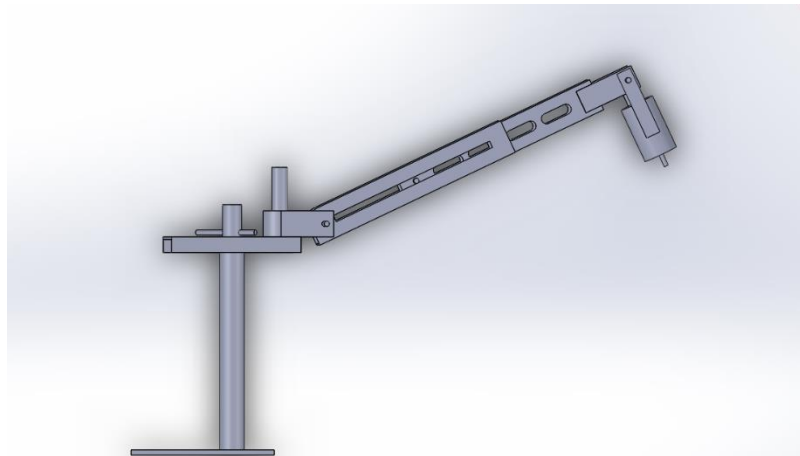
Fig.8 Conceptual Assembly Model

DESIGN CALCULATION:

A. Specification of Motor:

Type of Motor – D.C. Motor   Speed – Max 5000 rpm

Voltage – 12 Volt   Supply – D.C. Supply

Current – 0.2 – 1.2 AMP   Power – 2.4 – 15 Watt

Frequency – 50 Hz   Weight – 150gm

Shaft dia. – 4 mm   Diameter – 40mm

Length (Body) –65 mm   Length (Shaft) – 15mm

B. Cutting Speed (V):

$V = \pi DN$

N=1750 rpm

V=274.88 mm/sec

C. Feed Rate (f): 40 mm/min

D. Depth of Cut (d):

d=D/2

d=1.5 mm

E. Material Removal Rate :

MRR = (πD*D/4)f N

MRR =494800.84

F. Machining Time:

P = 15 Watts,   N = 1750 rpm

P = 2πNT/60   T = P x 60/2πN

T = 15 x 60/2π x 1750   T = 81.8511 N-mm

CONCLUSION:

The purpose of our product is to rotate 360 degree and make it more convenient to use. The size of our 360-degree flexible drilling machine is comparatively smaller in size than those existing in the market. So, it is very simple to move from one place to another. This machine can be easily transported. The overall space required is also minimum. With the help of this machine, we can drill holes in any direction at a particular time. This machine reduces the manufacturing cycle time, the re-clamping can be eliminated: once the workpiece   is clamped, there is no need   for re-clamping in a   different   direction, reduces the number of machines needed, elimination of human error. It precedes our expectations and   performs   well. Thus, fabrication is done according to the design calculations.

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CONCEPTUAL DEVELOPMENT AND ANALYSIS OF A CONVEYOR BELT MATERIAL AND ITS SUPPORTING PARTS FOR PERFORMANCE IMPROVEMENT

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ABSTRACT

The conveyor is important in small scale industries for productivity improvement, but the implementation and maintenance cost of the conveyor are very high and for small industries it is unaffordable. To avoid this problem a basic conveyor system is used to move materials in small scale industries. This is used to help transportation of raw material from vehicles to manufacturing unit to delivery unit. Reduce the loading and unloading time and human effort. It is compact to use. It is much necessary in current industries. After the transporting process is finished the conveyor system is dismantled and kept aside. This paper investigates the load conditions and its effects experienced by a conveyor belt material which is fast, safe and efficient for a small-scale industry. A conveyor system is a common piece of mechanical handling equipment that moves materials from one location to another. Many kinds of conveying systems are available and are used according to the various needs of different industries. The conveyor belt 3D design done by using SolidWorks and analysis work done by using ANSYS.

Keywords: conveyor belt material, load analysis, stress strain analysis.

INTRODUCTION

Significant technology advances are highly appreciated in system design, analysis and numerical simulation. The application of traditional components in non-traditional applications requiring horizontal curves and intermediate drives have changed and expanded belt conveyor possibilities. Example of complex conveying applications along with numerical tools require insuring reliability and availability will be reviewed. Throughout the world bulk materials handling operations perform a key function in a great number and variety of industries. While the nature of the handling tasks and scale of operations vary from one floor to another end, according to the industrial and economic base, the relative costs of storing and transporting bulk materials are, in most of the cases, quite significant. This drives to investigates the various load conditions and its adverse effects experienced by a conveyor belt material to improve its efficient performance for both small-scale and medium scale industries.

LITERATURE SURVEY

Rahul introduced the machine having different height that peak of inclined belt conveyor is adjusted by pneumatic system. One belt conveyor consists of Support frame, vertical stand with wheel and bottom stand while other consist of Pneumatic cylinder bracket and bottom stand. Mayungbe O. Elijah and Oguntuase O. Bolaji concluded that the use of variable electric motor which will allow for evaluation of the system performance at different speeds. The relationship between the weight of packs ant the time is directly proportional to each other. The shaft distance will guarantee unbending nature when movement in various condition. I.A. Daniyan, A.O. Adeodu and O.M. Dadahave designed the roller dimension and speed, power and tension, type of drive unit, location and arrangement of pulley, angle and axis of rotation, control mode. It ensures low investment and flexibility, incorporating gravity flow in material flow system and ensuring that ratio of dead weight to the payload of material handling equipment is minimum.

Patil et al reviewed the system design tools and methods used to get put components together into unique conveyance system designed to solve ever and expanding bulk material handling needs. The application requiring horizontal curves and intermediate drive have changes and expanded belt conveyor possibilities. Kaul stated the task depends on the improvement of the energy efficiency of belt conveyors. The material handling system contains various types like lifts AGV's conveyors etc., it has a high efficiency, large conveying capacity and it can be achieved at different distances, different materials transportation. Deepak Gupta and Dheeraj Dave identified that for transporting bulk materials from one place to another depending on speed of handling height of transportation nature quantity size and weight of materials to be transported. A belt conveyor consists of an endless and flexible belt of high strength with two end pulleys (drivers and driven) at fixed positions supported by rollers.

Ms. Sayali Todkar, Prof. Minlind Ramgir and JSPMs RSCOE Tathwade stated that the belt conveyor used for coal processing industry whose design capacity is 4400TPH and speed of conveyor will be 4.65m/s. It consists of tension calculation on pulley, stress analysis on pulley, stress analysis carried out to find highly stressed components of belt conveyor which are prone to failure. Gerges S. Youssef, Iman Taha and Samy J. Ebeid designed power saving by long belt conveyor systems through increased roll size, using relatively narrow idler spacing and operation systems at relatively high belt speeds. The effect of belt speed at a constant bulk material loading and include the economic aspects of idler spacing to have a clearer image that can contribute efficiently in lowering power consumption. Aniket A Jagtap, Akash R Samrutwar and Rahul G identified the efficient movement of crushed biomass wood while avoiding fatalities during loading and unloading. Transportation is done with Friction between roller surface and moving belt set in motion by rotating pulley. Salave et al made a review that system has a time delay between moving packages for any other purpose, the prototype design requires electric motor, shafts and all the links are being made of aluminum which reduces the weight of whole system.

MATERIAL DESCRIPTION

Conveyor belt

The belt is a principal component of the conveying system as it supports handled materials during loading, discharging and transporting. Belts are wrapped around conveyor systems in two strands to form a closed loop, which makes them typically the largest and the most expensive component in the system.

Idlers

Idlers support the belt along the entire length of the conveyor, in both carry and return strands, where they can be considered the most numerous components among conveyor system parts. To minimize wear between belt and supporting idlers, idler rolls are free to rotate on axles supported by sealed bearings. Several types of idlers are used in conveyor systems, where each is utilized according to its function at a certain location in the conveyor system.

Pulleys

Pulleys are one of the main components of any belt conveyor system, where they are used to form the belt profile, drive the belt, assist the belt advance and apply controlled tension to the belt. Pulleys are classified into drive and non-drive pulleys, where both types are used to support conveyor belts at bends. Drive pulleys are, however additionally, used to transmit power to the system.

Drive assembly

A drive assembly is responsible for empowering the system in order to drive the belt, where such assemblies are typically composed of a set of components that are mounted on a structural steel base. As presented, the main components of a drive are electric motors, speed reducers, power transmission devices and safety guards. Other devices such as brakes and holdback can be installed if necessary.

Support frame

This support frame is used to elevate and hold the pulley and belt above the floor. By using this framed structure, we can adjust the height of the discharge unit to top floors. Based on the length of the distance to be reached the support frame also been increased to deliver the goods in a stable manner without any drop in belt. Increasing the support frame, the help to increase the speed of the belt driving.

Design Process

To achieve a detailed design of small-scale conveyor system, we sketched the concepts initially. Then several attempts were made to get the results. In between designing, we added few necessary features such as foldable and height adjustable conveyor belt. As a result of multiple trials, we have achieved the finalized model of the small-scale conveyor system.

Fig.1 3D Model of a proposed Conveyor system for small scale industries

Design Considerations

The design of an effective and efficient material handling system which will increase productivity and minimize cost, the guidelines normally followed are:

1. Designing the system for continuous flow of material (idle time should be zero).

2. Going in for standard equipment which ensures low investment and flexibility.

3. Incorporating gravity flow in material flow system; and

4. Ensuring that ratio of dead weight to the payload of material handling equipment is minimum.

CONVEYOR BELT ANALYSIS
LOAD APPLYING ON CONVEYOR BELT

The load is acting mainly in the center portion of the belt which is maximum. Placing extra support in load condition we can reduce it.
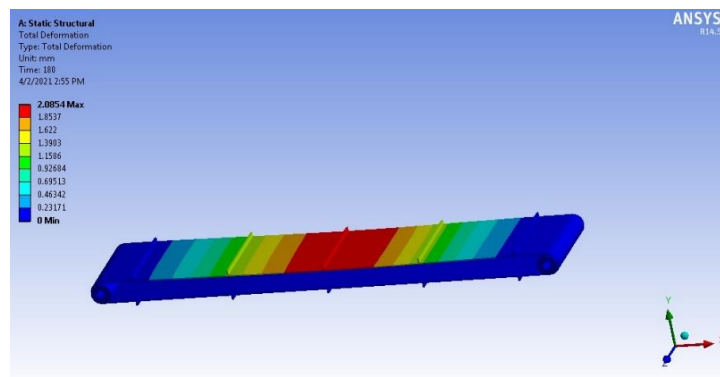
Fig.2 Total deformation for conveyor belt - Maximum total deformation :2.0854
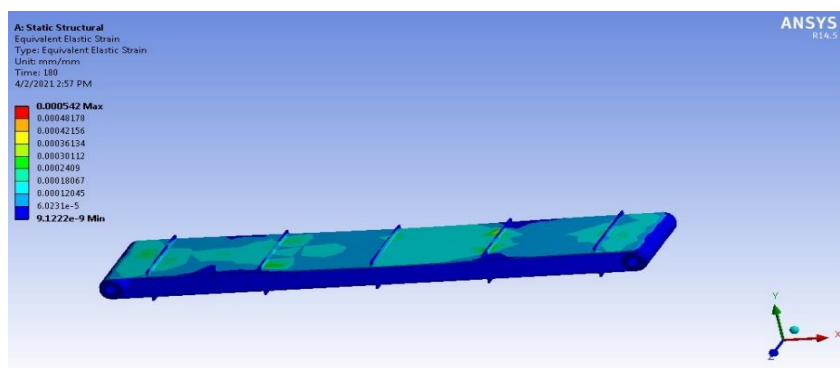
Fig.3 Stress analysis for conveyor belt - Maximum stress: 0.000542

BELT ANALYSIS
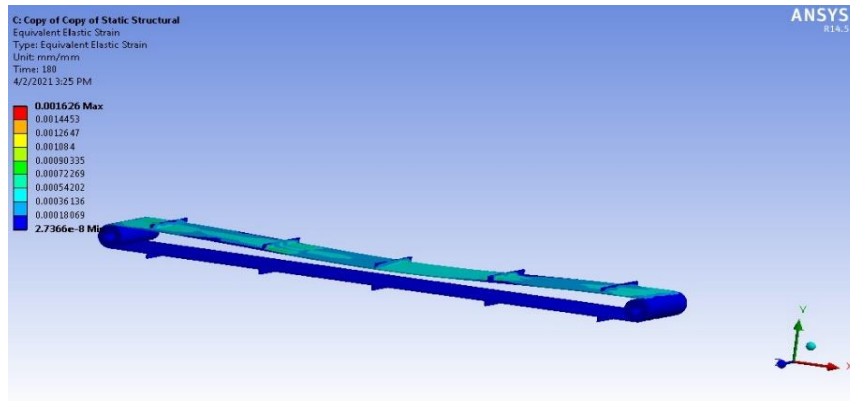
Fig.4 Stress analysis for conveyor belt

ROLLER ANALYSIS

With a load of 400 N, over the conveyor roller part, following is the analysis result obtained for total deformation
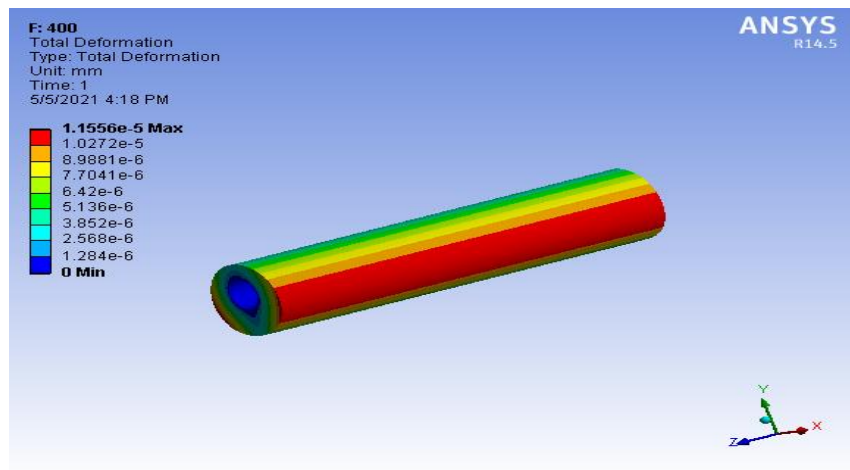
Fig.5 Total deformation on roller conveyor - Maximum deformation: 1.1556e-5mm
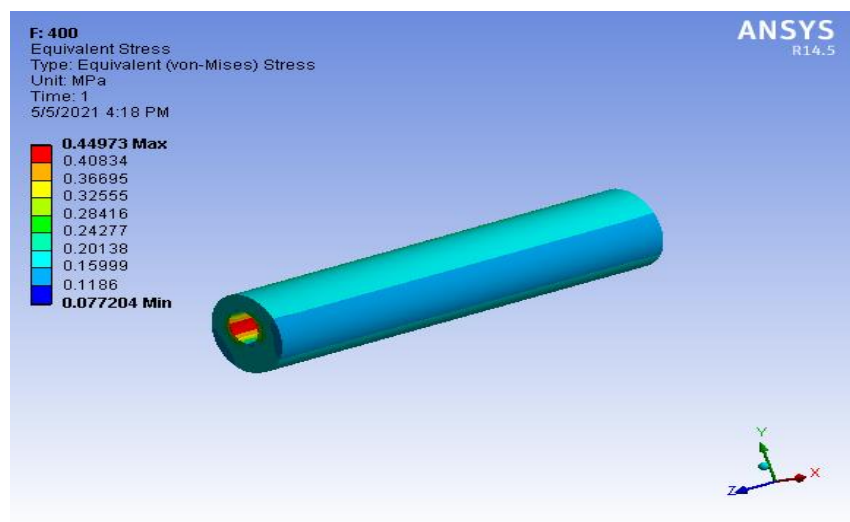
Fig.6 Stress analysis on roller conveyor - Maximum Stress: 0.44973MPa

Lateral portion of the roller bears the most of the load acting on it during analysis. Increasing roller width and reducing idler distance in frame will overcome this.

STAND ANALYSIS

With a load of 300N, over the conveyor stand, following is the analysis result obtained for total deformation.
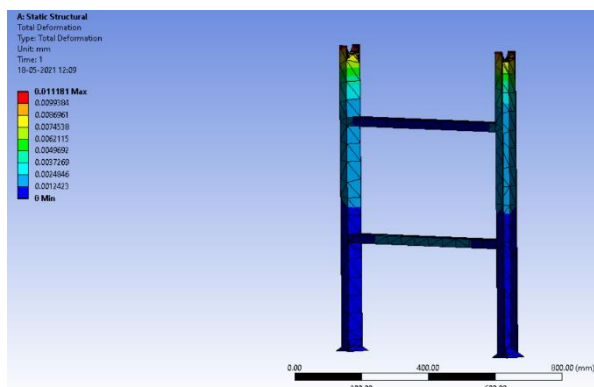
Fig.7 Total deformation on conveyor stand - Maximum deformation: 0.011181mm
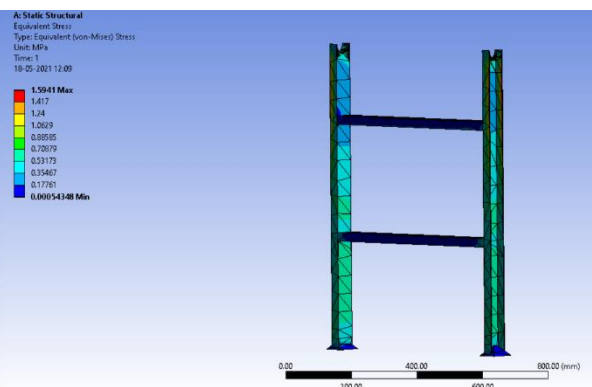
Fig.8 Stress analysis on conveyor stand - Maximum Stress: 1.5941MPa

The deformation tends to bend the bearing end and causes deform the structure. By changing the thickness of the stand, it will withstand.

CONCLUSION

From the belt analysis, the center portion of the belt had the maximum stress. So that extra stand is added in the middle of the conveyor belt to withstand the load. From the roller analysis, the lateral portion of the roller bears the most of the load. So, by increasing the width of roller it is reduced and reduces the distance between idler. From the stand analysis, the roller holding portion has maximum deformation. So, thickness of stand is increased. The load condition of the components is acknowledged through this analysis. Thus, human effort in material handling shall be reduced by building this portable form of conveyor system.

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PLANNING AND DEVELOPMENT OF URBAN CENTRES AND THEIR IMPACT ON ENVIRONMENT IN DIBRUGARH AND TINSUKIA DISTRICTS (UNDIVIDED)

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ABSTRACT

Planning in any town is an important part of the growth, development and sustainability of the citizens and businesses in that town. Good planning helps to create communities that offer better choices for where and how people live. Planning helps communities to envision their future. It helps then find the right balance of new development and essential services, environmental protection, and innovative change. Planning the town involves the intricate details of understanding the requirements of the towns and its character and use of the land to the best of benefit.Therefore in order to understand such a process, an attempt has been made in this paper to briefly examine the planning and development of urban centres and their impact on environment in the Dibrugarh and Tinsukia Districts. The data and information required for this study has been collected from primarily secondary sources.

The study reveals that planning is found highly neglected and rejected in this region except restricted application in Dibrugarh and Tinsukia towns. Hence the spatial urban planning should be implemented in such a way that the entire urban habitat remain pollution free and become eco-development zone.

Key words:- Communities, development, environment, examine, planning, pollution, etc

INTRODUCTION:

The term 'planning' has different connotations when applied to a city (Shankar, 2001). Planning here is not economic sectoral planning, but spatial planning also called urban planning or city and regional planning. It is a dynamic process that works to improve the welfare of people and their communities by creating more convenient, equitable, health, efficient and attractive places for present and future generations. It is like promoting development by implementing decisions and turning the town into a planned city, without interfering with the environment features. Planning looks at the needs of people and environment to expanding limits of development.

STUDY AREA:

Dibrugarh and Tinsukia Districts located in between 27°5′ N and 27°58′N latitude and 94°35′ E and 96°0′ E longitude in eastern most part of Assam. The districts have developed principally as trade and commerce centre, for the central Eastern Region. Administrative functions have also created some impact on its development. Now this region is not only developed as a trade and commerce centre but also attracting large number of Industries.

OBJECTIVES

1. To know the purpose and function of town and country planning.

2. To examine the environmental impact of urban centres.

3. To investigate the regional development of Dibrugarh and Tinsukia districts.

METHODOLOGY

The study has been done on the basis of secondary data collected from the Dibrugarh and Tinsukia Municipal board. The landuse data collected from town and country planning. The data regarding population and environment has been collected from census of India, statistical handbooks of India and IOCL Digboi.

DIBRUGARH AND TINSUKIA DISTRICTS REGION UNDER URBAN PLANNING:
PLANNING AND IMPLEMENTATION STATUS:-

Under Urban Development Department (UDD), most of the schemes are implemented by Local Bodies (Town Committees or Municipal Boards), Development Authorities and Town and Country Planning's Drainage Divisions (Guwahati and Tinsukia) and are facilitated and monitored by the Directorate of Town and Country Planning, Assam, through its district offices.

DEVELOPMENT PLANNING, MUNICIPALITY DEVELOPMENT AUTHORITY:-

The most important agency of Local Self Government at present in urban areas is the Municipality. Now-a-days the Municipal Boards everywhere are playing very important roles in the fields of communication, public health, welfare, regulatory functions, public safety, public infrastructure works and development activities in

towns. In Dibrugarh and Tinsukia Districts there are two Municipal Boards at Dibrugarh and Tinsukia. Between these two the Dibrugarh Municipal Board is the oldest in the region. Dibrugarh and Tinsukia Development Authorities were constituted in the year 1963 and 1986 respectively under the provision of Assam Town and Country Planning Act, 1959 (amended) and rules made there under. The main purpose and function of the Authorities are to encourage planned growth of the town controlling the development in accordance with the provision of the zoning regulation published by the Government in order to have a balanced development in the master plan area for Tinsukia and Dibrugarh so that, the towns can accommodate additional population that contributes a lot in the process of urbanization without affecting infrastructure and civic amenities.

Development authorities not only see the development activities in master plan area, it also plans to develop some areas as per their direct control. It works in areas both inside and outside the municipality area. Under development authority, Milan Nagar area, Mankata, etc in Dibrugarh, Chalihanagar, Bordoloinagar, Napukhuri, Hijuguri, etc. area in Tinsukia are some areas developed by Development Authorities.

DRAINAGE AND SEWERAGE PLANNING:-

Drainage and Sewerage Planning have been taken in Tinsukia and Dibrugarh towns where the existing drainage are extended and new drains are propose and thus drainage networks are proposed to both towns suiting with the situation and adjusting with the roads, geomorphology, slope and climatic situation. Construction of main drains interlinking with sub drains as per identified and demarcated catchment area is the main work of the drainage plan. In Tinsukia, two main catchment areas are identified with some sub catchment inside and three catchment areas in Dibrugarh has been identified. Thus through drains and drainage network urban water is facilitate to flow out easily without making any drainage congestion. But drainage congestion is an outstanding problem in urban centres especially in Dibrugarh. Tinsukia is also ahead in the list of course proper implementation based on proper scientific planning is yet to be done in both Tinsukia and Dibrugarh.

LAND USE PLANNING:-

The Zoning Maps precisely define the lots or parcels of land for each land use category in detail. Therefore, without preparation and adoption of Zoning Maps Zoning cannot be enforced (Das, 2007). Each land use category has different characteristics and impact on the environment. Therefore separation of land uses is necessary, zoning is justified for these reason. Land use determines the inter-relationship of functional activities. In order to accommodate future population of about 1.5 lakh a total area of about 2350.28 hectares is earmarked for residential use in Tinsukia Town. The residential areas are to be developing as self contained units with provisions of all community facilities, services and work centres within seasonable distance. However, this ideal situation cannot be always provided since most of the parts of the town has already been developed. The plan envisages a hierarchy of commercial centres to be redistributed uniformity throughout Tinsukia Planning areas. The existing central area will continue as the main city centre, and proposed to relieve further pressure in the central area. The central area is already congested; therefore further development will aggravate the traffic problem. The proposed Dibrugarh Master Plan Area covers an area of about 7182.69 hectare or approximately 71.83 sq. k.m. out of which about 4085.40 hectare or 56.88 % of the total area is proposed to be developed for urban use by 2021 for a projected population of 282541 lakhs (Fig 8.2) and different zones are taken for development in the days to come.

TRANSPORTATION PLANNING:-

In an urban centre, there are many authorities to construct and maintain transport system viz, the municipal board, Development Authority, PWD, CPWD, railway, Inland water Transport, etc. So these are working over the transport network in the area under their domain. So only the Municipal Board of Development Authority cannot develop the transport system alone. Again transport system may belong to Govt. private or joint venture, etc. It gives the real picture of transport planning.

To avoid traffic congestion and through passing in the town and in the Dibrugarh University campus it is now proposed to divert the N.H. 37 through Dainijan goan, Mancotta grant, Nizkhanikar, Chotobogpara grant, Kuchiakhana and Gharbandichuck jarwa gaon and will ultimately meet the existing N.H.37 near Bokul. This has got the following advantage over the original alignment (i) cost of acquisition is less, (ii) enough scope for widening of the road will be available, (iii) it will give direct excess to proposed marshalling yard and the industrial blocks from the surrounding, (iv) it will help the expansion of the town towards south and (v) it will reduce traffic congestion at the heart of the town .

A bypass road is under construction in Tinsukia town and Makum town also. Increase of vehicles occurs traffic congestion in all towns. Integrated effects are need to solve the problem by construction of extra roads, fly-overs, over bridges, proper traffic control, construction of foot paths, development of parking places, more

terminus, proper control planning, etc. for traffic development in the city. In respect of railway also, the authority should take proper step for development.

ENVIRONMENTAL IMPACT OF URBAN CENTRES:-

The major urban environmental problems of urban centres of Dibrugarh and Tinsukia districts Region are (i) water shortage (ii) shortage of housing (iii) congested roads of central area of the towns (iv) air, water, and noise pollution (v) high density of residential area (vi) absence of organized commercial areas and shopping centres with sufficient parking and storage facilities (vii) inadequate, drainage, and sewerages (viii) Slums problems (ix) less development or resource points (x) land availability, etc

The traffic survey ascertained that mixed type of traffic on all roads has accelerated the traffic congestion in Dibrugarh.The station road near khemka Market caries maximum number of vehicle per hour during the peak period. About 37,000 vehicles running and passing through the town per day. The noise pollution reveals range from 85-95 decibels during peak hours. In Tinsukia the A.T. Road (National Highway) is the most busy road of the town carrying both through and local traffic. Poor maintenance, encroachment on the road, parking on the road side, etc. further aggravate the problem. The other major roads are Rangagora road and road leading to Bordubi. The accident prone areas are Sibdham, Dhekiajuri, G.N.B.Road, Makum road and Hijuguri.

The major roads affected by air and noise pollution due to discharge of exhaust and honking from light and heavy vehicles, The pollution due to effluent discharge and disposal of sewage is noticed in the tributaries of the Brahmaputra river the Maijanghat at Dibrugarh, Burhi Dihing at Margherita and Digboi river at Digboi.

The ambient air quality (Annual Average) observed in Dibrugarh (Boards office Building) for 78 days in 2007 reveals that SO_2 ranges from 3.79-6.23, NO_2 ranges from10.02-12.69, RSPM ranges from 36.94-102.57 and SPM 63.69-154.50 respectively.

Due to disposal of sewage water of towns, hospital and industrial effluents, vehicular cleaning, bathing ghats and dhobi washing, the ground water in and around the Maijan area of the Brahmaputra, defecation, occurs. There is no sewerage system and solid water disposal management system at Dibrugarh town. Individual service pit and sanitary latrine serve the system. The garbage are disposed of by Dibrugarh municipal board by truck carriage to Maijan area near the river Brahmaputra. There is no solid waste disposed management system at Naharkatia town too. At present a small portion garbage of the town are dumped near Sukapha Bhawan on the bank of Buri Dehing river. In Tinsukia and Namrup, majority of daily waste of the town either are dumped in personal own compound or in open space specially on the bank of Tinrai river in Tinsukia. The most part of Dibrugarh town is lowland and drainage system of Dibrugarh is extremely bad and most of the roadside drains are kutcha and have very mild gradient towards the outfall. The worst affected areas are Dibrujan, Grahambazar, Khalihamari, Loohit nagar, South and North Milan Nagar. The town protection drain runs through the heart of the town and falls at Rajabheta stream at a distance of about 5 km. from the town, overspills during the rainy reasons and heavy showers. A second main drain carries water from East-West and central Chowkidingee and Santipara ward to the town protection drain. This drain is also not capable of carrying the load during heavy showers. The third drain i.e. the Rajabheta drain, requires attention in terms of increasing its discharge capacity.

Although Dibrugarh, Naharkatia, Margherita, Duliajan town are located on the bank of the River there are no piped water supply system in the town. The only sources of water are the tube wells and the ring wells. Though the tube wells and ring wells are efficiently functioning, it will no longer be considered free from pollution. Because with the increasing number of sanitary latrines with septic tanks and soak pits, the tube wells and ring wells are likely to be polluted soon. The water supply in Tinsukia development authority's area has the arrangement of deep tube wells to cater to the need of about 300 surrounding persons having the capacity of 7,500 gallons per day.

The spatial distribution of housing density of Dibrugarh and Tinsukia Districts Region denotes that in the central part of the towns are highly density zone. The low density up to 130 person's per hectare and high density ranges from 250 to 620 persons per hectare. In Nahakatia low density up to 75 persons per hectare and high density ranges from 125 to 225 persons. In the same way in Namrup town, the low density is up to 100 persons per hectare and high density ranges from 150 to 250 per hectare. In Dibrugarh per hectare housing density is high in ward no-2,4,5,6,8,9,13,15,18,19,&22 in Tinsukia,1,2,3,7,9,13&15.

At present there are total 10 slums pockets in Dibrugarh town and 21652 populations living in the slum pockets out of a total population of 1,22,523 in 2001 with municipal area,i.e.17.67% of the total population of the municipal area has been lived in the slum pockets. During rainy season most of the slum areas of Dibrugarh

town becomes water logged due to which the existing kutcha roads as well as graveled roads has becomes badly damaged. With the growth of population, the slum areas started increasing in the vicinity of Naharkatia town. These include daily wage earners, low-income group, employees, beggars ,etc. These people manage to occupy vacant Govt. land, riverside areas and deserted plots of land in and around railway station on the bank of the Burhi Dehing river of Naharkatia town such dwellings have sprung up gradually. These temporary shelters have converted into permanent congested and unhygienic buildings in due course. At present there are 4 slum pockets at Naharkatia town. In Tinsukia ward no 1, 2, 3, 5, 6, 8, 9, 10 have slump pockets. These houses are congested damp, dark and unsuitable for human living.

Due to high building activities, low green coverage, high housing and population density, high urban crowding and traffic congestion the micro climate is very much affected in the central core of towns. There is an increase in day temperature in the core of the town. The concentration of carbon dioxide and carbon monoxide is high. Industrial town like Digboi, Duliajan, Namrup are most polluted town in this region. Due to Digboi Oil refinery, water pollutant like P^H, phenol, sulphide, biochemicals, oil & grease effluent discharged during 2009-2010 was $93744M^3$. Storm water is openly released to Digboi Nollah at Digboi town. NOx & SO_2 , RPM & TSPM emission occur to the air in different direction. So, landscape and aesthetic problems are very high in these industrial towns. Duliajan is also a busy and commercial town, that's why these pollutions badly affect the Duliajan town also. Due to this, various types of disease attack the people there. It is increasing day by day. The Brahmaputra Cracker and Polymer Limited (BCPL) project located at Lapetkata, in Dibrugarh District is so constructed with concrete that even a single tree has not been seen, in the construction area. In spite of that hundreds of hectares of tea garden are clearing down for the development of the project. It will become an environmental problem.

CONCLUSION AND RECOMENDATIONS:-

Based on investigations, analysis and interpretation of the existing facts and figures in respect of the planning and development of urban centres and their impact on environment in the Dibrugarh and Tinsukia Districts indicates that the integrated development approach should be the strategy for overall development of the region. Development of infrastructure and all other basic requirements according to the need in different planning should be provided. Training should be also provided to the young people for a commercial career, the overall development of a region only can be geared up though human resource development (Das, 2006).Hence the spatial urban planning should be implemented in such a way that the entire urban habitat remain pollution free and become eco-development zone. Planning is found highly neglected and rejected in this region except restricted application in Dibrugarh and Tinsukia towns. Planning and development is not impressive and slowing down the growth. After spontaneous growth, town and country planning bounds take up plans for growth of Dibrugarh and Tinsukia towns, and so parts especially residential use are developed under their control. Planned commercial area is rarely being able to develop. Due to lack of resource allocation and encouragement, the work under planning and development is lacking behind.

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A REVIEW ON INTELLIGENT SYSTEMS FOR PERFORMANCE EVALUATION O*F* TEAM MEMBERS

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ABSTRACT
Now a days, the performance evaluation of team members is very important in every organization. In this review article, existing studies on performance evaluation of employees, students, senior managers are summarized. In the literature, the authors have used the concepts of fuzzy logic, expert systems, machine learning algorithms for the performance evaluation of team members. The results achieved by using machine learning algorithms, fuzzy logic is impressive. The different attributes such as employee knowledge, teaching activities, research activities, attendance, quiz etc. are taken as input variables for the existing systems found in literature and output of these existing systems is category of team member such as outstanding, good, average, poor etc.

Keywords: performance; evaluation; fuzzy logic; decision tree

1. INTRODUCTION

Performance evaluation systems are designed and used in almost every organization. These systems are used for self-evaluation by team members, employees of an organization. It is also helpful for higher authorities so that they can have status of their employees. Now different techniques are being used for design and development of such systems. Machine learning algorithms, soft computing techniques are used by majority of researchers in the existing studies found in literature. Fuzzy Logic is an approach to variable processing that allows for multiple values to be processed through the same variable. Fuzzy logic attempts to solve problems with an open, imprecise spectrum of data and heuristics that makes it possible to obtain an array of accurate conclusions. Fuzzy logic is designed to solve problems by considering all available information and making the best possible decision given the input. Machine Learning algorithms are the programs that can learn the hidden patterns from the data, predict the output, and improve the performance from experiences on their own. Different algorithms can be used in machine learning for different tasks. **KNN** is a Supervised Learning **algorithm** that uses labelled input data set to predict the output of the data points. It is one of the simplest Machine learning **algorithms** and it can be easily implemented for a varied set of problems. It is mainly based on feature similarity. SVM stands for Support Vector Machine. SVM is a supervised machine learning algorithm that is commonly used for classification and regression challenges. Common applications of the SVM algorithm are Intrusion Detection System, Handwriting Recognition, Protein Structure Prediction, Detecting Steganography in digital images, etc. In the SVM algorithm, each point is represented as a data item within the n-dimensional space where the value of each feature is the value of a specific coordinate. After plotting, classification has been performed by finding hype-plane, which differentiates two classes. The Decision Tree Algorithm is one of the popular supervised type machine learning algorithms that is used for classifications. This algorithm generates the outcome as the optimized result based upon the tree structure with the conditions or rules. The decision tree algorithm associated with three major components such as Decision Nodes, Design Links, and Decision Leaves. It operates with the Splitting, pruning, and tree selection process. It supports both numerical and categorical data to construct the decision tree. Decision tree algorithms are efficient for large data set with less time complexity. **Bayesian networks** are a type of probabilistic graphical model that uses Bayesian inference for probability computations. Bayesian networks aim to model conditional dependence, and therefore causation, by representing conditional dependence by edges in a directed graph. Through these relationships, one can efficiently conduct inference on the random variables in the graph through the use of factors.

2. LITERATURE REVIEW
A review on existing studies for performance evaluation is summarized in table 1.

Table 1: Existing studies for performance evaluation of team members

S No.	Reference	Technique	Input(s)	Output(s)	Remarks
1	Aguilar Lasserre et al. (2014) [1]	Fuzzy logic	Staff information, Management, use of resources etc.	Scale: competent, highly Competent etc.	Mamdani fuzzy inference system is designed for the performance evaluation.

2	Gupta, Y et al. (2019) [2]	Machine learning: KNN, SVM, DT, BN	Attendance, quiz, Assignment and marks	Performance: Excellent, good, needs improvement.	Machine learning systems are designed for performance evaluation of students of a university.
3	Khan, A. R et al. (2011) [3]	Fuzzy expert system	Proficiency in teaching, content knowledge, speaking style, body language etc.	Performance of teacher	Fuzzy expert system is developed for performance evaluation of teachers
4	Turnip, M et al. (2019) [4]	Decision support system	Pedagogy, personality, professionalism etc.	Performance of teacher: Worthy, considered etc.	Decision support smart system is designed for performance evaluation of teachers in a school.
5	Ahmed, I et al. (2013) [5]	Fuzzy logic	Employee knowledge, quality of work, quantity of work etc.	Performance evaluation of employee	Fuzzy logic-based system is designed for performance evaluation of employees in an organization
6	Shaout, A. et al. (1998) [6]	Fuzzy logic	Teaching activities, Research activities, service to school etc.	Performance evaluation of employees	Fuzzy logic-based system is designed for performance evaluation of employees in an organization
7	Arvey, R. D et al. (1998) [7]	Survey paper	Employee attributes such as research activities, services etc.	Performance evaluation in work settings	Research papers from year 1993 onwards are reviewed
8	Wu, H. Y et al. (2009) [8]	Fuzzy expert system	Finance, customer, growth etc.	Evaluation of banking performance	Ranking of banking performance is calculated based on fuzzy logic
9	Gui, X. et al. (2014) [9]	Expert system	Different characteristics of manager	Performance evaluation of senior managers	Expert system is designed for performance evaluation of senior managers
10	Islam, R et al. (2006) [10]	Analytic hierarchy process	Quality of work, planning, team work, initiatives, communication etc.	Evaluation of employee performance	In this system, performance of an employee is evaluated by using AHP method.

3. CONCLUSION AND FUTURE SCOPE

Different systems have been designed in the existing studies for evaluation of performance of team members in different organizations. These team members may be students, teachers, managers in a bank, faculty in a university etc. Researchers have used fuzzy logic, different machine learning algorithms, novel artificial

techniques for performance evaluation of team members in the organizations. The performance of developed systems is computed in terms of different performance parameters such as accuracy, precision etc. it is concluded from the literature that KNN method, SVM, Decision tree, Fuzzy logic achieved good results. In the future, hybrid models can be designed for performance evaluation of employees for better accuracy or results. The comparison based on the performance of existing systems is shown in the table 2.

Table 2: Performance evaluation of existing systems

S no.	Technique/Algorithm	Accuracy
1	KNN	76%
2	DT	84%
3	BN	92%
4	SVM	93%

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E-COMMERCE TRENDS -A NEW BUSINESS REVOLUTION IN INDIA

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ABSTRACT

E-commerce is a boom in the modern business. E-commerce means electronic commerce. E- commerce (Electronic commerce) involves buying and selling of goods and services, or the transmitting of funds or data, over an electronic network, predominantly the Internet.

E-commerce (Electronic commerce) is a paradigm shift influencing both marketers and the customers. Rather e-commerce is more than just another way to boost the existing business practices. It is leading a complete change in traditional way of doing business. This significant change in business model is witnessing a tremendous growth around the globe and India is not an exception. A massive internet penetration has added to growth of E-commerce and more particularly start-ups have been increasingly using this option as a differentiating business model.

Moreover, E-Commerce has significant influences on the environment. Although the model is highly used in current business scenario but the option has not been explored at its fullest.

The current research has been undertaken to describe the scenario of E-Commerce, analyze the trends of E-Commerce. The study further examines the key variables imperative for the success of E-commerce business models.

Objective:

The objectives of present study are:

1. To understand the present status and trends of E-Commerce; and

2. To reveal the key variables influencing the increased usage of E-Commerce.

Key Words: E-Commerce, Internet, Self-service, Technology, Internet banking.

FULL PAPER

E-commerce means electronic commerce. It means dealing in goods and services through the electronic media and internet. E-commerce involves carrying on a business with the help of the internet and by using the information technology like Electronic Data Interchange (EDI). E- Commerce relates to a website of the vendor on the Internet, who trades products or services directly to the customer from the portal. The portal uses a digital shopping cart or digital shopping basket system and allows payment through credit card, debit card or EFT (Electronic fund transfer) payments.

A more complete definition is: E-commerce is the use of electronic communications and digital information processing technology in business transactions to create, transform, and redefine relationships for value creation between or among organizations, and between organizations and individuals.

The main types of electronic commerce are: business-to-business (B2B); business to- consumer (B2C); business-to-government (B2G); consumer-to-consumer (C2C); and mobile commerce (m- commerce).

E-COMMERCE FACILITATORS:

(1) Internet: A massive internet penetration has added to growth of E-commerce. Internet and smart phones are becoming an integral part of every life. Internet is no more a source of information but has become an important tool for shopping, learning, communicating and even getting service from plumbers, carpenters, doctors etc. Supply chain is also becoming leaner and smarter as digital platforms are helping to better connect with the customers which significantly reduces the waste and supporting to green businesses. Over the past 15 years the ICT revolution has driven global development in an unprecedented way. With an immense progress in technology, internet and its services have led to creation of new markets. The internet user population was small during the 1980s, experiencing a slow but steady growth until 1994 due to an increasing number of text-based users (eg, those using email and file transfer functions). Then, with the introduction of the World Wide Web and subsequent multimedia content expansion, the number of net users exploded. In fact, the internet has grown much more quickly than any other medium in history. The International Telecommunication Union (ITU), a United Nations body, recently predicted in 2015 that 3.2

billion people will be online. The population in May 2015 stood at 7.2 billion. In the year 2000 there were just 400 million internet users worldwide. Internet in India took more than a decade to move from 10 million to 100 million and 3 years from 100 to 200 million, it took only a year to move from 300 to 400 million users. Clearly, Internet is mainstream in India today. This number is expected to further surge to 462 million by June this year as more people come online, especially through their mobile devices. The total Internet user base stood at over 300 million in December 2014, which grew to 375 million by October last year. Currently, India has the second largest Internet user base in the world recently overtaking the US (now the third largest user base). China currently leads with more than 600 million Internet users. Mobile Internet user base in 2015 in urban India has grown 65 per cent over 2014 to reach 197 million, while the rural user base surged 99 per cent to 80 million by October 2015. This is expected to grow to 219 million (urban) and 87 million (rural), respectively (IAMAI and IMRB.

(2) Payment Gateways: A payment gateway is an e-commerce application service provider service that authorizes credit card payments for e-businesses, online retailers, bricks and clicks, or traditional brick and mortar. The life blood of online business is the payment routes which comprises credit card, debit card, online banking payments, electronic funds transfer. The world is transforming from cash to digital money and thus there is a need of payment gateways for sustainable future ecommerce.

(3) Analytics: Analytics is the scientific process of transforming data into insight for making better decisions. Analytics helps businesses to gather, organize, analyze, and report on everything their customers do. The massive increase in the volume of data has forced the businesses to focus on analytics to understand the behavior of the customer. E-tailor need to have real time access to information to measure return on online investments and optimize the channel mix. There are basic analytics capabilities available with the ecommerce players like basket size analysis, average order value, conversion ratio but we need deeper analytics solution for actionable insights of the consumer.

(4) Social Media Businesses are increasingly making use of social media in order to market their goods and services. Social media refers to websites and computer programs that allow people to communicate and share information on the internet using a computer or mobile phone. Social media has played a great role in brand building and informing various offers to the customers. It also helps in getting the feedback about the product or service. It provides a platform for brand building, advertisements, developing a community of trusted users, spreading word of mouth etc

(5) Autonomous Vehicles An autonomous vehicle is a motor vehicle that uses artificial intelligence, sensors and global positioning system, coordinates to drive itself without the active intervention of a human operator. The age of the autonomous car is coming, and it's coming fast. Purchasers of autonomous vehicles will have more time to view emails, search the web, buy new products, and see advertisements all around them. With autonomous cars, vast digital marketing experience will present itself. These purchases and search patterns can be tracked to help companies tailor their marketing campaign to capture this new segment. The scope of big data just got much bigger, but will become so tailored and predictive in the years to come that we may never have to manually adjust anything again.

(6) 3D Printing A 3D printer is a device that's capable of making a three-dimensional object from a digital design. It uses something called "additive manufacturing" -- a layered process that bears some similarity to the way an ink-jet printer sequentially layers its colors on a flat piece of paper. It is expected that 3D printing, might one day blow away manufacturing of the kind we've been used to since the Industrial Revolution shook up agrarian life in the early 19th century. 3D printing is creating a market in designs that are meant to be printed by the buyer -- or a third-party manufacturer unrelated to the designer. The end product isn't sold -- it's the design that's sold, along with a license for it to be printed. Buried in corners of the Internet are marketplaces where budding designers are selling their plans for printing at home or in the workplace. Customers canuse their own printers or they can buy the design and have it printed on the marketplace's printer and then delivered.

E-COMMERCE TRENDS -A NEW BUSINESS REVOLUTION IN INDIA:

E-commerce is a boom in the modern business. It is a paradigm shift influencing both marketers and the customers. Rather e-commerce is more than just another way to boost the existing business practices. It is leading a complete change in traditional way of doing business. This significant change in business model is witnessing a tremendous growth around the globe and India is not an exception. Moreover, E-Commerce has every potential to curb the pollution and thus producing significant influences on the environment.

Buying goods and services via E-Commerce allows consumers the freedom to choose when and where to shop and the opportunity to research the product, the seller, and any other available options. Shopping has been revolutionized through the availability of online information. Just about anything that can be bought in a merchandise store can be bought via E-commerce, even perishables like groceries. And consumers have embraced these possibilities around the globe.

The effects of e-commerce are already appearing in all areas of business, from customer service to new product design. It facilitates new types of information based business processes for reaching and interacting with customers like online advertising and marketing, online order taking and online customer service. In now days E-commerce uses the WWW at least some point in transaction lifecycle. It can also reduce costs in managing orders and interacting with a wide range of suppliers and trading partners, areas that typically add significant overheads to the cost of products and services. For developing countries like India, e-commerce offers considerable opportunity. In India it is still in nascent stage, but even the most-pessimistic projections indicate a boom. There has been a rise in the number of companies' taking up e-commerce in the recent past. Major Indian portal sites have also shifted towards e-commerce instead of depending on advertising revenue. Many sites are now selling a diverse range of products and services from flowers, greeting cards, and movie tickets to groceries, electronic gadgets, and computers, etc. E-commerce has reached to an extent that the cow dung patties are also selling like hot cakes online in India.

India's e-commerce market is likely to touch $38 billion mark in 2016, a massive jump over the

$23 billion revenues clocked by the industry in 2015, according to a study. Increasing internet and mobile penetration, growing acceptability of online payments and favorable demographics have provided the unique opportunity to companies to connect with their customers. On the other hand, mobile commerce (m-commerce) is growing rapidly as a stable and secure supplement to the e-commerce industry. Shopping online through smartphones is proving to be a game changer. It is believed that m-commerce could contribute up to 70 per cent of their total revenues.

UNDERLYING FACTORS IN E-COMMERCE :
ASSOCHAM Study found the highest growth rate in the apparel segment, almost 69.5 per cent over 2014, followed by electronic items, up 62 per cent, baby care products, up 53 per cent, beauty and personal care products at 52 per cent and home furnishings at 49 per cent. Rapid growth of digital commerce in India is mainly due to increased use of smartphones. Mobiles and mobile accessories have taken up the maximum share of the digital commerce market in India, noted the study. Moreover, almost 45 per cent online shoppers reportedly preferred cash on delivery over credit cards (16 per cent) and debit cards (21 per cent). Only 10 per cent opted for internet banking and a scanty 7 per cent preferred cash cards, mobile wallets, and other such modes of payment. The 18-25 years of age group has been the fastest growing age segment online with user growth being contributed by both male and female segments. The survey highlights that 38 per cent of regular shoppers are in 18-25 age group, 52 per cent in 26-35, 8 per cent in 36-45 and 2 per cent in the age group of 45-60. Nearly 65 per cent online shoppers are male and 35 per cent female.

Mitra Abhijit suggests E-Commerce has unleashed yet another revolution, which is changing the way businesses buy and sell products and services. New methodologies have evolved. The role of geographic distances in forming business relationships is reduced. E-Commerce is the future of shopping. With the deployment of 3G and 4G wireless communication technologies, the internet economy will continue to grow robustly. In the next 3 to 5 years, India will have 30 to 70 million internet users which will equal, if not surpass, many of the developed countries. Internet economy will then become more meaningful in India. With the rapid expansion of internet, E- commerce is set to play a very important role in the 21st century, the new opportunities that will be thrown open, will be accessible to both large corporations and small companies. The role of government is to provide a legal framework for E-Commerce so that while domestic and international trade are allowed to expand their horizons, basic rights such as privacy, intellectual property, prevention of fraud, consumer protection etc. are all taken care of.

Chinana Nisha and Goele Sangeeta propose that the future of E-Commerce is difficult to predict. There are various segments that would grow in the future like: Travel and Tourism, electronic appliances, hardware products and apparel. There are also some essential factors which will significantly contribute to the boom of the E-Commerce industry in India i.e. replacement guarantee, M-Commerce services, location based services, multiple payment option, right content, shipment option, legal requirement of generating invoices for online transactions, quick Service, T & C should be clear & realistic, the product quality should be same as shown on the portal, dedicated 24/7 customer care center should be there.

Awais Muhammad and Samin Tanzila (2012) indicate that use of internet has made the world a global village. The use of Internet has reduced the distances and brought the people together. A nation's back bone is commerce and it will be strengthened if backed by electronic tools in which e-commerce plays a vital role. The important feature in ecommerce is privacy which not only increases competitive advantage but confidence level also. E-commerce brings sellers and potential buyers at the distance of one click and it saves time as it is cost effective, as E-commerce is becoming key to success

Internet banking, one among the innovative and significant internet based services has experienced explosive growth and led to transformation of traditional banking practice. Online banking or net banking in today's dynamic age of banking has made things much easier for the people and saves a lot of time for its customers. The traditional way of standing in the queues and filling up all the forms are well solved and now it is no hassle for making any transaction with the banks by virtue of internet banking. The financial institutions which operated traditionally are now able to lower their operational costs and increase the consumer retention by virtue of technology. Internet banking as a latest and potential means for banking now holds a similar importance as that of ATM's, phone banking and traditional bank branches. The works by ABA, 2004; Fox, 2005 suggest that an internet banking strategy may be effective, with reports of more profitable, loyal and committed consumers compared with traditional banking consumers.

Dutta and Dutta, found tangibles have the highest impact on overall customer satisfaction. The largest discrepancy between the customer expectations and perceptions is in terms of empathy which includes Bank locations and ATM machines in convenient places and tele- banking and internet banking facility. The study regards this a major source of concern for Indian banking industry as a huge service quality gap exists for all the banks in this category.

Kumar and Rajesh suggest that the facilities of the banks should be made more convenient for customer comforts. The ATM services should be extended with few more cabins. The work also concludes that with sincere efforts and positive attitude, the needs of many customers can be satisfied when banks aim at 'customer delight'.

Blasio, in his study does not find the support for the argument that the Internet reduces the role of distance. Internet usage is much more frequent among urban consumers than among their non-urban counterparts. The use of e-commerce is basically unaffected by the size of the city where the household lives. Geographically remote consumers are discouraged from purchasing goods by the fact that they cannot inspect them beforehand. Leisure activities and cultural items (i.e., books, CDs, and tickets for museums and theaters) are the only goods and services for which e-commerce is used more in isolated areas. Finally, e-banking bears no relationship to city size. In choosing a bank, non-urban customers give more importance to personal acquaintance than do urban clients, partly because bank account holders in remote areas are more likely to have taken out a loan from their bank.

Ozok et al identified ten items contributing to overall consistency in e-commerce customer relationship management. These items are consistency of transaction steps, consistency of Web site design, consistency of navigation, consistency of promotions, consistency of in-stock indications, consistency of product variety, consistency of fraud protection, consistency of product guarantees, consistency of overall site fairness, and consistency of return policies. This list of consistency items includes three usability items. It can be concluded that sites with good usability have a better chance of having successful CRM implementation in their business. Consistency of promotions, in-stock indications, product variety, fraud protection, guarantees, fairness, and return policies indicate mainly that customers in fact demand a high level of security-related information as well as trustworthiness and high ethics on the shopping site to become regular customers of e- vendors. Customers demand equal and consistent treatment concerning products and product- related services. The findings indicate that the level of security and guarantees presented to customers has a significant positive effect on customer retention and customer acquisition.

Singh and Lalwani in their work on internet banking suggest that internet banking has facilitated the banking relationships with the customers. It is now widely accepted in the country because of the fact that it is the cheapest source of providing banking services. As more and more banks will succeed in online banking, a day will come when it will reach a common place as ATM's. It has not only increased the banking transactions but also has reduced the time and cost factor. It has brought revolution in the banking industry.

Rust and Chung, suggests to know not just what customers do in any particular e- commerce contact but also what they do (and how they perceive and feel) across multiple contacts. The work also suggests to investigate the kinds of online services that promote growth of the customer relationship, and the most effective ways to

combine the online relationship with the offline relationship, with the idea that the full relationship with the customer is not complete without considering both online and offline, as well as how they interact.

Hsieh examined what a firm should consider in order to encourage customers to at least try, and eventually adopt, the SST offered by a firm into the customer's regular routine. The result suggests that before a firm makes the leap into adding SST to their product/service line, they need to invest the time in seeing if they are ready themselves. Customers want what they have always wanted. They want reliable, affordable, quality service that is convenient and easy to acquire. If firm can't provide an SST that is at least as reliable, if not more so, than no-technology customer service, then firms isn't prepared to properly implement SST.

Deva shish Pujari, explored the issues relating to service recovery in case of SST failure and effects of favorable/ unfavorable SST encounters on business relationships. The key findings of the study show that key sources of satisfaction are different for B2B clients than for end consumers, as evidenced in previous studies by Meuter et al. and Srijumpa et al. The study shows that in the event of SST failures, service recovery is very critical to clients. In a situation where service personnel are not involved in the service encounter, clients' needs a quick and complete recovery after reporting the failure. Clients may also expect that SST delivery should have the capability to transmit the failure to their service provider on a real time basis. The results of this study also echo that satisfying SST incidents will lead to future behaviors such as word of mouth and repurchase intentions.

Snellman and Vihtkari, in their study reveal that, in general, failures are very common in both, interpersonal service encounters and technology-based service encounters. In interpersonal service encounters, unfriendly or impolite service and time-related aspects are the most common causes for dissatisfaction. On the other hand, dissatisfaction in technology-based encounters is often related to failures in technology, service design or in the service process.

Chou and Chou reveal that with the astonishing growth of electronic commerce, banks around the world now see a huge potential market for internet banking. In order to provide efficient services to its customers, a bank needs to design and implement a robust internet system. Several technological issues must be considered before adapting to a specific internet environment, including network technologies, platform and standards, scalability, security and intelligent software agents. In order to meet the needs of global business communities, the banking industry needs to carefully select suitable networking technologies to serve the internet market. As banks select electronic commerce as one of their mission-critical business processes, managing risk and liability become important. Internet security is always a major concern in a digital economy; it involves the application of both technical and nontechnical practices. The non-technical ways of pursuing security on the internet include formulating a corporate security policy and educating and training users about that policy. On the other hand, major technical measures consist of access controls, authentication, encryption, firewalls, audit, antivirus tools, and self-assessment tools. The bank needs to select suitable security tools and policy to protect itself and its customers. Specific security policy can be posted on the website for user's reference.

CONCLUSIONS:
A developing country may well attempt to be modernized if it introduces e-commerce effectively and efficiently. It will improve its output and lead to its competitive advantage. Information Technology (IT) has uplifted ecommerce worldwide. Now it's at ease to enter to a new market and marketers' can easily evaluate their product and company's performance.

A growing number of firms in various industries, such as banking, education, commerce, and tourism, etc. have improved their services by both incorporating technologies into their service delivery process. Integration of technology in services is becoming very common; however, very little academic research has been conducted to examine its influence. The issues related to E- commerce are also on the rise which is posing serious threat to its tall future and hence demands right strategies on part of marketers.

The research works on E-commerce propose good number of variables to be taken care of if marketers need to be successful in this newly business model. The factors which will significantly contribute to the success of the E-Commerce industry and focused upon should be consistency of transaction steps, consistency of Web site design, replacement guarantee, M- Commerce services, consistency of promotions, consistency of in-stock indications, consistency of product variety, location based services, multiple payment option, right content, shipment option, legal requirement of generating invoices for online transactions, quick Service, T & C should be clear & realistic, the product quality should be same as shown on the portal. The important feature in ecommerce is privacy which not only increases competitive advantage but confidence level of the customers.

The researches also suggest 18-35 as the good customer age to be promising and to be targeted irrespective of gender for better results.

Social media may be a boon for brands and marketers looking to reach target buyers without wasting big bucks on traditional media, but luxury brands have recently found it challenging as unauthorized sellers are luring buyers, most of who fall in to the temptation of getting discounts of up to 50-70% have cropped up using platforms like Facebook, Instagram, Twitter and WhatsApp. Firms must closely monitor such accounts and spend money on legal checks controls.

In a marketplace model, the ecommerce firm provides just the technology platform while sellers on the site own the inventory. Most E-commerce companies have call centers to connect with customers, the pressing need is the initiative to set up call centers to deal exclusively with merchants as increasing the number of sellers in a marketplace becomes the next battlefront in the E-Commerce. The need is 24/7 call centers should be dedicated.

The e-commerce industry participants must also understand and address the cultural issues that are unique to the target country and relate to off-site transactional process, the large scale diffusion and success of such endeavors will be greatly impeded. E-Commerce firms must also find most effective ways to combine the online relationship with the offline relationship, with the idea that the full relationship with the customer is not complete without considering both online and offline, as well as how they interact.

The governments should offer a level field to its E-commerce firms to allow the country's significant development. The thrust on E-Commerce should be to offer a legal framework so that while domestic and international trade are allowed to expand their horizons, basic rights such as consumer protection, privacy, intellectual property, prevention of fraud, etc. are highly protected. The banks also need to select suitable security tools and policy to protect itself and its customers.

E-Commerce is a boon for any country- if given right impetus and good environmental framework to prosper can significantly lead to country's progress and development.

IMPLICATIONS FOR RESEARCHERS:
Our study, being conceptual in nature, raises a number of opportunities for future research, both in terms of theory development and concept validation. More empirical research will in fact be necessary to refine and further elaborate findings in the area of ecommerce.

The study is an eye opener for the researchers who have ample interest in E-commerce. This review paper will offer them the leads towards the better understanding of the key variables of the recent E-commerce platform that is revolutionizing the business.

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BUSINESS OPPORTUNITIES FOR IT SERVICES START UPS DURING COVID 19: A CASE STUDY ON GROWTH AND EXPANSION STRATEGY WITH REFERENCE TO SUDEEP & CO., BANGALORE, INDIA

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ABSTRACT

Business expansion has the potential to help a Company accelerate its growth by fulfilling its objectives and goals in the long run and also exposes its products and services to a broader audience. In today's ambitious era, it is very crucial for a Company to overcome growth stagnationand expand its operations which provides them a competitive advantage over other competitors. This paper aims to highlight how an IT company embraced different strategies in order to grow during the pandemic whereas, many of the other Companies were on the verge of dissolving theiroperations. The paper also highlights what strategies this Company has formulated and implemented for its future growth. This research derives responses from the mid-level and top- level management of Sudeep & Co. in Bangalore, and based on which, analysis is performed andinterpretation has been drawn. Proper implementation of strategies can help a Company to withstand itself during any economic crisis. And utilization of latest technology becomes vital in order to create a unique USP and reach higher profits. Looking at a problem as an opportunity toexpand the business operations and making a right choice for the betterment and advancement of the business is the key factor contributing towards the success of any business.

Keywords: Internet-Of-Things (IOT), Expansion Strategy, Fleet Management Solutions, Vehicle Tracking Services.

INTRODUCTION

The research focuses to study the expansion strategy of Sudeep & Co. when the pandemic hit the world. The research will be focusing on the targeted market segment and the major contributor in the revenue of this company. Sudeep & Co. is a new age company focused on building state-of- art Internet-of-Things (IOT) solutions. They are the creators of one of the India's leading vehicle tracking and telematics portal. As we are well aware that the situation before and after pandemic was totally different, yet the company survived and focused on alternative ways to grow the business with the help of all the employees, who supported the management to reach its business goals and objectives. The idea of starting the company emerged from observing the growing need of IOT which was a high growing domain and as the predictions stated, going forward the biggestconsumer in the IOT sector is going to be connected vehicles and by 2030, 50% of the overall IOTmarket is going to be driven with connected vehicles, as vehicle owners will be able to upload theirdata and provide fleet management solutions to the end users.

COMPANY'S RESEARCH FOR GROWING NEED OF VEHICLE TRACKING SERVICES

After the Company's inception, it was found that there is a huge need for vehicle tracking servicesin the B2B space and it made very necessary for large fleets to have a comprehensive solution to track their fleet and manage their vehicles. In 2018, carriage dominated the marketplace in high sales, however, commercial vehicle fragment was still expected to extend at a formidable rate during calculated period on account of skyrocketing usage of economic vehicle for the movement of products and its tracking technology which offers real-time tracking. On the basis of technology, the market is often bifurcated into mobile and satellite tracking. Satellite tracing may be a widely implemented technology and bought the foremost share in 2018. In addition, it is the most cost- effective option when put next with other technologies. In terms of appliance, the market will be segregated into private cars, conveyance & logistics, fleet management etc. Transport and logistics application division is leveraging the capability of internet and tracing to watch the automobile. Provincially, the marketplace for automobile tracing was obtaining traction. In terms of regional study, the market may be fragmented into North, South, East and West region. West region was growing at a brisk rate on account of high penetration of internet and major smartphone user base.

MERGER OF THE COMPANY WITH THE PARENT COMPANY

Sudeep & Co. is purely a software based company, they have the best and comparatively, the most accurate data giving software. In the initial period itself, they had the best crew of software developers. But, for its installation in vehicles, vital requirement was of hardware devices. This was the reason in 2018, when Sudeep & Co. saw the opportunity for merging with India's largest telematics device manufacturer which is now their Parent Company. The Parent Company has been in the business of manufacturing telematics hardware for the tracking purposes since 2009, they were purely into the hardware domain and Sudeep & Co. found that it is the best fit for them to work together as they had a complete software platform by developing application software. As Sudeep & Co. is purely a software based company, it earns its revenues from the incoming data from vehicles or vehicle owners using applications. It makes software for tracking vehicle tracking operation which are subscription based software. So, device once sold requires a yearly subscription.

CLIENTS

Its service is to provide visibility to large fleets that operates in market, so there are various domains that they cater to. Solutions are provided to both consumer facing applications as well as internally using aggregators. Some of their Clients are;

- Cab aggregators/ Taxi providers

- Mining sector

- Bus transport services

- Manufacturers of vehicles

- Commercial vehicles

RESEARCH PROBLEM

In the unexpected pandemic hit period, why the Company adopted the method of growing and expanding the business taking into consideration all the risk factors, yet looking at the pandemic as an opportunity to execute and grow is studied. Wherein, many other companies were on the aisle of exiting the market during this tough time.

LITERATURE REVIEW

Kumar et al, (2008) discovered that the Indian manufacturing sector had grown at an astonishing average annual pace of 9.5 percent during 2003-04. Its continued expansion is crucial for producing the jobs required to accommodate the ever growing workforce. The Indian manufacturing sector exhibits considerable geographical heterogeneity and a distinct dualism in terms of productivity and pay levels between organized and unorganized sectors. Manufacturing, particularly organized manufacturing, has been unable to produce sufficient jobs. The primary reason for India's poor development is a lack of R&D and a paucity of skilled workers.

Maurya et al, (2012) stated that a vehicle tracking system is the one which when installed in a vehicle can enable to track location. This design will constantly monitor the vehicle and inform the GPS receiver. There are several reasons why car owners and public transport operators desire to have GPS as to do wildlife tracking, asset tracking and stolen vehicle recovery. These can be used for various personal or professional reasons too like employer tracking employee or parent tracking their children.

Kamble, (2012) According to studies, car monitoring technology enables us to optimize driving routes, save petrol or gas and time, reduce thefts, and regulate how the vehicle operates. However, in the majority of cities, tracing is limited to local purposes, such as monitoring vehicle travel inside a city, monitoring raw materials inside an industrial estate, or determining the current status of children inside a city. However, route planning is critical for running greater task loads within a certain time frame. Vehicle tracking improves safety and security, communication style, and performance coaching for both individuals and businesses.

Kanda, (2013) said that after independence in 1947, particular priorities for industrial growth were also established in the successive Five Year Plans. The industrial policy resolution of 1956 widened the public sector's reach. The 1973 Economic Policy report sought to avoid excessive concentration of industrial activity in major industrial corporations, while giving importance to power generation and broadcasting. The primary reason for deficient industrial execution in terms of growth and production may be linked to the industrialized sector's policy approach.

Mukherjee, (2013) The service industry is the biggest and fastest growing sector in India, with the greatest labor efficiency, but in terms of employment, the segment's share of gross domestic product has not created the

required number of high-quality jobs. While India aspires to be a knowledge center, there is no standardized quality or level of education, and formal education does not guarantee employment. By increasing investment, creating jobs and human capital, and improving infrastructure, the service sector can contribute to inclusive growth.

Das et al, (2014) discovered that until recently, the tertiary sector, or service sector, was not deemed as important as other sectors. However, it is critical to remember that service industries generate intangible products such as health care, education, communication technologies, and information technology. In comparison to agricultural or industrial commodities, the production of services requires far less natural capital and much more human capital. As a consequence, the need for more educated employees has increased, leading governments to invest more in education, endowing the environment with less density. The significance may be seen in 2008 estimates, when the agriculture sector received 17.2 percent of subsidies, the industrial sector received 29.1 percent, and the service sector received 52.7 percent.

Latha et al, (2014) acquired as a result of the fact that when civilization advances, human requirements expand, resulting in the expansion of economic activity. Primitive activities such as hunting, animal husbandry, and agriculture developed earlier. However, research and technical advancements have resulted in the evolution industry. Both of these industries expanded, resulting in the advancement of the service sector. The service industry may be classified according to its exposure to specific sectors of the economy. The period between 2010 and 2011 was markedly better in compared to 2000-01, since this period saw a rapid expansion of the service industry and other services.

Aydin et al, (2015) discovered that by changing public management attitudes, it is possible for public institutions to provide more efficient and effective services at a lesser cost. Following investigation, it became evident that public institutions need a vehicle monitoring system to regulate fleets. IT infrastructure aided in the improvement of performance with these car monitoring devices, and the agency saved 459 million Euros over a ten-year period using an IT- based National Judiciary Informatics System plan.

OBJECTIVES

1. To study the business opportunities identified by Sudeep & Co. during Covid 19 pandemic.

2. To analyze the growth and expansion strategy of Sudeep & Co.

3. To understand the level of proper environmental analysis and its influence for effective SWOT analysis of the Company.

THEORETICAL FRAMEWORK BUSINESS STRATEGIC MANAGEMENT

Strategic management is the ongoing process of planning, monitoring, analyzing, and evaluating all of an organization's prerequisites and requirements in order to achieve its goals and objectives. Changes in business settings will need firms constantly reevaluating their tactics in order to maximize their performance. Additionally, strategic management offers an overarching road map by formulating plans and policies aimed at achieving goals and then allocating resources to carry them out. Finally, strategic management enables organizations to get a competitive advantage over their rivals. The following categories apply to strategies: Stability strategy, Expansion/Growth strategy, Retrenchment strategy and Combination strategy.

EXPANSION STRATEGY

Growth fundamentally entails the expansion of an organization's activities and the inclusion of new parts of activities. Growth strategy is a high-risk endeavor that requires forecasting and analysis of numerous elements affecting the organization's development, such as resource and market availability. Growth is necessary and crucial, however, owing to the instability of company and industry. Growth must be carefully managed and regulated to ensure an organization's success. Clearly, there are four fundamental development tactics that may be used to build a business:

- Market Penetration

- Product Development

- Market Expansion/Development

- Diversification

PRODUCT DEVELOPMENT STRATEGY

A product development strategy is one that focuses on creating new goods or altering old goods to make them look unique, and then marketing those items to existing or new markets. These techniques are often adopted when the Company's present market offers little or no chance for fresh growth. In other words, product development strategy is a risk management tool used to limit risk associated with generating a new product idea from scratch, enhancing the fit of goods and markets, refurbishing a product line, and increasing the sales of current goods via enhancement.

MARKET PENETRATION STRATEGY

Typically, market penetration is seen and employed as a technique for entering a new market segment. Additionally, it is employed as a statistic to quantify the proportion of market share that a service/product may capture. A market penetration strategy is when a business aims to increase its market share by capitalizing on current goods in current markets. This manner, a firm (that already has a product on the market) may expand its business by increasing sales among existing customers.

MARKET EXPANSION/DEVELOPMENT STRATEGY

When growth in the Company's traditional sales channels reaches saturation, a market expansion strategy involves marketing existing items to a new market segment. Successful market growth plans need that the organization first conquer current markets. There are several reasons why a business may consider pursuing a market growth plan. One of the primary reasons is that the level of competition would be so intense that there would be no room for development in the existing industry. If a firm is unable to expand into new market categories, it will be difficult to increase its profitability. A small business may also use a market growth strategy if it discovers new and inventive applications for its product.

DIVERSIFICATION STRATEGY

Diversification is a technique that a corporation uses to expand and improve its company. This approach entails expanding the organization's footprint across many goods and market areas. The approach is to join a new market or industry in which the organization does not presently participate, while simultaneously producing a new product for the new market. Typically, the plan is a sort of growth plan that assists the firm in growing and expanding naturally. It provides the Organization with new options and chances. By applying this approach, the company diversifies its product offerings and broadens its business viewpoint in the target market groups. This technique enables the business to increase sales volume and income while maintaining a low cost structure.

RESEARCH METHODOLOGY

To study and analyze the expansion strategy implemented in the Company during the pandemic, both primary and secondary data are collected. The primary data is used more intensively which is gathered from Sudeep & Co. during the period March-April 2021 by conducting in-depth interviews with semi structured questions from the mid-level and top-level management employees and employers of the organization. The interview questions were open-ended that had no predetermined limit or border and the secondary data is collected through magazines, newspapers, journals, articles, research papers. The sampling size was 30. The data used for the study is qualitative and sampling technique used is purposive technique. To analyze the study, demographic variables were analyzed, Content analysis technique was adopted for interpretation and framing theoretical framework, for in depth understanding, SWOT is incorporated.

DATA ANALYSIS STATISTICAL ANALYSIS
No. Companies merged with, pre and post pandemic

No. of companies pre-Covid	14
No. of Companies post-Covid	5

Areas that were focused after pandemic
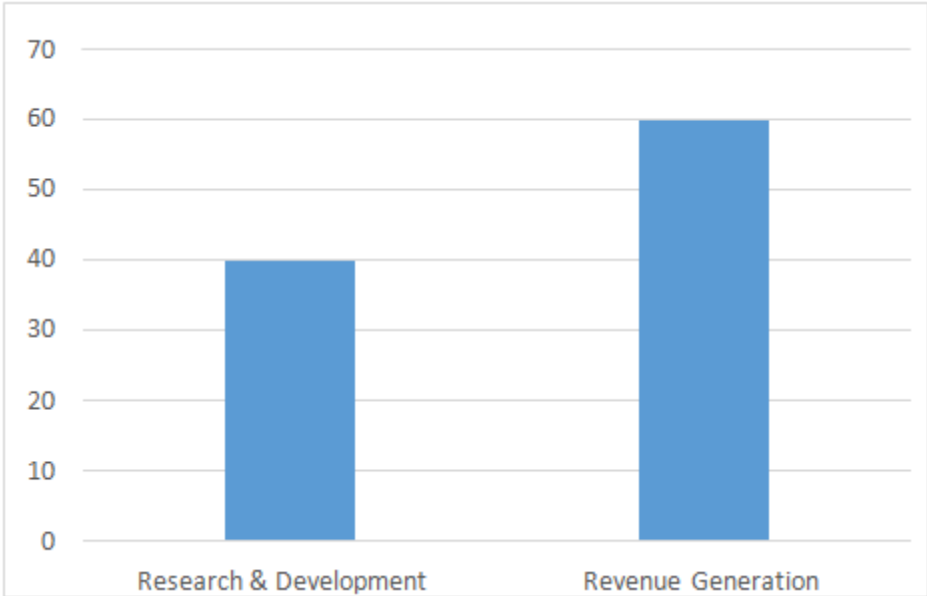
Major working domains of the Company
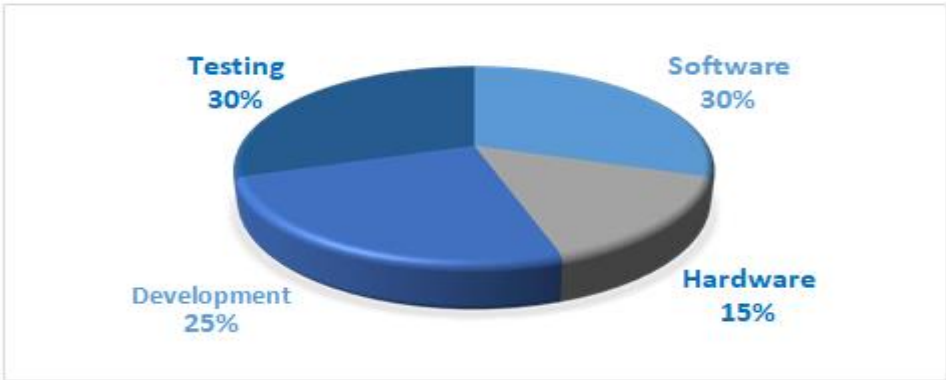
INTERPRETATION

The Company when incepted in 2018, initially focused on only Product Development in IOT space which was a growing domain and the predictions always stated that going forward the biggest consumer in the IOT space is going to be connected vehicles. By 2030, 50% of the overall IOT market would only be driven by connected vehicles. That is when the idea of having a platform which enables all the connected vehicles to upload their data and analytics being performed on them and provide a fleet management solutions to the end users was thought about. Initially, when they started, they focused on Market penetration. The services that were being offered by them were in the aftermarket (aftermarket is when the vehicles are sold and then players like Cab services, Bus transport Operators, Mining sector vehicles etc. lease the vehicles out). Going forward, with the drive of Government that is coming in, their push is to directly tie up with the manufacturers of the vehicles. The Company has concentrated more on the aftermarket so far. And now they are thinking of Market expansion which focuses on penetrating the market through players such as manufacturers.

The above diagram shows the block diagram of the same. The Company initially operated in the Aftermarket segment (segment2) which is now expanding its business into a different market segment (segment 1) which are the manufacturers. Once this is done, right from the production stage that is when the vehicles are rolled out, their services will be part of the vehicle.

KEY FINDINGS

☐ Proper implementation of survival strategy can help a company to withstand itself during any economic crisis.

☐ Utilization of latest technology and hardware is necessary in order to create a unique USP.

☐ Merger and acquisition can help a business to sustain its operations even if modifications happen within the organization.

☐ Being determined while carrying out a business venture rather than giving up easily is a key success factor.

☐ Data privacy of sensitive information given by clients is a necessary thing that every software companies should pay attention to.

☐ Service sector in India has a wider scope of opportunities that has the potential torevolutionize the business opportunities in the coming time.

☐ Blue ocean strategy in the form of developing Unique selling proposition (U.S.P) is an effective strategy that can give an extra edge to a company without getting involved into cut-throat competition in the current market.

☐ Targeting and providing a cost-effective solution to a business problem is the one critical initiative that most successful companies do consistently.

☐ Positive attitude is also required to combat any crisis in whose absence, entrepreneurs despite having initial success in their venture, will not focus on the bigger picture of the future prospective.

SUGGESTIONS

☐ Rural immersion of IOT technology will connect vehicles in more remote area to providebetter exposure.

☐ Considering ecological advantage in manufacturing of electrical vehicles or motors, whichcan give a better experience to the customer and also environmental friendly.

☐ Engaging in CSR activities to support social cause and letting deprived people to explorethe opportunities in their life

Strengths
- Technology driven Organization.
- Good Cost Cutting strategy used during covid
- The Business is Versatile in nature.
- Providing Urban Public transport solutions.
- Creation of common platform to get connected.

Weaknesses
- Technology in B2C space is 'good to have' but not 'must to have', hence the business might not be able to capture the entire customer segment resulting in limited access to the Market Segmentation.

Opportunities
- Value added services to the customers.
- Visiblity to all stake holders
- Government mandate for connected vehicles (commercial vehicles)
- During Covid, manufacturing increased and cab aggregators business decreased.

Threats
- Limited number of manufacturing companies.
- Increase in number of Competitors

FUTURE IMPLICATION

The world is drastically changing towards advanced technology and this service can be a gem to the upcoming technology. With the development and progress of Artificial Intelligence (AI), IOT, Virtual Reality, Robotics it will be a complex job to embrace the changes and go hand and hand. And what seems to be a game-changer today becomes the basis for another game-changer tomorrow. The globe has also witnessed a meteoric growth in the use of electrical automobiles, and enormous progress is being made with the next generation of self-driving vehicles. All these developments will perhaps open new doors for the Company to develop a software that will enhance direct communication without a third party intervention.

CONCLUSION

The success factor of a Company is always about the teamwork and team effort put. All bits and chunks that come from the team are vital to bring the Company forward and to achieve new heights. For a sustainable future of any business, a unique strategy is very crucial else, they will be on the verge of being wiped off against the competitors. The implementation of IOT technologyhighlights the significance and determination that Sudeep & Co. showed while meeting its goals and objectives also keeping in mind that employees are the true and biggest assets of the Company. There might be several reasons why a business adopts certain strategies, however, if the Companyfails to make the right decisions, even the strongest player in the market can begin going downhill.

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A STUDY ON THE EFFECTIVENESS OF EMPLOYEE ENGAGEMENT AND MOTIVATIONAL STRATEGIES IMPLEMENTED BY PHONEPE DURING COVID 19 PANDEMIC

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ABSTRACT

The study's objective was to establish which incentives and motivating elements may most successfully foster creativity and employee engagement inside the business, as well as to examine the actions that management may take in light of our results for this firm. This study was conducted on the employee perspective primarily. With the Findings from the surveys, managers will be able to analyze the information to make employees more effectively engaged and increase productivity even in the phase of a sudden crisis, pandemic. This study will also help the organization to understand the value and need of the employees they hired and might be able to get the maximum outcome from them to meet organizational goals and objectives. From our study that we conducted, these are the key learning and findings that we have deduced- The company PhonePe is not only aware but also determined towards and about the safety of its employees, E-commerce sector or PhonePe to be more specific attracts more male human resources than female human resources, the company has deployed helpline number and conducted training and workshops in order to support and help employees fight the crisis.

Keywords: PhonePe, Employee engagement, Employee Motivation, Compensation & Benefits, Covid-19

INTRODUCTION

As the days are passing by, companies are trying to adapt to the changing dimension of employee development and growth. Organizations are increasingly recognizing the value of employee engagement, and it has become a top focus for leadership, as they continually explore new ways to keep their workforce motivated. The management is having significant trouble maintaining employee engagement while also enforcing the company's regulations. Employee turnover has impacted every area of the business, since workers are continuously changing positions, resulting in significant attrition rates. As a result, retaining and engaging employees has become a difficult undertaking in these uncertain economic times and throughout this epidemic.

Employee involvement is a term that may be defined in a variety of ways. An engaged employee is one who provides effective and efficient outcomes, stays in one position for an extended period of time, and acts as the company's ambassador at all times. The Hay Group described engaged employee performance as "an outcome attained by igniting an individual's excitement for work and channelling it toward organizational success." Employee motivation refers to the amount of energy, dedication, and inventiveness brought to a task by a company's employees.

With defensive measures being implemented on a global scale in order to combat the Covid-19 outbreak, some businesses find themselves in the unexpected position of being 'totally remote' for the first time. In the present environment, it is critical to examine the degree of employee involvement, whether it is decreasing or rising. It is critical to maintain employee motivation in order to accomplish company goals and objectives and to boost overall productivity.

As per the company engagement strategies which they implemented to motivate and retain employees had some limitations due to the Covid-19 pandemic. They are:

1. All the employee engagement activities and other events that are done to motivate employees can only be done through virtual platforms and no physical engagements were done.

2. Motivational Events like mental therapy sessions, wellness sessions, yoga sessions, etc which were done online to uplift employee engagement during Covid-19 pandemic.

3. Get together, annual project parties, etc or client meets are done virtually.

4. Earlier during meetings or parties the employees used to get refreshment and food packets but during the pandemic instead of refreshments they were give gift coupons or vouchers of different partners. The study is confined to the employees belonging to the PhonePe organization. The study and the research will help the company to know the current levels of engagement of their employees and the ways of motivation and

employee retention implemented in their system, and will also allow them to adopt more varied and innovative strategies and activities to engage their employees to perform better, enhance the corporate culture between the employer and the employees and employee satisfaction. The study will also help the organization to understand the mindsets of theemployees and how they perceive the engagement strategies. This will reduce the employee turnover intentions and will maximize the quality of employee's performance.

LITERATURE REVIEW

Garg et al., (2014) discussed the various employee engagement techniques used by IT businesses in their research, as well as the effect of employee engagement methods on employee job satisfaction. They selected a random sample of 100 workers from two of India's largest IT companies, TCS and Infosys.

Pandita et al, (2017) discussed the impact of employee engagement on work-life balance and the aspects that firms should consider when planning about employee engagement and work-life balance. Additionally, they sought to determine if there is any correlation between employee engagement and work-life balance.

Bhattacharya et al, (2018) undertook a study on employee engagement and psychologial capital and found that the psychological capital and employee engagement are positively correlated and they also brought into light the fact that psychological capital among the male employees is comparatively higher than the female employees. They deduced to the conclusion that high employee engagement, psychological capital and lower stress levels are fundamentals for the smooth functioning of any organization.

Abby M, (2007) explained how communication plays a major role in motivating the employees at work. The analysis that was done pointed out six themes that impact employee motivation at work, which were as follows-goal setting, performance feedback, work performance, attitude, and empowerment/power and job satisfaction.

Singh, (2016) According to their findings, future information leaders and managers shouldrecognize that innate factors influence employee motivation more than external factors and should make a greater effort to foster a culture of respect, recognition, trust, and autonomy when tailoringtheir management strategies to appeal to their coworkers' emotions.

Setiyani et al, (2019) in their study explained how employee engagement is influenced by the working environment and flexible working hours, according to research. Employee motivation has a mediating effect between work environment and flexible working hours on employee engagement, according to the study's findings. The survey also demonstrated the need of taking intervals between tasks so that people do not feel confined in their jobs.

Sattar et al, (2015) Through mediating the role of employee engagement, the Pakistan Economic and Social Review investigated the effects of Human Resource practises on employee happiness and performance. They investigated which rewards/incentives to workers are effective in improving worker performance and satisfaction.

RESEARCH METHODOLOGY

The purpose of the study is to understand the various sources of the Effectiveness of Employee Engagement & Motivation Strategies Adopted by Phonepe During Covid-19 Pandemic in the service sector, particularly in PhonePe. The primary data is used more intensively which is gathered from the employees of the PhonePe during the period of March, 2021 by circulating the5-component Likert scale questionnaire with open ended and closed ended questions as well. Thequestionnaire was distributed among the employees of PhonePe via google form. The Secondary data is collected through magazines, newspapers, journals, articles, research papers. For this research purpose, we used the random sampling method to select the individuals for better and unbiased results. We aimed at collecting 200 responses but ended up receiving 150 valid responsesonly.

OBJECTIVES OF THE STUDY

1. To Study the nature of employee engagement strategies implemented by the company.

2. To analyse the challenges of strategic changes due to the sudden crisis - Covid-19 Pandemic.

3. To evaluate the measures taken by the company to keep the employees motivated during thepandemic.

ANALYSIS AND INTERPRETATION

In this study, we have used a 5-component Likert Scale questionnaire as the primary data sources. All the collected responses were analysed graphically to interpret the data and to establish suitablefindings

• Questionnaires were distributed among employees in the above-mentioned company.

- Employees are selected through a random sampling method. This is done in order to analyses the engagement of employees and measures taken by the company to keep them motivated in the phase of Covid Pandemic.

- Targeted sample size of this project was 200. We have received valid responses from 150 people in total.

- Different parameters have been shown in this chapter to get an in-depth analysis based on the survey questionnaire responses.

DEMOGRAPHIC ANALYSIS

Demographic analysis includes the measures of the population area of interest. Based on the survey questionnaire, the demographic parameters of the respondents are–

Age Group:

For analyzing the age divisions in the employees of the organization, we have categorized the age group in 4 different categories, e.g., Between 18 - 25, Between 25 - 30, Between 30 - 40 and above 40.

According to the data, out of 150 respondents, almost 51.3% employees are between the age group of 25 to 30 years, 25.6% employees are between the age group of 18 to 25 years and about 23.1% of employees belong to the age group between 30 to 40 years.

(Source: Primary Data)Gender:

For analyzing the gender division among the employees of the organization, we have taken 3 parameters into consideration, e.g., Male, Female and Prefer not to say.

According to the above data, out of 150 respondents, about 89.7% responses belong to male category and only 10.3% belong to the female category.

(Source: Primary Data)Job Duration:

For analyzing job duration, we have taken 4 parameters, e.g., Between 0 to 6 months, between 6 months to 12 months, between 12 months to 18 months and more than 18 months.

According to the above data, out of 150 respondents, 33% employees are working with the organization for more than 18 months, 28% have recently joined within a duration of 0 to 6 months, 23% are working for 6 to 12 months and 16% belong to the job duration between 12 to 18 months category.

(Source: Primary Data)

DESCRIPTIVE ANALYSIS

Different parameters of employee engagement and motivation strategies has been used here to interpret the data through graphical analysis.

- **Company's Effort to Help to Cope with COVID 19 Stress:** According to the above data, out of 150 respondents, 46.2% responded in favor of satisfactory efforts that are taken by the company in this crisis and also 33.3% responded in the favor of highly satisfactory efforts. 15.4% are in favour of neutral and 2.6% and 5.1% are in support of dissatisfactory and highly dissatisfactory categories respectively. (Source: Primary Data)

- **Company being the Biggest Support Amid COVID 19:** According to the above data, out of 150 respondents, 35.9% and 28.2% employees responded in favour of highly satisfactory and satisfactory categories respectively saying that company being one of the biggest supporters amid this pandemic. 20.5% are in favour of neutral and 10.3% and 5.1% responses belong to the dissatisfaction category. (Source: Primary Data)

- **Company's Motivation to Work Efficiently and Effectively:** According to the above data, out of 150 respondents, 38.5% responded in the favour of satisfactory levels of motivation provided by the company to work effectively and efficiently in this pandemic. 23.1% responded in the favour of highly satisfactory efforts. 30.8% of employees responded to the neutral motivation level provided by the company. And only 12.8 and 5.1% responded in support of a dissatisfaction and highly dissatisfaction level of motivation. (Source: Primary Data)

- **Contribution Provided the Company During this Crisis:** According to the above data, out of 150 respondents, about 41% and 25.6% responses are in favour of satisfactory and highly satisfactory level of

contributions provided by the company during the crisis. About 30.8% employees responded in favour of neutral contributions and only 5.1% responded in the support of dissatisfactory contributions. (Source: Primary Data)

- **Helpline / Support Provided by the Company During this Pandemic:** According to the above data, out of 150 respondents, we have got an equal percentage of 25.6% responses in the favour of a highly satisfactory, satisfactory and neutral category that means the company is providing enough helpline or support during this pandemic. only 15.4% and 7.7% responded in support of dissatisfactory and highly dissatisfactory category. (Source: Primary Data)

- **Workshop / Training Sessions to Train Employees During the Crisis:** According to the above data, out of 150 respondents, about 28.2% responses are in favour of ahighly satisfactory and a satisfactory level of training and workshops provided by the company to train employees. 33.3% employees responded for neutral contribution and only 5.1% and 7.7% employees responded in support of the dissatisfaction category. (Source: Primary Data)

- **Precautions Provided by the company in the Phase of Pandemic:** According to the above data, out of 150 respondents, 33.3% responded in the favour of satisfactory number of precautions provided by the company in the phase of pandemic, 28.2%responded for both highly satisfactory and neutral category of the parameter and only 5.1% responded in the support of dissatisfaction portion. (Source: Primary Data)

- **Company's HR Management and motivation practices During the Crisis:** According to the above data, out of 150 respondents, almost 38.5% employees are satisfied with the company's ongoing HR management and motivation practices. About 23.1% are highly satisfied and 33.3% responded in the favour of neutral satisfaction level. Only 5.1% responses are in support of dissatisfaction level. (Source: Primary Data)

- **Job loyalty:** According to the above data, out of 150 respondents, 46.2% responded against changing their current job with this organization. 30.8% responded in support of changing their job and 23.1% responded about whether they might or might not switch their jobs. (Source: Primary Data)

- **Self – Productivity During the Phase of Pandemic:** According to the above data, out of 150 respondents, the majority about 94.9% responded that they were engaged in self-productivity during the crisis. Only 5.1% responded against the statement. (Source: Primary Data)

- **Getting allowances / bonus / hike from the Company During Pandemic:** According to the above data, out of 39 respondents, 66.7% employees responded in the favor of getting allowances, bonus, hike in the phase of pandemic and 33.3% responded that they arenot provided with any such extra benefits. (Source: Primary Data)

DATA ANALYSIS

H1: There is significant relationship between employee engagement and motivation factors during pandemic WFH scenario

H0: There is no significant relationship with regards to employee engagement -motivation factor during pandemic WFH scenario.

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of theEstimate
1	.957[a]	.916	.913	.148
a. Predictors: (Constant), Motivation Factors				

R value = 0.957 and R square value =0.916 therefore the model is good fit and proves there is significant difference between dependent and independent variable.H1 Alternative hypothesis is accepted i.e., motivation factors during pandemic play a very important role for employeeengagement.

ANOVA (Motivation and Employee Engagement)

	Model	Sum/Squares	df	Mean Square	F	Sig.
1	Regression	4159	1	436	291.757	.000b
	Residual	1066	8	135		
	Total	5223	9			

Model		Unstandardized Coefficients		t	Sig.
		B	Std. Error		
1.	(Constant)	4523.0	984.60	4.594	.002
	Motivation Factor	10055.5	587.6	17.110	.000

Dependent variable: Employee Engagement

P value< 0.05, hence this proves the significant fit for the alternative hypothesis, In general, the regression modelaccurately predicts the result variable (i.e., it is a good fit for the data).

a.   Dependent variable: Employee Engagement

b.   Predictors: (Constant), Motivation Factors

Coefficient: Dependent Variable: Employee Engagement

FINDINGS

From our study that we conducted, these are the key learnings and findings that we have deduced-

•   The company PhonePe is not only aware but also determined towards and about the safety of its employees.

•   E-commerce sector or PhonePe to be more specific attracts more male human resources than female human resources.

•   The company has deployed helpline numbers and conducted training and workshops in order to support and help employees fight the crisis.

•   The employees at PhonePe are mostly satisfied with whatever decisions the company is makingwith respect to the crisis.

•   About the allowances/ bonus/ hike, though some employees are receiving the allowances/hike/bonuses, there are also a minority of the employees who are not receiving thesame.

SUGGESTIONS

From the employee's perspective, we have received varied suggestions and recommendations thatthey want to give to the company, while most of the employees are happy with the company PhonePe, there are also employees who have the following suggestions-

•   Enable managers to build better relationships with their teams as some of them are working from home and are not fully interested in meetings and all.

•   Company should strictly follow HR practices.

•   As the pandemic is hitting everyone adversely, we would suggest the company give bonuses/allowances to not some of the employees but all the employees.

•   In our study we found out that there are mixed responses when we talk of job loyalty, so we would suggest the company do something about making the employees loyal.

CONCLUSION

COVID19 has required companies to make meaningful connections with their workers in order to adequately respond to the present epidemic. Retaining the top position in the absence of the aid of legislators would, of course, be a pipe dream. Since associations know that the only way to succeed during this time of transition is to have more representatives, they know the members will alwaysbe at the top of their lists. As a result, enterprises should concentrate on developing and motivating their personnel, in order to meet and please their representatives during times of widespread contagion. To increase the likelihood of success, organizations must focus on creating an enthusiastic and committed workforce by combining a business-driven culture with innovation. More companies these days are promoting different methods of employee commitment, such as virtual group gatherings, virtual learning and development, online group meetings with weekly schedules, training programs that use industry experts, and online courses that are used to help with stress and anxiety. Exercises for online group formation, online family commitment, conceptualization, expression of guilt, and gratitude Commitment drills like this encourage the members and staff to feel convinced and placed under the influence of the organization due to thisdevastating epidemic that was triggered by Covid-19.

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IMPACT OF COVID 19 ON SUPPLY CHAIN AND INVENTORY MANAGEMENT OF START UP COMPANIES IN PHARMA INDUSTRY: A CASE STUDY ON SUSTAINABILITY STRATEGIES AND SWOT ANALYSIS OF EYE CARE MEDICAL AND SURGICAL

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ABSTRACT

The pharmaceutical industry is enhancing with more and more technology addition in the inventory management process. From big industries to local pharmaceuticals, everyone is using technology in some or other way. There are number of Inventory management software available which are cost-effective and easy to use which help the pharmacists for keeping a track on the procurement and sale of medicines. The study here explains the improvement of inventory management technique by pharmaceuticals. Pharmaceuticals work on differentmethods of inventory management like EOQ, MOQ, JIT, FIFO, LIFO, ABC Analysis, etc. Thebasic aim of the study is to identify and improve the problems in inventory management by proposing the analysis of data provided. The analysis of data shows that there is need of getting connected with more suppliers and also customers. Study also shows that there is increase in profit but there is need of procuring variety of medicines according to demand of customers. There is also need of hiring experienced pharmacists with enough technical knowledge for making the process work well. For the team to achieve optimal performance, Inventory control, Inventory forecasting, Purchase order creation and management, Warehouse management are all necessary factors.

Key Words Supply Chain Management, Inventory Management, Pharmaceutical,

INTRODUCTION

There is a need to comprehend supply chain and inventory management in depth. Supply chain management is concerned with the movement of commodities and services, which encompasses all processes involved in converting raw materials to completed commodities. Inventory management include the ordering, storage, and administration of inventory, as well as the management of raw materials, components, completed items, warehousing, andprocessing.

The main components of supply chain management are-

Planning: Planning is important for controlling inventory as well as manufacturing process. Companies use analytics to match supply with demand and companies should be aware of demand variations all the time.

Sourcing: Sourcing is identifying the suppliers who will meet the demand of procuring goods and services. Sourcing also includes managing supplier relationship.

Making: For transforming raw materials to the final product, firms perform different activities as per consumer preference. The activities involve- assembling, testing, packing,etc.

Delivering: Delivering deals with contributing to the integration with customer which further impacts brand image of the firm. Finished goods and services have to expectations of the customers with efficient delivery channel.

Returning: Every firm has a Reverse logistics is customer support process all kinds of returned projects.

PHARMACEUTICALS SUPPLY CHAIN:

The pharmaceutical supply chain includes the following procedures for assuring medicineinventory:

- Pharmaceutical manufacturing facilities.

- Distribution to wholesalers

- Stocking pharmacies, including retail and mail-order, as well as other forms ofpharmacies

- Negotiation of prices in accordance with pharmaceutical benefits

- Patient delivery

INVENTORY MANAGEMENT:

Inventory refers to items and services that are intended for resale to consumers. Goods management is concerned with the monitoring of inventory between producers and warehouses, as well as between warehouses and points of sale. Inventory management's fundamental goal is to have the proper product in the proper place and at the proper time. We need inventory visibility—knowing when and how to order products, as well as where to store them.

Inventory management at pharmacies is a complex process. Pharmacies either distributors or local pharmacies, control different factors of inventory management process and also pharmacy revenue cycles. Maintaining the supply of medication is the primary goal of pharmaceuticals. For successful operation, keeping control of inventory levels.

The basic steps of inventory management are as follows:

1. Inventory acquisition: Completed items are bought and sent to the warehouse or straight to the point of sale.

2. Inventory storage: These commodities are inventoried and kept until they are required. Additionally, commodities are moved across networks and held in a stock.

3. Profitable inventory management: Items are dispatched, the total number of products to be sold is managed, and orders are fulfilled via the sale of completed items.

PROBLEM STATEMENT

Our prior focus was on the particular pharmaceutical company based in Kolhapur, Maharashtra. We tried to study how it deals with the challenges of inventory and supply chain management of its medical & surgical items during the pandemic of COVID-19.

REVIEW OF LITERATURE

Nouçaiba Sbai et al (2018) It is through the study of multi-echelon inventory management that we get a clearer picture of the multi-echelon inventory management conundrum. This problem is more prominent in the pharmaceutical supply chain. After conducting an extensive investigation of several multi-echelon pharmaceutical supply chain problems, many multi- echelon inventory systems are categorised using a set of criteria.

Gökçe et al (2016) believe in the merit of using a novel solution to the issue of inventory management in the pharmaceutical supply chain. This approach works well in the pharmaceutical business, as the proposed model optimizes overall income while creating the appropriate production plan with the time and product transition limitations. The authors' feel that the suggested model is in much closer correspondence to actual life than previous research has shown. The last step is to compare the suggested mathematical model to an existing model. With this comparison, it may be determined that the new model is better.

Santhi et al (2016) The pharmaceutical inventory models were researched, and it was discovered that inventory management is vital for all businesses, whether they are little or large, local or foreign. Raw materials in a pharmaceutical firm have an expiration date, thus it's critical to have enough safety stock on hand. Businesses usually aim to have a small supply of items on hand to make it easier to monitor our operations. The models accessible in the relevant literature have also been appropriately categorised in this article, which includes an overall overview of the Pharmaceutical Inventory literature from early 1968. The rationale and expansions of a wide range of models in each subclass are thoroughly explained.

Settanni, et al (2017) The potential for reconfiguration of Pharmaceutical Supply Chains (PSC) was examined as a consequence of manufacturing technology innovations and the introduction of new, more patient-centric delivery models. The compilation of literature detailing the ins and outs of practice models is applied to identify, conceptualize, analyse, and classify practice model types. Research across all phases of system development from conception to model development and application involves gathering a wide variety of OR ideas, from concept formulation to model solution, and then moving on to implementation.

Lu He et al (2017) Drug shortages and inadequate inventory management are blamed for disruptions in the pharmaceutical supply chain (PSC), which result in inadequate healthcare services at a high cost. Because they fail to address how pharmaceuticals are maintained, delivered, and utilized, many pharmacies and hospitals struggle to achieve adequate inventory management. The suggested inventory model takes into account medication variety, lead time, order quantity, holding and shortfall costs, and the quality of customer service. In the emergency planning phase, the proposed method finds the best safety stock and replenish needed amount

with the lowest total inventory cost. A numerical example scenario is used to demonstrate the model's applicability and behavior. The suggested model may be used to effectively enhance inventory management techniques in both normal and catastrophe situations.

Azghandi et al (2018) Pharmaceutical supply networks were studied in order to learn about drug shortages. They simulated different disruption patterns and utilized a mathematical simulation model to evaluate the impact of product recalls depending on these patterns. The researchers used two performance indicators to gauge the effectiveness of alternative policy measures in mitigating supply chain disruptions: inventory levels and the failure of medical institutions to have enough drugs and medical supplies. This study shines a focus on the repercussions of selecting an inefficient inventory strategy in the face of disruptions.

Carlo et al (2017) A quantitative supply chain model was examined. The aim of this research is to outline and examine the many quantitative models which exist in the pharmaceutical supply chain, a subject that has not been adequately investigated in prior logistics healthcare or hospital logistics research. 46 investigations from 1984 to November 2016 were included in the search database. During the review process, they determined that uncertainty is present in all three domains, as well as demand in 56% of the cases. The supply chain network design is not generally studied since the research is focused on pharmaceutical supply chain optimization and inventory models.

Samuel et al (2016) Focuses on the possible hazards and listed a number of possible causes, which include unethical behavior by pharmacists and chemical vendors, difficulties procurers of raw materials, inventory management and reverse logistics, which are all problems but are ignored in the pharmaceutical business, and a lack of consumer income in Ghana. According to the recommendations given in the article, the use of Information and Communication Technology (ICT) technologies in inventory management and the effectiveness of the Pharmaceutical Supply Chain are beneficial. Risk mitigation and risk elimination are both required in order to reduce or remove the risk to the pharmaceutical supply chain.

OBJECTIVES

1. To study the Supply Chain management of Start Up companies in Pharmaceutical industry for organizational effectiveness during COVID 19

2. To understand the role of the effective usage of software in the Inventory Management for obtaining optimal efficiency, productivity and profitability.

3. To study the sustainability and survival strategies of the organization during the pandemic

RESEARCH METHODOLOGY

The main purpose of the research is to study and understand the supply chain and inventory management process of pharmaceuticals. For gathering the data, interview of the owner has been taken and the secondary data is collected from 'Eye care Medical and Surgical' which is extracted from a software the firm is using. The data includes purchase and sale amount of suppliers and customers for March, 2021. Through the interview with open ended questions, a data is also made available for 6 months (November, 2020 to March, 2021) of total purchase amount, sales amount, opening stock amount and expiry amount, which is further analyzed. The data is quantitative as the transaction data tracked by "Medi-Vision" software is used. Exploratory method of research is implemented and the sampling technique used is purposive sampling technique. To analyze the study, demographic variables were analyzed and content analysis technique was adopted for interpretation.

DATA ANALYSIS

The data of 'Eye care medical and surgical Distributor' is collected by using a software named "Medi-Vision". The software has purchase entry and sales entry. The data analyzed is of the month of March, 2021. It comprises of Purchase data from the super stockers in the month and also sales data to the local pharmaceuticals and hospitals in the same month.

The data is then segregated and analyzed using MS-Excel according to date and amount of purchase and sale which also includes store wise sales with the amount. The collected data has the entries of amount of opening stock, purchase, sales and expiry stock for six months (November, 2020 to March, 2021). The segregated data is plotted from which the conclusion is driven.

Analysis and Interpretation:
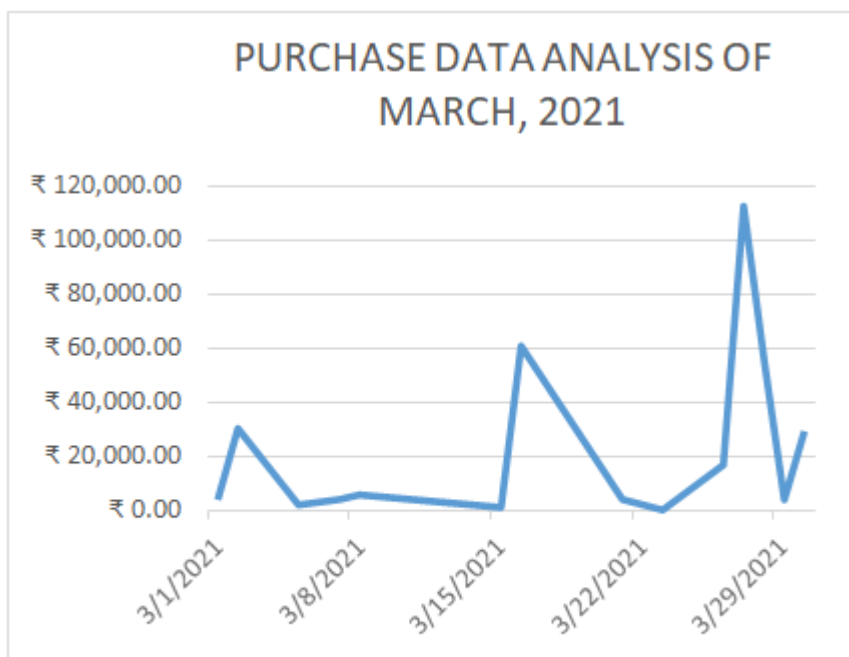
FIGURE 1

.**Figure 1** shows the variation in purchase of medicines in the month of March 2021. It shows that purchase is not constant and varies with requirements of distributor. As per graph highest purchase is done on 27th March 2021 and lowest purchase is done on 23rd March, 2021
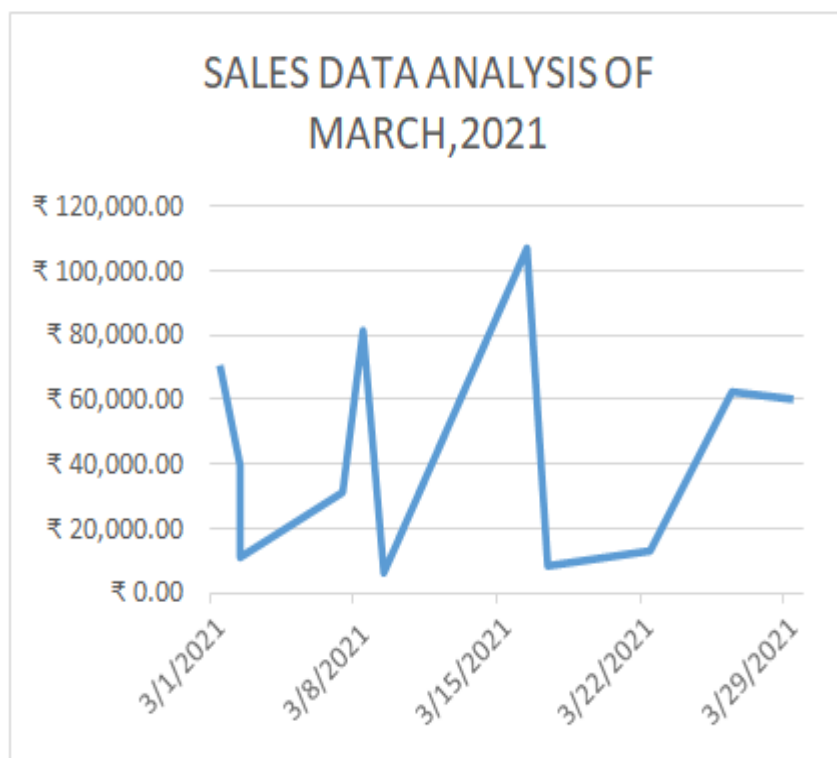
FIGURE 2

Figure 2 shows the variation in sales of medicines in the month of March 2021. Different Medical stores and hospitals purchase different amount of stock each day. So highest sale is on 16th March 2021 and lowest is on 17th March, 2021.
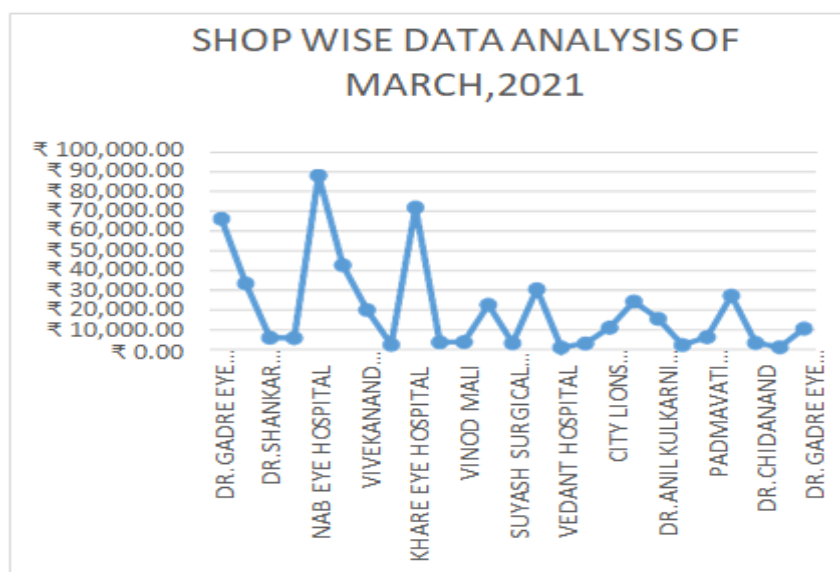
FIGURE 3

Figure 3 shows Shop wise sales which indicates that few shops and hospitals are frequently purchasing medicines from the distributor, but many are purchasing once in a month which indicates non availability of stock and less contact with the shops. It requires better customer relation with medical shops for making them purchase more. Khare Hospital purchased more in the month of March 2021.
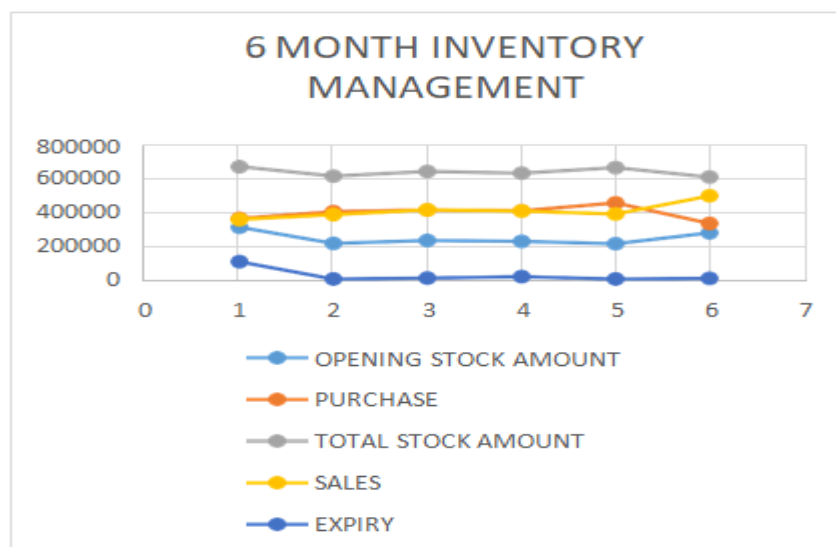
FIGURE 4

Figure 4 Shows inventory management of last 6 months from October, 2020 to March, 2021.

In the month of November, 2020 and February, 2021 there are no expired medicines.

1. Monthly Sales are increasing gradually.

2. Opening stock is decreasing every month

3. Purchase increased gradually and decreased in the month of March, 2021 because of sufficient Stock.

- **Pitfalls of Supply chain and Inventory management**

Let us try to understand these pitfalls in a more comprehensive way by understanding itssymptoms

- If there are no supply chain measurements, signs such as the existence of independently- managed and separated retail locations, inadequate metrics, measurement tools that fail to trackdown their performance, and little attention being devoted to monitoring the tools that do succeed will all be evident.

- Inadequate customer service definition As a result, the line item fill rate metric is insufficient, and there are no measurements for response time, lateness, or backorder profile.

- Erroneous delivery status data causes delays in delivering information as well as inaccurate delivery information.

- Inefficient information systems result in insufficient database connectivity between locations, proliferation of operating systems for the same function across locations, and data transmission delays and errors.

- If you ignore the effects of uncertainties, you won't be able to record or monitor major sources of uncertainty.

- There is no effect of uncertainty magnitudes, a static inventory policy, or generic and subjective stochastic inventory policies.

- This fosters discrimination against internal consumers, since this negatively impacts service quality and service priority, the reward system, and internal staff bickering.

- Poor coordination results in no order completion coordination among providing divisions, no system information among various providing divisions, and no independent shipping plans.

- A lack of consideration of inventory and reaction time is frequently the result of an incomplete shipping techniques study.

- An incorrect inventory cost assessment leads to the exclusion of obsolescence and rework costs, as well as a lack of a quantitative foundation for inventory holding cost evaluations.

- A lack of consideration of the supply chain leads in a lack of consideration of manufacturing and distribution in the product process design. There are also organizational hurdles between design and the supply chain.

- Separating supply chain design and operational decisions often leads to unnecessary inventory and response time inefficiencies.

- An insufficient supply chain leads to a narrow emphasis on internal operations and a lack of awareness of the operational environment and the demands of immediate and ultimate consumers.

KEY FINDINGS
- Monthly sales amount is increasing gradually.

- Sufficient stock is maintained as per customer requirement.

- The distributor needs to switch all kinds of medicines instead of just eye care medicines.

SUGGESTIONS
- The store needs to be large and inventory should be kept according to some criteria

- Except being in only one domain that is eye care medicines, the owner can think about all other medicines and include them in stock as well

- For purpose of supply chain management owner needs to recruit more work force for effective workflow

- The number of super stockers or suppliers are limited and hence owner needs to be in contact with more suppliers

- As a distributor he should contact manufacturers directly to increase his business and to be supplier or super stocker.

- As he directly contacts distributor it would benefit him in his profit margin

SWOT Analysis:

STRENGTHS	WEAKNESSES
• Contact with many eye care hospitals	• Less number of employees
• Location is at the center of city	• Small area of store
• Use of technology for inventory management	• Limited number of suppliers
• Experienced staff	• Procurement of only eye care medicines

• OPPORTUNITIES	• THREATS
•Increase number of workforce •To have contact with more suppliers •Increase the number of customers by adding all kinds of medicines in stock	•Many competitors in the area •Restricted investment amount

CONCLUSION

- The pharmaceutical business is critical in establishing the welfare state.

- Economic expansion in industry is necessary, as is the availability of generic products and strong competition.

- Inventory management is the most critical responsibility for distributors, since the success of the firm is contingent upon inventory management. As analysis of data is made easy by the technology it helps distributor to manage the supply chain each includes purchase of stock from super stocker and sales to medical shops.

- The data concludes well management of inventory and supply chain of Eye Care Medical and Surgical with the help of Inventory management software.

- The distributor requires more engagement with customers and suppliers for better results.

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LEADERSHIP CHALLENGES OF WOMEN IN VIRTUALWORK: A COMPARITIVE STUDY BETWEEN IT AND EDUCATIONAL SECTORS DURING COVID -19

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ABSTRACT

Women are setting a precedent of diverse, trustworthy, assertive, and powerful leadership on the global level. The countries with female representatives seem to have done especially well in the battle against Coronaviruses. More organizations have found it difficult to move to remote work due to the associated issues, however, ultimately, it turns out, to be good for business, accountability, and openness. Leaders should reconsider decisions in an entirely new way to manner and encourage confidence and cooperation. For this reason, women in positions of leadership will have to change their job roles and organizational structure as a result of the pandemic. The article studies the pandemic's effect on women and how they deal with its effects on the workplace, as well as their style of leadership and leadership outside of work. This paper builds on the findings of an inquiry among women working in IT, and education. A detailed survey and questionnaires have been used to gather the data, which is examined in depthusing a comparative/regression analysis. The research also has an acute emphasis on Women who work outside the household, as well as the problems encountered by them in this modern day, and aims to raise and upgrade the level of their leadership.

Keywords: Women, leadership, Pandemic, Challenges

1. INTRODUCTION

The current coronavirus epidemic presents unforeseen challenges to corporate leaders and beyond. People are apprehensive about the COVID-19 toll on the population. Due to the vast scale and extraordinary variability, there is no way to prepare for an outbreak. The catastrophe is not only "local": there is also significant confusion, lack of control, and instability. When leaders perceive a challenge, they may begin to respond to it. It is impossible for them to activate preparations in the event of an emergency. A limited number of company-level office managers cannot work and collect enough knowledge to make decisions well. This is beneficial for teams because it identifies concrete corrective steps that should be taken, and it empowers them by providing a sense of purpose. Although the team network application is widespread, it is worth noting that few companies have experience in using it.

Many different facets of network efficiency are shown by good teams. They are extremely multifaceted it seems that crises tend to arise from practitioners in a number of fields. They are expected to act accordingly. it is not enough to ask for advice; an organization has to organize and optimize the skills of specialists; and these specialists must be engaged to devise and implement and develop plans as well as be upgraded The ability to engender unity and transparency through the network is leadership. For this, one means, the management must place more power in the hands of the teams and share more information. When faced with a critical case, a leader's primary impulse may be to transfer more decision-making control to his underlings to manage the facts on an unbiased basis of facts alone. Teams are required to comply.

People involved in the crisis: the significance of 'deliberate hope' and 'desperate reconciliation. It is crucial for senior leaders to ensure that they encourage the most competent members of the team to tackle crisis decisions. As decision makers are human, they must be prepared to learn quickly and react quickly to corrective action if they make mistakes. Decision makers will have to be replaced in the event of a disaster.When there is a problem, more members will join the networks of teams. This executives are typically not in charge of running the business. Day-to-day disasters are witnessed by members Character is essentialto recent catastrophe. During a crisis, it is important for a leader to be capable of uniting the teams towardsa mission and willing to formulate questions for investigation. The best thing is to show off a wide range of characteristics. Realism blended with hope is often has been described as an important characteristic. Ifleaders seem to be too confident in the face of obstacles, they will quickly lose credibility. For people to build faith in the organization, leaders should be shown that they have already found a solution to the crisis,but that they are still dealing with the challenges. If all of the details have been settled, there is more optimism (and can be far less bounded). Act on the assumption that you are not certain: stop making decisions.

As situations develop, as a measure of their effectiveness, leaders should be making efforts to collect intelligence. Factually, this means pausing the crisis, observing multiple views, predicting what might happen

next, and coping. At any point during a crisis, it, politicians are forced to act quickly and boldly. However, they are afforded little time to conduct careful evaluation or anticipation prior to moving forward.

Evaluating and predicting is two fundamental ways for effective leaders to lead. One, known as updating, seeks out facts and improvement of plans. A second strategy is to use is to find out what's been done, decide what needs to be done, and then assess whether to change, introduce, or discard what has already been done. Updating and challenging help modern and/futuristic innovations by assuaging leaders'

To be in a leadership position of leadership, Empathy is needed. Using the model allows you to evaluate the implications of your decisions and actions for those individuals, and prepare accordingly helps you Team members who are unable to develop empathy are destined to remain undeveloped, while new leaders cannot be created.

Neither approach has the assurance necessary to encourage others. Life is so much simpler when you know who you are "An open exchange of information is essential for crisis leaders. Keep an open mind on what you do, and what you don't know" Reflective, on-and-routine feedback shows that leaders are tracking the situation and adjusting their behavior. Realistic, and positive expectations have a profound effect on employees and business partners, inducing them to helping transform the business around. Coronavirus studies businesses and organization around the world. It could have longer-term consequences, making things more difficult than anticipated. The volatility in leadership lets them use a number of tactics to accomplish the goals. Many that work on behalf of their organizations and families will be ready for a larger scale crisis.

2.   LITERATURE REVIEW

Gender inequality at senior ranks has long been described as a major problem, according to (Kloot's 2004) report of Australian public sector universities. A way to boost the gender diversity in higher education is to use methods for the retention and recruitment of senior women. This paper gives the details of what happened when three female faculty members were made department heads at a large research university. By the end of the year, all three of them had disappeared entered into a culture of men-oriented management where they had little to no exposure to principles of female management. There were many areas of leadership and differing expectations of job opportunities for women and men. For the older women, gender issues became more evident but did not affect their relationship with the men. The retention of senior women would benefit from increased funding, an increase in transparent processes, and changes in our management.

The advancement of women's leadership has dramatically changed over the years, as shown by (Porterfield et al, 2005) Women always had leadership capacity and desire; but this was, for the most part, under-utilized because of political, fiscal, and cultural constraints. The new results reveal that the typical worker efficiency deficit has greatly narrowed. More recently, a study has shown a significant gender difference in emotional intelligence. Individualism and egalitarianism are unlikely to be affected by change of leadership. In the future, more focus will be directed at women in managerial roles.

According to the observations of Position et al, there have been relatively few studies concerned with gender and public relations. I always employ analysis on gender problems in my public relations studies. Specifically, our study found that women's presence is emphasized in leadership and leadership qualities, as well as women's absence to be cited as causes and women's absence to be seen in leadership roles. This manuscript gives some strategies for promoting female leadership, particularly in conducting research. This involves implications for quantitative processes, models of leadership, attitudes, modes of leadership, transition, and educational approaches.

(*Vasavada*, 2012) Many women are still moved towards social justice in the home and the college, respectively despite this, women remain underrepresented in leadership roles and, in higher education, an exception relative to males. Sometimes, the differences between how men and women lead are found to be less important than the details of their interactions. Stereotypical assumptions may inhibit their ability to act as leaders. Perceived incongruity between women's positions in management causes negative evaluations and less favorable comparisons to men. It's becoming clearer that a gender-neutral perspective is insufficient, and we must incorporate societal viewpoints and behavioral norms.

(Chanana et al, 2020) There are several different kinds of female leadership, including collaborative and transformational. This issues tend to become more complex when dealing with social and ethnic diversity. We could transform our values and foster new theories of leadership that exhibit greater variance. Although modern leadership theories support a "transformational" and "inclusive" or "out" type, genders and ethnicities may still appear in corporate cultures. in hierarchical and participative management, there is also a struggle between top-

down and bottom-up leadership methods. Although leaders are able to establish dominance in such environments, they face similar societal prejudices when doing so in business.

As stated by (Madsen et al,2018) after analyzing a series of post-secondary educational institutions that struggled to draw competent and high-ability representatives, found Another possible reason for the continued scarcity of well-qualified candidates is that few women are in higher education today are being given opportunities to advance to do so. This is a synopsis of the relevance and interconnections of human resources, leadership, higher education, and women's initiatives in higher education. the article serves to show the issue in its entirety, the point that's being made, the strategy that's used, and how crucial the skill is concerns about the absence of women in higher education in administration are addressed, and this Special Subject is presented in a straightforward and succinct manner. This may be a reference list for academic scholars and clinicians on women's leadership in higher education, and related programs.

(Surawicz et al, 2016) conducted a survey to find out the percentage of females in leading positions in medical school and medical college administration. There are several explanations for the gender gap in the academic fields of medicine. A single subject is composed of two subjects: two subjects are formed by an invisible wall of glass and a leaky pipe. The loss of women faculty in both places of higher education and career progression along the pipeline appears to be an issue. Problems related to glass ceilings may exist on either of two levels: bias in the culture or in the structure. Women's leadership development needs can be supported by enabling work-life balance.

Bhattacharya et al, (2018), explores the most important factors that support female leadership in India's IT and IT-enabled service industries. Following several case studies, an interview-based approach to inquiry and collected descriptive evidence with semi-structured interviews the research established vital factors that aid in women's advancement. These results can help organizations recruit, retain, and expand the number of women talent that is diverse and empowering.

(*Chin*, 2011) says that considering the gender leadership roles, the majority of women serve in lower-level academic positions The challenge that many women face is the tension between their personal and professional identities Because being excluded from higher positions in academia is not an indication of discrimination against a woman, it follows that there should be no discrimination against women in academia. The UGC has launched a national scheme to empower women in varied occupations. The advancement of gender inclusivity has a beneficial consequences for gender equality. The project has encouraged many women and built a widespread support network for them.

3. OBJECTIVES OF THE STUDY

1) To Study Challenges faced by Women in leadership Role while working virtually in Educational & IT sector.

2) To examine the impact of Women working in virtual environment on productivity levels.

4. RESEARCH METHODOLOGY

This paper is about the study of challenges of women in leadership roles during pandemic. Primary data is collected through a set of questionnaires during the month of Jan – March 2021 from employees who are working from home in Educational and IT Sector for about six months. Secondary Data is collected through Newspapers, Magazines, and Research papers published from 2004 to current year. Data Sampling Size was 250 respondents, With IT & Educational Sector. Non Probability Random Sampling Technique is used. SPSS software is used to analyses data.

5. DATA ANALYSIS AND INTERPRETATION
IT SECTOR

Table 1

Model	Variables Entered	Variables Removed	Method
1	Job Satisfaction, Communication, Management Support, Knowledge flow [b]	.	Entered

a. Dependent Variable: PRODUCTIVITY

b. All requested variables entered.

Table 1 shows variables entered and removed, the entered variable are Job Satisfaction, Communication, Management Support, Knowledge flow which are independent, the dependent variable is Productivity. The independent variables depends on the Productivity

Table 2

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.806[a]	.753	.750	4.247

a.   Predictors: (Constant), Job Satisfaction, Communication, Management Support,Knowledge flow

Table 2: Shows model summary with R value = 0.806, R Square value = 0.749and Adjusted R value is 0.750, Std. Error of the estimation is 4.247 and predicts the independent values are highly significant. Since R value is 80% valid, highly significant and therefore Independent variable is highly fit and significant.

TABLE 3

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	11556.798	4	2889.199	160.213	.000[b]
	Residual	6239.584	346	18.033		
	Total	17796.382	350			

a. Dependent Variable: PRODUCTIVITY
b. Predictors: (Constant),

Table 3: Here P<0.005 which signifies that overall regression model statistically significant which shows agood model for the data.

Educational Sector

Table 4

Model	Variables Entered	VariablesRemoved	Method
1	Job Satisfaction, Communication, Management Support, Knowledge flow[b]	.	Entered

a.   Dependent -   Variable:PRODUCTIVITY

b.   All requested variables entered.

Table 4 - the entered variable are which are Job Satisfaction, Communication, Management Support, Knowledge flow independent, the dependent variable is Productivity. The independent variables depends on the Productivity

Table 5

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate

1	.610[a]	.692	.690	.562

a. Predictors: (Constant), Job Satisfaction, Communication, Management Support, Knowledge flow

Table 5: Shows model summary with R value = 0.610, R square value is 0.692 and Adjusted R value =

.690, Std. Error of the estimation is 0.592 and predicts the independent values are significant. Since R value is 61% valid, significant and therefore Independent variable is highly fit and significant.

Table 6

ANOVA[a] Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	11902.322	4	2975.581	9405.873	.000[b]
1 Residual	45.871	145	.316		
Total	11948.193	149			

a. Dependent Variable: PRODUCTIVITY

a. Predictors: (Constant), Job Satisfaction, Communication, Management Support, Knowledge flow independent

Table 6: Here the p<0.05 and we find a strong overall regression which is a good and significant fit for the data.

6. CONCLUSION

Pandemic has thought us that Work from home is possible and feasible. Virtual organizations are developing in both IT and Educational Sector. Work from home is feasible and is effective in terms of production. There are more also upcoming opportunities as well to explore in different organizations. It is evident from the result that women in the leadership roles while working from home in IT sector have productivity levels higher when compared to Educational Sector. Therefore Virtual working in IT Sector isnot new, as the concept of Technology adaptation and Work from home has been in practice from years butwhen compared to Educational Sector the virtual working is new and adapting to technology was a challenge. Therefore the productivity levels from IT sector remained the same, but in educational sector the productivity levels fluctuated and dropped down. From the Regression Analysis in IT sector R value = 0.806, R Square value = 0.749and Adjusted R value is 0.750, Std. Error of the estimation is 4.247 and predicts the independent values are highly significant. Since R value is 80% valid, highly significant and therefore Independent variable is highly fit and significant. In Educational Sector, R value = 0.610, R square value is 0.692 and Adjusted R value = .690, Std. Error of the estimation is 0.592 and predicts the independent values are significant. Since R value is 61% valid, significant and therefore Independent variable is highly fit and significant.

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TALENT ACQUISITION STRATEGIES IN IT INDUSTRY: A STUDY WITH REFERENCE TO TATA CONSULTANCY SERVICES (TCS), BANGALORE

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ABSTRACT

Employees are considered as Human Capital or assets in every organization. Attracting or acquiring the right set of talent requires a continuous and changing talent acquisition strategy followed by different sources of recruitment. The IT services sector is very large in India and provides employment to thousands of engineering graduates every year. Recruitment is a mammoth task in these companies and therefore, it is interesting to study the various solutions they have devised to meet their recruitment goals and match them with their business needs. This study focuses on recruitment drive and sources of TCS alongside the effect of technology for acquiring the right-fit via virtual hiring. Talent acquisition is the need of an hour because the entire process of recruitment is an expensive and time consuming, and if the right people are not hired the entire process can go haywire. Talent acquisition takes into consideration the long-term organisational goals and plans. It also provides competitive advantage to the companies. The study also reflects the whether there is a significant relationship between gender and virtual hiring. A questionnaire was formulated and circulated among 150 employees of TCS to understand the method adopted by the company for recruitment. Through our research we were able to get the percentage distribution of the above-mentioned sources of recruitment. The company mainly hires through job portals that accounts for 96.875% followed by, walk ins (50%), employee referrals (31.25%), Campus recruitment (21.875%), professional associations (12.5%) and present employees (9.375%). The research implications suggest that how recruitment being a subset of talent acquisition is very crucial in attaining and finalizing talent in IT companies like TCS and also tells us about the diversified source of recruitment in TCS.

Keywords: Talent management, candidate sourcing, employer branding, recruitment, talent attraction

INTRODUCTION

Talent Acquisition can be defined as a strategy used in the organizations in order to find, acquire, retain and maintain talented workforces or human capital in the organization. It also covers the facets of recruitment and selection by filtering and analysing the perfect fit for the organization, followed by mapping of employee's skills with organization goals. The talent acquisition department is responsible for recognizing, obtaining, analysing, and selecting candidates to fill in vacancies within a company. Branding of employee-employer relationship, future HRP, and expanding workforce are the main aims of talent acquisition. Talent acquisition is an ongoing cycle which addresses attracting, selecting, and predicting the future needs of the organization in terms of manpower planning. It can play a competitive advantage in the job markets which are undergoing transformation both in terms of technology and growth. A proactive hiring strategy in IT companies like TCS, helps in anticipating or predicting what the future requirement of manpower will using HR and hiring analytics.

Recruitment Vs Talent Acquisition: Although, Recruitment and Talent Acquisition has been used interchangeably in some of the contexts, but both of them differ substantially. Recruitment is the subset of Talent Acquisition. The latter is much broader than barely recruiting new employees. Recruitment refers to getting people in the organization, as per the vacancies or job positions that are vacant whereas Talent Acquisition refers to getting the right talent and lining them for present and future needs. In other words, recruitment fulfils the current organizational labour needs and talent acquisition addresses the ongoing present and future needs of organization.

Recruitment is about hiring people in order to fill the vacant positions, on the contrary talent acquisition is a cyclical and long process to seek out strategists, experts, and analysts to not only hire the right-fit but analyse and predict what the future workforce requirements might be. It tends to specialize in a broader sense of manpower planning and picking the talent having niche skills which is specific to the industry and organization. Hiring people or recruitment is one of the steps for talent acquisition.

Recruitment needs are of three types i.e., planned, that happens when there are changes in organization and retirement policy. Second is Unexpected, that Comes to picture when there are resignations, deaths, accidents and illness etc. and the third is Anticipated, that covers talent mapping.

Recruitment Process: It is a process instead of one act or event and is bound to change as per the business environment. It is a costly process as it involves various strategies to attract as many applicants as possible. Recruitment is followed by funnelling down the right fit or best fit for the organization from the pool of potential candidates by evaluating the organizational needs and the person who can satisfy the job requirements. It is a mutual and rapport-building process between recruiter and recruited.

FEATURES OF RECRUITING:

- Defining Requisitions: It contains the specifications about the quality and quantity of vacancies to be filled, and also defining the recruitment strategy.

- Sources involved: internal or external, remote hiring, social media hiring etc.

- Communication of job descriptions and requirements to accumulate prospective employees.

- Identifying prospective/potential candidates.

- Encouraging applicants through employer branding, and building talent pipeline. It also involves candidate assessment and evaluating the cost-benefit or the effectiveness of the entire recruitment process.

Factors Affecting Recruitment: There are several of things affecting recruitment, they're broadly classified into two categories. - The internal factors or endogenous factors are within the premises of the organization that affect hiring, which includes the scale and size of the organization, hiring strategy, branding of organization, job description and specification. External factors- Like internal factors, there are some factors outside the organization's premises influences the recruitment process, which includes all the factors of PESTLE analysis. E.g. - increase in remote hiring after covid.

Source of Recruitment:

Internal	External
Previous applicants	Advertisements
Present employees	Campus recruitment
Employee referrals	E – recruitment
Former employees	Employee exchanges
	Walk – ins, casual applicants
	Mergers and acquisitions

LITERATURE REVIEW

The following contains a review of the literature available on Talent acquisition and a summation of the prevalent trends in various industries as collectively outlined by the available texts.

Cook, (2004), the aim of this paper is to examine the talent management methodology of organizations in the services sector. The author has expressed that numerous service corporations are currently understanding the upsides of a diverse working environment. In this unique circumstance, the author has called attention to that, Most firms are growing global with their market expansions and people now have a need to apply various skills, which is why executives should provide workers a chance to use their hidden skills. The author has expressed that, in each service offering associations, the administration ought to have such a talent management system or projects which improve the abilities of their employees.

Douglas, (2005), the aim of this paper is to examine the variables which are answerable for the achievement of talent management exercises. In this context, the author has expressed that talent management exercises can appear to be scary and hard to deal with for supervisors and human resources in companies. Nonetheless, while talking about 'talent' the author has alluded to the most important function in the corporation. In the assessment of the author, companies don't survive without its individuals, and when the management individuals of the corporation think and plan for the advancement of these results of significant worth; things can be intricate and seem numerous. For the fruitful talent management arrangement of any corporation, the author has recommended five points for actualizing the plan. These points are- Discover what you are talking about, describe what all is meant by being transparent, discuss professional goals with workers, determine who belongs where and Differentiated development.

Bersin, (2006), the aim of this paper is to examine the basic issues about talent acquisition. These are the concerns – I) Executives demand coordination and equivalence between current human resource and research and development activities. ii) Competency the board, misunderstanding, and aggravating component of training and human resources have become standard; and iii) Vendor asserts that there is no capacity for the board programming arrangement at the present time. On this note, the author has discussed the examination paper in detail in the examination paper.

Donnells, (2008), the aim of this paper is to examine the relationship of hidden abilities and preparing programs of an organization. While extending this relation, the author has expressed that effective training is one of the ways to opening the gifts of employees and ensuring workers to meet daily business goals. In the assessment of the author, harnessing the hidden capabilities of potential workers, bosses can move their business as well as enlarge their workers maximum capacity. As per the Report of the HR Community. (2008), there are three significant stages to the Talent Management process; these are; I) planning ii) distinguishing proof of ability and iii) management of ability. A concise depiction has been given with respect to these three phases in these 15 reports. The planning stage depicts the purpose of the arranging stage as ensuring that the network is formed to try the operation and that the framework has the necessary assets and resources to complete the operation effectively. The objective of the subsequent stage, which is the identified validation of a worker's ability, is to achieve an expanded perspective of the HR people group by determining critical or fundamental conditions inside the HR people group and differentiating ability.

Berger et al, (2008), addresses literature on the talent management model dependent on the act of high performing companies. It incorporates three related components, for example, a belief, technique, and the framework. The initiated model implies that the standards of the company's belief which are inserted into its talent management procedure and in its talent management framework by consolidating its regulations into selection rules, competency definitions, performance evaluation framework for driving well founded achievement and furthermore talked about on the consolidating succession plans and career planning of workers.

Amiri . et al, (2017), addresses literature on the impact of talent management among workers. They have clarified that such systems expose the hidden capabilities of the employees and accentuated that the administration ought to be focused on the ability of workers for improving and expanding the profitability and performances of employees.

OBJECTIVES OF THE STUDY

1. To understand the talent acquisition strategies of TCS by analyzing the percentage of different sources of recruitment namely- (job portals, walk-in interviews, job portals, present employees, employee referrals, campus recruitment and professional association)

2. To study whether there is significant impact of updated technology for acquiring the right talent via virtual hiring

3. To study whether there is significant impact of gender with regards to Virtual Talent Acquisition in acquiring correct talents.

RESEARCH METHODOLOGY

The purpose of the study is to understand the various sources of talent acquisition in service-based software companies- TCS, HCL, Infosys, Wipro and Accenture and to identify the major sources of recruitment in the software industry. The primary data is used more intensively which is gathered from TCS during the period April,2021 by conducting in-depth interviews with semi structured questions from the mid-level and top-level management employees and employers of the organization. The interview questions were Open-ended that had no predetermined limit or border and the Secondary data is collected through magazines, newspapers, journals, articles, research papers. The sampling size was 150. The data used for the study is qualitative and exploratory method of research is implemented. The sampling technique used is purposive technique. To analyze the study, demographic variables were analyzed, Content analysis technique was adopted for interpretation and for in depth understanding.

Data Analysis HYPOTHESIS CASE 1

H1: There is significant impact on requirement of Updated Technology for acquiring appropriate talent via virtual hiring

H0: There is no significant impact on requirement of Updated Technology for acquiring appropriate talent via virtual hiring

Dependent variable: Acquiring appropriate talentIndependent Variable: Updated Technology

Chi-Square Tests

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	97.361[a]	40	.000
Likelihood Ratio	95.324	40	.000
Linear-by-Linear Association	11.656	1	.001
N of Valid Cases	400		

a. 28 cells (50.9%) have expected count less than 5. The minimum expected count is .46.

We reject the null hypothesis and accept the alternative hypothesis, since the p-value is lower thanour selected significance threshold (= 0.05). There is significant impact of requirement of Updated Technological for acquiring appropriate talent via virtual hiring.

We may conclude the following based on the findings: There is correlation between requirement of Updated Technological for acquiring appropriate talent via virtual hiring is observed. (X2(2)>

= 97.361, p = 0.00).

HYPOTHESIS CASE 2
H1: There is significant impact of gender with regards to Virtual Talent Acquisition in acquiringcorrect talents

H0: There is no significant impact of gender with regards to Virtual Talent Acquisition in acquiring correct talent

Dependent variable: Virtual Talent AcquisitionIndependent Variable: Gender

Gender	Total
Male	87
Female	63
Total	150

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	3.283[a]	4	.604
Likelihood Ratio	2.793	4	.593
Linear-by-Linear Association	.925	1	.336
N of Valid Cases	400		

We do not reject the null hypothesissince the p-value is higher than ourselected significance threshold (=

a.   5 cells (55.6%) have expected count less than 5. The minimum expectedcount is .03.

0.05). Rather than that, we find that the evidence for a link between gender and virtual TalentAcquisition is insufficient.

We may conclude the following based on the findings: There is No correlation between gender and virtual talent acquisition (X2(2)> = 3.2, p = 0.605). talent acquisition (X2(2)> = 3.2, p = 0.605).

FINDINGS
TCS opts for various different sources (both internal and external) of recruitment ranging from job portals, referrals, professional association and campus recruitment. During our study we were ableto get the idea of the percentage distribution of the various sources of recruitment followed by TCS.

When we take a look at the data, we find that Job Portals, Walk-in interviews, Employee Referrals, HR and Campus recruitment are the most used sources for looking for candidates. Now, let us lookat the list of sources in the decreasing order of preferences.

Through the analysis we found out that majority of the employees were picked from job portals (96.875%) followed by the selection process. Similarly, walk-ins, employee referrals, campus recruitment, professional associations and present employees accounts for 50, 31.25, 21.875, 12.5,

9.375% simultaneously.
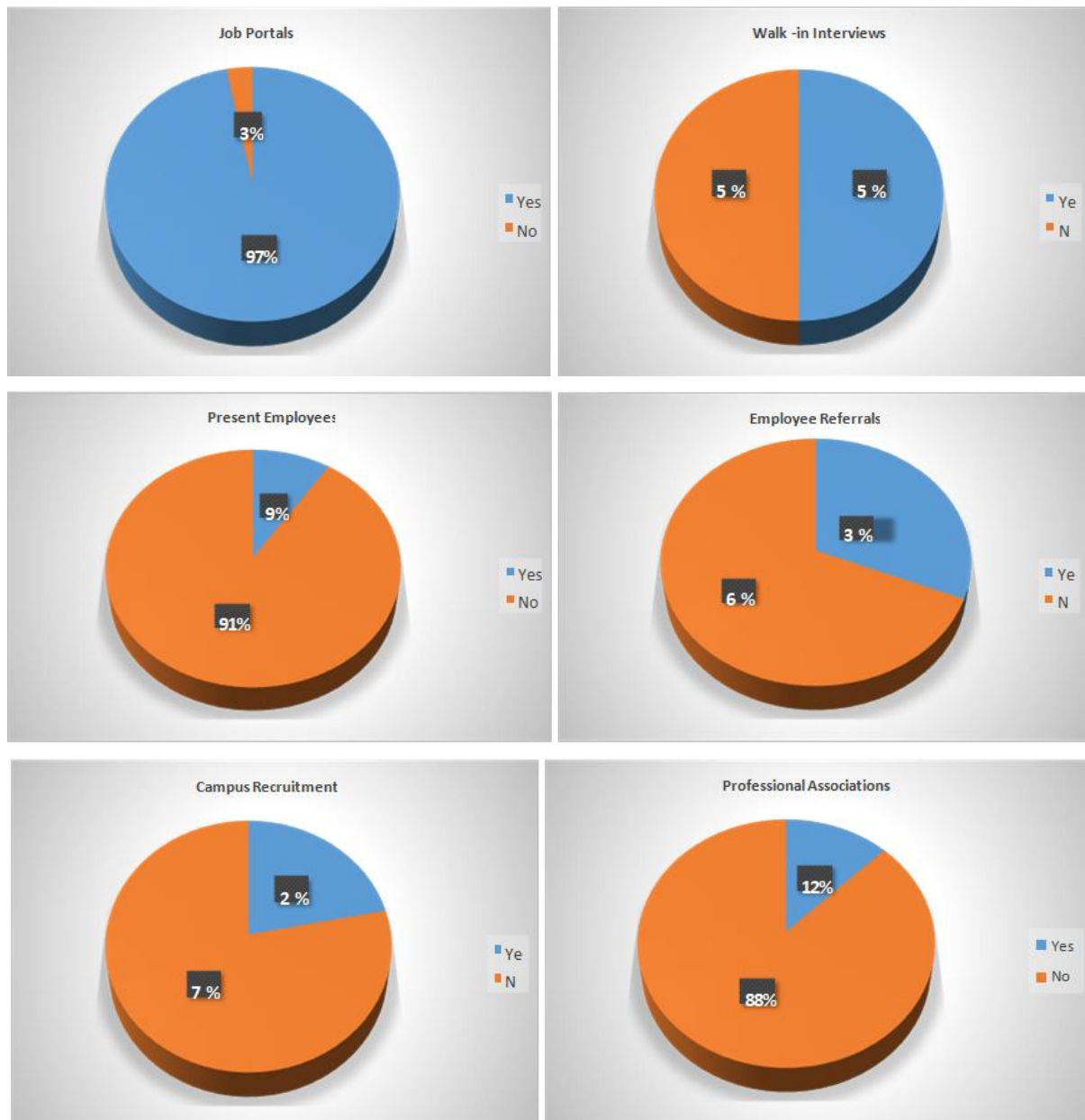
SOURCE OF RECRUITMENT	ADOPTED BY TCS	NOT ADOPTED BYTCS
Job portals	96.875%	3.125%
Walk in interviews	50%	50%
Employee Referrals	31.25%	68.75%
Campus recruitment	21.875%	78.125%
Professional associations	12.5%	87.5%
Present Employees	9.375%	90.625%

We also found out that there has been a significant impact of technology in hiring the best fit for the organization as far as virtual hiring is concerned.

There has been significantly weaker effect of gender with regards to Virtual Talent Acquisition

SUGGESTIONS

❖ This study focuses on identifying the major sources of recruitment and talent acquisition. A further study on selection process of TCS as well as retention of employees will better highlight the significance of talent

acquisition in these software companies

❖ Another research, on continuation of this research can be carried out to understand the financial cost that the organisations bare to attract talents from the various sources of recruitment mentioned in the study.

CONCLUSION
The study reflects that, although the term, "Talent Acquisition" and Recruitment is used interchangeably but there is a subtle difference. While both recruitment and talent acquisition begin on the same grounds of Human Resource Planning, but talent acquisition is a roundabout strategic planning and it doesn't end after a potential candidate is hired, unlike recruitment.

TA helps organisations to create a talent pipeline beforehand, and also predicting what the future needs of manpower can be both in terms of quality and quantity with the help of HR analytics and metrics such as recruitment matrix, succession planning and profiling. Nowadays Talent acquisition is being replaced by talent attraction, which suggests that you can't acquire talent, you can only attract them. Both talent acquisition and talent attraction talk about strategic planning, employment branding, employee engagement and retention.

The study also highlights the various recruitment solutions offered by TCS to acquire talent by recognizing that a position is available, analysing the job requirements, writing the job listing, advertising the job listing to the right candidate pool and then collecting applications.

With the help of questionnaire survey done on 150 employees of TCS, it was evident that TCS uses diversified sources of both internal and external recruitment. The study reflects the percentage of various source of recruitment namely, job portals, walk-in interviews, employee referrals, campus recruitment, present employees and professional associations used by TCS.

Technology has affected the hiring practices of TCS in a positive manner by easing out the recruitment process and for virtual hiring. Although there was no significant relationship between gender w.r.t virtual hiring.

It is critical to note that regardless of the tactics or sources of recruiting used by a business, recruiting is a costly and time-consuming operation. Recruitment and selection should provide the appropriate suggestion in order to speed the recruiting process. Recruitment and selection, in particular, serve as a gateway for firms to access willing and competent human resources, just as job seekers do for firms of their choosing.

FUTURE IMPLICATIONS
The research implications suggest that how recruitment being a subset of talent acquisition plays an important role in attracting and ultimately hiring the right talent. Our main focus of the study is to understand the differences between talent acquisition and recruitment.

Other implication of the study was to understand the modes of recruitment adopted by TCS highlighting their recruitment strategies. The study gave a good idea about the Human resource planning followed by recruitment sources and preferences of the company. A furthermore research on the recruitment cost of the various sources of recruitment mentioned in the study, in terms of money and time will help to get a clear picture about the expenses bear by the company for its recruitment drive.

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FAKE NEWS DETECTION TOOLS AND METHODS – A REVIEW

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ABSTRACT

In the past decade, the social networks platforms and micro-blogging sites such as Facebook, Twitter, Instagram and Sina Weibo have become an integral part of our day-to-day activities and is widely used all over the world by billions of users to share their views and circulate information in the form of messages, pictures, and videos. These are even used by government agencies to spread important information through their verified Facebook accounts and official Twitter handles, as it can reach a huge population within a limited time window. However, many deceptive activities like propaganda and rumour can mislead users on a daily basis. In this COVID times the fake news and rumours are very prevalent and are shared in a huge number which has created chaos in this tough time. And hence, the need of Fake News Detection it the present scenario is inevitable. In this paper, we survey the recent literature about different approaches to detect fake news over the Internet. In particular, we firstly discuss about fake news and the various terms related to it that have been considered in the literature. Secondly, we highlight the various publicly available datasets and various online tools that are available and cam debunk Fake News in real time. Thirdly, we describe fake news detection methods based on two broader areas i.e., it's content and the social context. Finally, we provide a comparison of various techniques that are used to debunk fake news.

KEYWORDS: Fake news detection, Rumor detection, Fact checking, Disinformation, Misinformation

1. INTRODUCTION

Social media has become an important information platform from where people gain and share information. Its increasing popularity has also enabled the wide dissemination of misinformation causing significant negative effects on society. Therefore, to maintain social harmony it is highly crucial to detect fake news on these platforms and also regulate these to ensure that the users receive genuine information. The social media users are mostly naïve, and get affected by the false information circulated on these platforms. They may unintentionally share the fake content and support them by commenting on the fake news. Some political experts believe that the victory of Donald Trump in 2016 U.S. presidential election was an outcome of propaganda and rumors[1]. Since last two years also the social media networks in different countries are continuously being flooded with all kinds of fake news and rumors on COVID-19. Today we are living in the information age, where the users are a content generator but most of the information generated lack of trust and verification because of the lack of debunking tools. The fake news detection on social media platforms have become an emerging research topic and is gaining attention of researchers all over the world. Many technical giants also like Google and Facebook are looking for solutions to debunk online fake information. In 2016, Facebook started a third-party fact-checking program to rate and review the accuracy of content on their platform in collaboration with IFCN-certified fact-checkers around the globe. Similarly, Google announced Google's News Initiative to fight misinformation, and controversial breaking news. The social media posts contain information in a multi-modal fashion, e.g., a mixture of text, pictures and videos which has evolved the traditional print media to an online based multimedia. The multiple information modality makes the claim more believable and presents a new horizon of opportunities to detect features in fake news[2]. A powerful and competent method for detection of misinformation has recently attracted serious attention from different research communities.

Our major contributions of this paper are summarized as follows:

- We discuss the definition of fake news and the various terms related to it that are used interchangeably.

- We give an overview of existing fake news detection methods on the two broad categories i.e. 1) Content and 2) Social Context of the news.

- We present the publicly available datasets and various approaches which have been adopted to gather the data for this research purpose.

- In addition to this we provide a comprehensive literature survey of the methods used for fake news detection.

The remainder of this paper is organized as follows. In Section 2, we present the definition of fake news, rumour, propaganda and other related terms. In Section 3, we provide an overview of the methods to detect fake news. In Section 4, we summarize the existing datasets. We briefly discuss the existing literature on fake news detection and related areas in Section 5 and finally, we conclude this survey in Section 6.

2.   FAKE NEWS, RELATED TERMS AND VARIOUS DEBUNKING TOOLS

According to Cambridge Dictionary **Fake News** is defined as false stories that are created and spread on the Internet to influence public opinion and appear to be true. Fake news is not a new term and has a long legacy reaching back centuries since the development of the earliest writing systems but with the advent of social media the past decade has seen a shift in how the news is propagated that is quite different from the traditional media. The social media platforms have become fertile ground for computational propaganda, and trolling. There are several terms that are used interchangeably for fake news like satire, yellow journalism, hoax, propaganda, misinformation, disinformation, rumor etc, some of them are described below. Figure 1 gives the visual description about the same.

Propaganda: Propaganda refers to news stories which are created and propagated by a political entity to influence political view.

Misinformation: It is inaccurate information that is deliberately created and is intentionally or unintentionally disseminated disregarding the true intent.

Disinformation: It refers to a false or incomplete information that is disseminated with the intention to manipulate facts and mislead the target audience.

Rumors and hoaxes are interchangeably used to refer to deliberate falsification or fabrication of information that is constructed to seem valid. They present the unverified and inaccurate claims as validated by traditional news outlets.

Parody and Satire usually use humor to give news updates and typically mimic mainstream news media.

Clickbait: Sensational headlines are often used as clickbaits to draw the attention of users and encourage them to click and thus redirecting the reader to a different site. More clicks on the advertisements means more money.

Figure 1: Key terms related to Fake News

The rise in the use of propaganda, hoaxes, satire, along with real news and credible content makes it challenging for regular Internet users to distinguish between real and fake news content. But there are various online tools available for debunking fake news like AltNews, APF Fact Check, BSDetector, Hoaxy, Reverse Image Search, Snopes, PolitiFact, Additionally, there are various IFCN-certified fact-checkers around the world that review and rate the credibility of content on various online platforms.

3.   FAKE NEWS DETECTION METHODS

The wide usage of social media platforms worldwide has provided a fertile ground for the widespread dissemination of online fake news in an unprecedented way. The social network is flooded with massive, diverse, and heterogeneous information (both real and fake), and spreads rapidly on these platforms causing

severe impact to the whole society. Therefore, many researchers and technical giants are working together to detect fake news on online media. The traditional automatic rumour detection methods were based on hand crafted feature but with the advent of big data and a huge base of user generated data we have seen a shift to deep-level features. In this section, we discuss various state-of-the-art studies on fake news detection under the broader umbrella of content and social context of the news article.

3.1. CONTENT BASED

The content-based fake news detection method aims to detect fake news by analyzing the content[3] of the article , i.e., either the text or image or both within the news article. For automatically detecting the fake news, the researchers often relying on either latent [4],[5],[6],[7],[8],[9] or hand-crafted features [10] of the content.

3.1.1. KNOWLEDGE BASED

Knowledge-based approaches utilize fact checking method in which the given claim is compared with the external sources to verify the authenticity of the given claim. The existing fact checking methods can be categorized as manual (using experts or by crowdsourcing) and automatic fact checking.

Manual fact checking

The manual fact-checking can be broadly divided into (I) expert-based and (II) crowd-sourced fact-checking.

Expert Based: The expert-based methods use expert-oriented approach and rely on human experts working in specific domains for decision making. The fact-checking websites like Snopes, PoltiFact, GossipCop use this approach. These methods are reliable but are time consuming and do not scale well with the huge volume of content available on social media. Many researches use these websites for creating their own datasets among these are the benchmark datasets LIAR[11] and FakeNewsNet[12].

Crowd sourced: For crowdsourced approaches, "wisdom of crowd" helps to check the accuracy of the news articles. A similar approach is used by Fiskkit that provides a platform for people to discuss important news articles and finds out their accuracy. Crowd-sourced fact-checking is even though relatively difficult to manage, biased, has conflicting annotations, is less credible but has better scalability as compared to expert-based fact-checking[13]. CREDBANK[14] is a publicly available large-scale benchmark fake news dataset that is annotated by fact-checkers. The datasets that are created using this approach needs to be filtered for non-credible users and the conflicting annotations need to be resolved beforehand. Some similar datasets can also be created and then be annotated using crowd-sourcing marketplaces such as AMT (Amazon Mechanical Turk).

Automatic fact checking

The Manual fact-checking approaches do not scale well with the huge volume of data especially generated with the use of social media as a result, to address this issue automatic fact-checking techniques have been deployed. Instead of relying on human intelligence these methods heavily rely on Natural Language Processing (NLP), Data Mining, Machine Learning (ML) techniques and network/graph theory[13]. The automatic fact-checking process can be divided into two stages: (1) fact extraction which is related to collection of facts and construction of a Knowledge Base and (2) fact-checking which is used to assess the authenticity of news articles by comparing that with the facts in the knowledge base. It uses open web source and knowledge base/graph to check whether the given claim is true/false. The real-world datasets for fake news detection are usually incomplete, unstructured, unlabeled and noisy[15] which make automatic detection a bit complex.

3.1.2. STYLE BASED

Style-based fake news detection follows the same approach like knowledge-based fake news detection of analyzing the news content. However, instead of evaluating the authenticity of news content this method assess the intention of writer to mislead the public[13]. Fake news publishers usually have an intent to influence large communities while spreading distorted and misleading information. To make the titles catchy fake titles use mostly all capitalized words, significantly more proper nouns, and fewer stop words [16]. Style-based approaches captures the distinguishing characteristics of writing styles between legitimate users and anomalous accounts to detect fake news. [17] reports the writing style analysis of hyperpartisan news in connection to fake news. The major contribution of [18] is detecting stylistic deception in written documents.
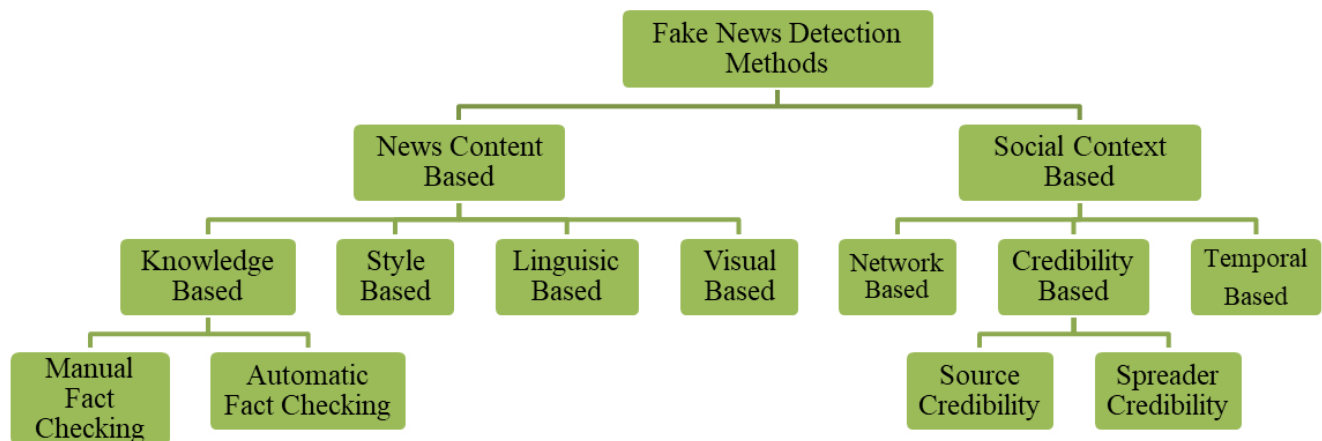
Figure 2. Fake News Detection Methods

3.1.3. LINGUISTIC BASED

Twenty-six linguistic based textual features were proposed in [19]. In [20] authors proposed an enhanced set of linguistic features to discriminate between fake and real news. [21] used network account features in addition to the linguistic features whereas [22] proposed Social Article Fusion (SAF) model that uses social engagements features along with linguistic. The authors in [23] have used linguistic features along with syntactic and semantic features to distinguish real form a fake news content. [7] proposes model to detect fake news having different lengths of news claims by using different variations of word embedding. [3] investigates a given news content at lexicon-level, syntax-level, semantic-level, and discourse-level. HDSF proposed in [24] learns a hierarchical structure for a given document by dependency parsing at the sentence level. Despite the success of this method in various scenarios, it poses a limitation in case of detecting misinformation on popular social media platforms where the messages are short and thus, the linguistic features extracted from them are often inadequate for machine learning algorithms to make accurate predictions[25]. Additionally, these approaches cannot be used to detect fake news that contains no text content but only a photo or a video.

3.1.4. VISUAL BASED

Visual content is often viewed as evidence that can increase the credibility of the news article[2] and hence the fake news publishers tend to utilize provocative visual content to attract and mislead readers. In [10] various visual and statistical image features are extracted for news authentication. Verifying Multimedia Use task [26] under the MediaEval-16 benchmark addresses the problem of detecting digitally manipulated (tampered) images.

3.2. SOCIAL CONTEXT BASED

There are three major aspects of the social context i.e.: user profiles, user posts and responses, and network structures[12]. It represents how the news proliferates over time and provides useful information to determine the veracity and stance of news articles. Recent studies [27]–[32] have explored various context based approaches for fake news detection.

3.2.1. NETWORK BASED

Network-based fake news detection studies different social networks like friendship, tweet-retweet, post-repost networks to detect fake news. It detects who spreads the fake news, relationships among the spreaders and how fake news propagates on social networks. Users tend to create various networks on online platforms media in terms of their common interests and similarities, these networks serve as paths for information diffusion. [33], [27], [34] studies various networks on social media which gives valuable insights about spreaders of the news and how spreaders connect with each other. [35] models the pattern of message propagation as a tree, which along with the relation among posts give additional information about the temporal behavior and the sentiment of the posts.

3.2.2. TEMPORAL BASED

Studies have shown that news stories on the Internet are not static but are constantly evolved over time by adding new information or twisting the actual claim. This is very much evident in cases where the rumors resurge multiple times after the original news article is posted. The lifecycle analysis of rumor helps in understanding this phenomenon and [36] examines the recurring rumors at the message level across different time periods. [37] provides deep understanding into the diffusion patterns of rumors over time.

3.2.3. CREDIBILITY BASED

The credibility of claim, publisher, spreader is often assessed by its news quality and trustworthiness/ credibility. [38] identifies the users spreading rumor by leveraging the concept of believability. [39] focusses on assessing credibility of the given claim. [40] proposed a credibility analysis system for evaluating credibility of a Tweet and prevents the proliferation of fake or malicious information. TweetCred is a web-based system that evaluates credibility of the tweet in real time.

4. DATASETS FOR FAKE NEWS DETECTION

With several researchers working on this area there are many various fake news datasets that are available, but only a few benchmark fake news datasets are released publicly. In [41] the authors have highlighted the key requirements like homogeneity in length, news genres, topics etc., that are need for creating a reliable fake news detection dataset along with the collection of both real and fake news articles to verify the ground truth for each element in the dataset. For the authors, key factors include. We here present several publicly available datasets along with their comparative analysis. Table 1 gives a brief overview of various fake news datasets available.

Table 1. Dataset Characteristics

Dataset	Task	Task Label	Content Type	Total claims
BuzzFace[42]	news veracity assessment and social bot detection	mostly true, mostly false, mixture of true and false, and no factual content.	news items posted to Facebook by nine news outlets	2263 articles
CredBank[43]	Credibility assessment	5-point credibility scale	news items posted on Twitter	1049 real-world events
Emergent[44]	Rumor stance detection	true, false or unverified	world and national U.S. news and technology stories.	300 claims and 2,595 associated news articles
FacebookHoax[45]	Fake news detection	Hoax, non-hoax	Scientific, conspiracy	15.5K
Fake News Challenge	Stance detection	Agreed, disagrees, discusses, unrelated	News Article	50K
FakeNewsNet[32]	Fake news detection		US Politics, Entertainment	
FakeNewsVsSatire [46]	Fake news detection	fake news or satire	American politics	
Fa-Kes [47]	Fake news detection	Fake, True	Syrian War	804
FEVER[48]	Fact extraction	Supported, refuted, not enough info		185K
LIAR[11]	Fake news detection	pants-fire, false, barely true, half-true, mostly-true, and true	Political statements	12.8K
MediaEval-VMU [26]	Fake News Detection	Fake, real, unknown	it contains posts related to the 17 events	15.8K posts
PHEME [49]	Rumor Detection and Veracity Classification	True, False or Unverified	nine different newsworthy events	4,842 tweets
RumorEval [50]	Detecting and verifying rumours	supporting, denying, querying or commenting	well-known breaking news	5.5K Tweets

5. REVIEW OF LITERATURE OF TECHNIQUES USED

Traditionally, the majority of approaches for detecting fake news focus on analyzing the textual content only and utilized hand crafted textual features for the same. But, with an increasing number of articles which are attached with images over the Internet and the extensive use of social media networks, the multimodal features and social-context play a very vital role in better understanding the overall heuristics of the content. The traditional machine learning and rule-based algorithms are inefficient to detect the patterns in today's information age. Hence, to take advantage of big data Deep learning techniques are investigated for fake news detection.

Jin et al. [51] first proposed att-RNN which fuses the multimodal features i.e. textual and visual features along with the user profile features and uses attention mechanism for feature alignment. Wang et al [52] proposed a model named Event Adversarial Neural Network (EANN) that detects fake news on newly arrived events, which can learn both textual and visual features and measures the dissimilarities among different events using an event discriminator. A similar idea is used by Zhang et al. [53] that proposes an end-to-end Multi-modal Knowledge-aware Event Memory Network (MKEMN) that not only learns event invariant features among different events but also exploits the external knowledge connections for accurate news verification. Khattar et al. [8] proposed a Multimodal Variational Autoencoder (MVAE) trained to find correlations across different modalities in a given tweet at post-level. Similarity-Aware Multi-modal Fake News Detection SAFE [54] is proposed by Zhou et al. that jointly learns the textual and visual features in a news article and similarity between them to evaluate whether the news is fake or not. C Song et.al. [55] proposed a Crossmodal Attention Residual and Multichannel convolutional neural Networks (CARMN) which mitigates the influence of noise generated by crossmodal fusion of components at post-level. FND-SCTI proposed by Zeng et.al in [6] not only mines the Semantic Correlations between Text content and Images attached but also uses attention mechanism to highlight the important parts of the given news article. Nguyen et al.[56] proposed FANG, a graph learning based fake news detection framework that captures the social interactions between users, articles, and media for source factuality and fake news prediction. Cui et al. [57] combines the multi-modal data with adversarial learning and incorporates user sentiment with it. An end-to-end neural network based model that automatically calculates the credibility of the given claims was proposed by Popat et al. [58]. Similarly to this, FAKEDETECTOR proposed by Zhang et al. [59] aims to provide the credibility labels to not only the claim, but also of the creators and subjects simultaneously.

Table 2. Literature Review

Features / Model	Content based		Social Context based		
	Text Based	Visual Based	Credibility Features	Temporal Based	Network Based
Att-RNN[51]	✔	✔		✔	✔
DeClarE[58]	✔		✔		
EANN[52]	✔	✔			
MKEMN[53]	✔	✔		✔	✔
MVAE[8]	✔	✔			
SAFE[54]	✔	✔			
CARMN[55]	✔	✔			
FAKEDETECTOR[59]	✔		✔		
FANG[56]	✔	✔	✔	✔	✔
FND-SCTI[6]	✔	✔			
SAME[57]	✔	✔	✔		

6. CONCLUSION

With an increase in the popularity and usage of social media over the past few years, a huge population of readers prefer to consume news from social media instead of traditional news media. Keeping this in mind, many publishers use social media and Internet in general as a breeding grounds for spreading propaganda and rumours rapidly which has strong negative impacts on the society. In this text we have mentioned several freely available Fake News Detection tools that should be used so that we forward only credible and genuine news. In this paper, we have explored the present fake news detection methods by reviewing existing literature under two categories: The Content Based and The Social Context Based Fake news detection. In the content based method, the article/post is considered that may contain the textual or visual content or both. In the social context based method, the propagation structure and the credibility of the publisher is considered. While the content based methods can be used for early detection of fake news the context based methods fail to do so because of the absence of the propagation details in the very beginning of the proliferation of misinformation. Additionally,

despite many researchers are focusing on this area but still there are only a few publicly available benchmark datasets.

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FINANCIAL MANAGEMENT PRACTICES BY SELF-HELP-GROUPS: A STUDY IN RURAL ASSAM

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ABSTRACT

Financial management is a crucial task for proper functioning of every SHGs and as an issue for every taker of such small finances. Through microfinance a small provision of loan and other financial support provided to the poor in a small quantity provided by the financial institutions. SHGs are formed by a group of people living in the same village known to each other and started their operative with savings and creates fund. Proper monitoring and review by the management is very essential in order to control the financial management of the group. The paper thus made an attempt to understand the financial management practiced by the SHGs that have been registered under economically and flood effected areas of rural upper Assam.

Key word: Financial Management, Microfinance, SHGs and Rural Assam.

1. INTRODUCTION:

Microfinance considered as a provision of small loan and other financial support provided to the needy poor in a small quantity granted by the financial institutions. Here the Self-Help-Groups (SHGs) are the key takers of these small finance to run their economic activities. The terms micro finance also includes financial support provided by the financial institutions to the poor in order to meet their general day to day financial needs. Management of finance is critical issues for every takers of these small finances. In this regard SHGs role is vital. It is a volunteered organization setup by 10-20 rural members doing to achieve a common goal. It is formed because to improve the economic conditions of the members by setting up their savings and loan fund. Generally, SHGs are formed by a group of people living in the same village known to each other and started their operative with savings and creates fund. After savings in a bulk, the group have given loans to its members at a reasonable interest rate either for emergency or any other needs. The income earned in the form of interest in a particular financial year is divided among the members of the group. This group is an inclusive team with common occupational appearances like animal husbandry, fishing, farming or any other common economic activity. Each and every group has a team leader who coordinates, manage and organizes the members concerning credit distribution, development of economic activities as well as the loan recovery on time. In order to smooth functioning of the group's activities including the financial transactions, loan recovery etc. the group meets once in a week of within the fortnight. Proper monitoring and review by the management is very essential in order to control the financial management of the group. In this regard the management also advise the members of the group about the proper fund utilization and accordingly plans programs and strategies to reinforce the group's financial position on one hand and economic position of the members on the other hand. The paper thus made an attempt to understand the financial management practiced by the SHGs that had registered at Development Blocks under economically and flood effected areas of Lakhimpur district of Assam.

2. OBJECTIVES OF THE STUDY:

❖ To understand the banking operation of the groups;

❖ To analyze the earnings and its management by the groups;

❖ To understand the savings management of the groups; and

❖ To study the mobilization of funds of the groups.

3. METHODOLOGY OF THE STUDY:

In order to achieve the main objectives of the present study, a field survey has been conducted at Lakhimpur district of Assam covering four Development Blocks. For the purpose of the study both the primary and secondary information were used. Primary data was collected by interviewing the president/secretary of each sample SHGs in the district. A total of 116 SHGs were randomly selected from the four sample development blocks (Lakhimpur, Boginodi, Telahi and Ghilamora). For analyzing the data statistical tools like simple average and percentage analysis were used by the researcher.

4. FINDINGS OF THE STUDY:

4.1 Agency wise Bank Account of the SHGs:

The SHGs having their bank account at different agencies are presented at **Table 1**:

Table 1 Agency wise number of SHGs having Bank Account

Sl. No.	Name of Bank	No. of SHGs	Percentage
1	Allahbad Bank	9	7.76
2	State Bank of India	14	12.07
3	Indian Bank	1	0.86
4	United Bank of India	28	24.14
5	UCO Bank	5	4.31
6	Bank of Baroda	5	4.31
7	Assam Gramin Vikash Bank	25	21.55
8	Assam Co-operative Apex Bank Ltd.	29	25.00
	Total	*116*	*100*

Source: Compiled from primary data.

Of the total sample SHGs (116 SHGs), 29 SHGs have accounts with the Assam Co-operative Apex Bank Ltd. representing 25.0 percent. The United Bank of India has savings accounts of 28 SHGs that is 24.14 percent, and 21.55 percent SHGs have saving accounts with Assam Gramin Vikash Bank, whereas only 12.07 percent SHGs have accounts with the State Bank of India. On the other hand only a single sample tribal SHG has its account with the Indian Bank in the district. It clearly indicates that the Commercial Banks have more influence than the RRBs and the Co-operative Banks to the tribal SHGs for providing banking services in the district.

As regards to visit to banks was concerned, study observed that 57.76 percent SHG representatives, visited the bank only once in a month while 19.83 percent representatives usually visit the Banks twice in a month as revealed in *Table 2.*

Table 2 Frequency of Visit to the Bank by the Group Representative of the SHGs

Sl. No.	Frequency of Visit	No. of SHGs	Percentage
1	Once in a month	67	57.76
2	Twice in a month	23	19.83
3	More than twice in a month	7	6.03
4	Occasionally	19	16.38
	Total	*116*	*100.00*

Source: Compiled from primary data.

It was also observed that only 6.03 percent SHG representatives visited the Bank more than twice in a month. In most of the cases the secretaries of the SHGs visit the Bank for their group's banking operation. The other members on the other hand do not get the opportunities for banking operations. It is, however, not helpful in enhancing members' knowledge in banking operations.

4.2 Earning of the Sample SHGs:
Table 2 shows the earnings of the sample SHGs in Lakhimpur district of Assam. It is to be noted that the total earnings of an SHG is equal to earnings from economic activities plus the interest earnings.

Table 2 Earning of the Sample SHGs from all Sources

Sl. No.	Earnings	No. of SHGs	Percentage
1	Below ₹ 10,000	5	4.31
2	₹ 10,001-₹ 20,000	18	15.52
3	₹ 20,001-₹ 30,000	25	21.55
4	₹ 30,001-₹ 40,000	59	50.86
5	₹ 40,001-₹ 50,000	9	7.76
6	Above ₹ 50,000	0	0.00
	Total SHGs	*116*	*100.00*
	Average Earning per SHGs	₹	29224.14

Source: Compiled from primary data.

It was observed from the *Table 2* that a little more than the half of the sample SHGs in the district representing 50.86 percent has their earning between ₹30,001 to ₹ 40,000 per year. It is followed by 25 SHGs

representing 21.55 percent whose earning is between ₹ 20,001 to ₹ 30,000 and 15.52 percent SHGs who has earned between ₹ 10,001 to ₹ 20,000 per year. It is also observed that 9 SHGs, representing 7.76 percent, have earned between ₹ 40,001 to ₹ 50,000 per year, while 5 number of SHGs have earnings less than ₹ 10,000. The average earning per SHG is ₹ 29224.14 per year. The picture of interest earning is, however, not same in all the cases as shown in *Table 3*.

Table 3 Interest Earning by the Sample SHGs

Sl.No.	Interest earning	No. of SHGs	Percent of Total
1	0	Nil	0.00
2	Upto ₹ 1000	29	25.00
3	₹ 1001-₹ 2000	23	19.83
4	₹ 2001-₹ 3000	27	23.28
5	₹ 3001and above	37	31.90
	Total SHGs	*116*	*100.00*
	Average Interest Earned per SHG	₹	2120.69

Source: Compiled from primary data.

It was revealed from the *Table 3* that 31.90 percent SHGs have earned more than ₹ 3000 per year as interest from the loans provided to the members or sometimes to non-members during 2011-12. It is followed by 25.0 percent SHGs whose earning is below ₹ 1000. Again, 23.28 percent SHGs have earnings between ₹ 2001 to ₹ 3000 and only 19.83 percent SHGs have earned between ₹ 1001 to ₹ 2000 per year.

4.3 Saving Management of the Sample SHGs:
Table 4 below shows the monthly contribution per member of the SHGs to the SHGs fund of the district under study.

Table 4 Distribution of the SHGs on the basis of Monthly Contribution per member to the SHGs Fund

Sl. No.	Monthly contribution	At the initial stage	At the time of Survey
1	Upto ₹ 20	67(57.76)	53(45.69)
2	₹ 21-₹ 40	31(26.72)	29(25.00)
3	₹ 41-₹ 60	18(15.52)	27(23.28)
4	₹ 61-₹ 80	0(0.00)	4(3.45)
5	₹ 81-₹ 100	0(0.00)	3(2.59)
6	Above ₹ 100	0(0.00)	0(0.00)
	Total	*116(100)*	*116(100)*

Source: Compiled from primary data.

Note: The figures given in parentheses indicate percentages of no. of SHGs.

It was observed from the *Table 4* that after joining the SHGs there is a tremendous improvement in the savings behaviour of the respondents in the district. Before joining the groups 57.76 percent SHG members saved upto ₹ 20 per month, 42.24 percent SHGs members saved between ₹21 and ₹60 per month. But after joining the groups 48.28 percent SHG members' saving gone up between ₹21 and ₹60 per month, 6.04 percent SHGs started saving even more than ₹ 60 per month. It clearly shows that there is an increase in saving behaviour of the respondents after joining the SHGs in the study district. The entire monthly contribution of the members is collected by the SHGs on a regular basis.

4.4 Mobilization of Fund of the SHGs:
The researcher has also made a humble attempt to understand the utilization of these monthly contributions by the sample SHGs. *Table 5* shows the utilization pattern of monthly contribution by the sample SHGs:

Table 5 Distribution of SHGs according to Utilization of Monthly Contribution

Sl. No.	Contribution is Utilized by	At the initial stage	At the time of Survey
1	Deposited in the bank account	116(100)	53(45.69)

2	Distributed as a loan among the members	0(0.00)	8(06.90)
3	Deposited and then distributed as a loan	0(0.00)	52(44.83)
4	Invested further in the business	0(0.00)	3(02.59)
5	Remains with the group representative	0(0.00)	0(00.00)
6	Kept in locker of the group	0(0.00)	0(00.00)
	Total	*116(100)*	*116(100)*

Source: Compiled from primary data.

Note: The figures given in parentheses indicate percentages of no. of SHGs.

Table 5 reveals that at the time of formation of SHGs all the contributions collected from the members were deposited into the Bank account. But after passing the 2nd grading test the tendency changes favourably. As reported in **Table 5,** 44.83 percent SHGs first deposited certain amount to bank account and then the balance distributed to the members or sometimes to non-members as loan, and 2.59 percent SHGs contributed further for investment in their respective economic activities.

5. CONCLUSIONS:

The concept of 'Microfinance' is becoming very popular in economically backward rural district of Lakhimpur in Assam. Microfinance through SHGs provides enough scope for financing the poor for self-employment. The present chapter is based on field survey method and focused on financial management of the SHGs that have been registered under economically and flood effected areas under the study area. However, increase in saving by the SHGs has resulted a positive development of SHGs and its members. The contribution that has been collected from the members through savings is expected to meet the emergency need of the members. This small savings is also expected to be gone up over time and may be invested further in different economic activities. On the other hand, productive utilization of fund by any SHG helps increasing the income from the investment to that SHG.

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EVOLVING CONCEPT OF LUXURY MARKETING WITH ADVENT OF SOCIAL MEDIA: A CONCEPT-DRIVEN SYSTEMATIC REVIEW APPROACH

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ABSTRACT

Luxury is a very old concept but it is continuously evolving. The traditional concepts of luxury consumption when linked to recent trends have seen to be miraculous in the luxury market. Therefore, this paper brings forth a concept-driven systematic review which draws a thematic view of luxury and various factors determining its consumption which are must to be considered while planning for luxury marketing strategies. In this reference, social media has been extensively adapted by marketers all around the world to utilize its advantages but in case of luxury industry, social media marketing has been a debatable subject. It is very recent for the luxury brands to gradually adapt to social media marketing in a way that maintains its exclusiveness and rarity as well as mark the presence of the brand in the online market. Therefore, the review indicates reports from many conducted empirical researches so as to develop meaningful insight about the process of adapting social media marketing through various touch points of luxury brand marketing such as customer engagement and retention, brand equity and co-creation. The paper also presents an outlook of the worldwide luxury market and its comparison to the Indian scenario in terms of both academic as well as market point of view.

Keywords: luxury, social media, luxury marketing, brand equity, customer engagement

INTRODUCTION

Luxury has always been a sign of aristocracy with few buyers that are considered to belong to the richer section of the society (Chandon et al., 2016). The exclusivity and authenticity of the luxury good has made it a traditional marker to differentiate between upper class from ordinary people due to its unavailability to the masses. Thus, the marketing of luxury good is a very expert oriented task and needs extreme specificity. However, the blurring line between social classes and increased availability of options within the luxury market has challenges the long established concept of luxury and had demanded for redefinition of luxury marketing in the new competitive era. (Eckhardt et al. 2015). Along with these factors, another determinant that had brought about revolutionary changes in the luxury market is the advent of web 2.0 which has proved its effectiveness over traditional marketing by shifting the brand centered marketing approach to consumer centered marketing approach. With the world going more and more digital, the marketing has shifted to digital platforms like social media, social networking sites etc. Luxury market has been a bit slower in adapting this change due to the fear of diluted brand prestige, but some luxury brands in response to dropping sales and growing competition; have moved an extra inch by incorporating social media into their overall marketing strategies especially through more influential communication channel like social media. (Kim & Ko, 2010; Chu et al., 2013; Holmqvist et al. 2020). Even though the advent of mass and social media has been slow in this market but it has proven its potential by making a huge arrange of consumers aware about the luxury offerings of a brand. The use of these e-platforms to communicate with consumers have enabled in bypassing the unidirectional relationship between brands and customers and making a omni-directional one. The ever increasing popularity of the social networking websites in the society has created a dire need for luxury brands to change their marketing mixes in a way that creates emotional connections with existing or potential customers, builds new engagement and interaction opportunities, communicates values and displays its exclusiveness in the online world. However despite all these advantages, there are many issues that have been admitted by the managers of luxury brands while adapting to the online modes. One such common issue is the availability of the luxury brands online leads 24/7 service to the customers to consult, share and create content about the brand effortlessly. This contradicts the fundamental idea of luxury being considered as exclusive and expensive which often causes change in the image of the company in customer's mind. Due to this psychological change in client's behavior, research has been extensively carried out to find various ways through which a strict control on communication and brand image monitoring could be in such a digital environment. As it is not possible for the luxury players to completely keep aside the online marketing option as it is the only way that helps in monitoring and reaching the consumers according to their changing behavior and needs as per the changing societal trends; hence more research has to be oriented towards understanding the implications of social media marketing in terms of luxury brands.

Therefore, the current review is a unique approach that brings forth a comprehensive insight about various factors affecting luxury brand marketing with special emphasis on advent of social media in luxury market. The review presents a unique view that links social media marketing with the theories of luxury consumption. The paper follows the concept-driven systematic review approach for the review so that a thematic view to each factor could be presented in a systematic manner. The review also attempts to bring the worldwide scenario of the luxury market and its relevance in Indian scenario so as to draw the implication of social media in luxury business by pinpointing various opportunities and challenges for the same.

LUXURY MARKET IN WORLD SCENARIO

Wirtz et al. 2020 has defined luxury as extraordinary hedonic experiences that are exclusive in terms of money, social status or its hedonic view and luxuriousness is jointly determined by objective service features and subjective customer perceptions. The authors have considered these factors as the basic characteristics that cover everyday luxury to elite luxury. According to a recent article "Charting the Rise and Fall of the Global Luxury Goods Market"; there has been a 6% increase in the CAGR from 1996-2019 for the global luxury goods industry comprising of cars, jets, drinks, fashion, cosmetics, fragrances, jewelry, and handbags etc.. The popularity of the luxury brands has been parallel to the popularity of social media and social networking sites. On dividing the trend demographically it is seen that the growth of the luxury market is highest amongst Chinese consumers followed by the Europe and the Americas.
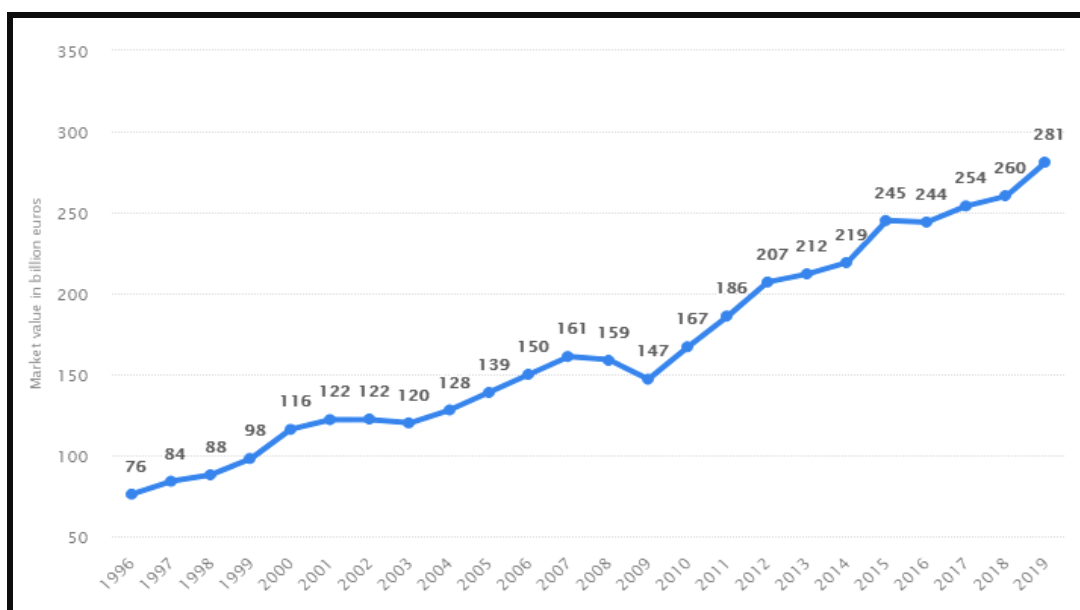
Fig 1: Global Luxury Goods Market; Source: www.statista.com

On a similar report by www.statista.com ; out of all the luxury products, the luxury car sector has been a the greatest contributor of profits worth 550 billion Euros in 2019 with Mercedes Benz, Lexus, and Bentley being the most popular names in the chart. The second in the list are Personal luxury goods that have seen a huge raise in popularity during the last few decades with The United States being the most substantial consumer of personal luxury goods in 2019.

Another trend observed in the luxury market is the popularity of monobrand stores, such as the Tiffany & Co.'s flagship store which is the channel for selling most of the products within the the luxury market. These Monobrand stores could grab more than 87 billion U.S. dollars revenue during the year. It was also noted that LVMH Luxury Company comprising brands like Moët Hennessy and Louis Vuitton was the company with highest sales in 2019 with Louis Vuitton valuing more than 47 billion U.S. dollars in 2019 and being the most valuable luxury brand in the world. apart from this, Gucci which is brand owned by the Kering Group was another key player as it earned a revenue of approximately 15.9 billion U.S. dollars in 2019.

Other than that the report indicates more than 20% of the market value share in 2019 was occupied by Perfume and cosmetics, apparel, and leather items belonging to the personal luxury goods with luxury apparel products reaching revenue of 64 billion U.S. dollars. Other entities like accessories that hold a central position in personal luxury market was also a force driving player in this field with luxury watch sector specifically exclusively crafted mechanical watches, holding a worth over 7.5 billion U.S. dollars of revenue in 2019. In jewelries, necklaces and rings continued their popularity in the personal luxury market.

RESEARCH METHOD

The method followed in the current review is the approach proposed by Webster and Watson (2002) called concept-driven systematic review approach which examines the literature from the concept perspective presented by various authors. It is different from author-driven approach which exclusively looks into the analysis of individual authors for multiple concepts in articles (Webster and Watson, 2002). As the literature in luxury is vast and extensive, therefore the former method is suitable in the current review. In current times, luxury brand marketing with extensive focus on use of social media for luxury brand marketing is a major emerging area. It is also a fact that this method is helpful in capturing the related studies in an easy and concise manner.

This process of review initiated with looking at the main database research engines like Emeraldinsight, Sciencedirect, Google scholar and EBSCO, in order to collect the related articles. The process of selection has carefully identified those articles that focuses on examining issues concerning with various factors influencing luxury brand marketing. Therefore number of relevant keywords likes "Luxury", "Luxury consumption; "social media" etc. were used. These collected research papers were then screened for assuming the main theme of the paper along with its implications and findings. Then, all the articles collected have also been screened and inspected to assure the main theme of the papers. In this manner after reviewing more than 50 research articles in this field it was identified that majorly the researchers in the area of luxury marketing is concentrated under four basic themes which includes:

1. Articles that have emphasized in defining luxury and related terms with respect to various perspectives.

2. Articles that validated various theories and theoretical frameworks of luxury consumption

3. Articles that have paid attention to factors affecting luxury brand marketing

4. Articles that have examined the impact of advent of social media in the luxury market

DEFINITION OF LUXURY RELATED TERMS

The American Marketing Association's dictionary of terms has no particular definition of luxury, luxury brand or luxury marketing due to multifaceted dimensions of these terms. But researchers in this field are making continuous efforts to define the constituent of a luxury brand but have not reach to a clear consensus. This has led to multiple definitions of terms related to "luxury". Some of the widely considered definitions are as follows:

Table 1: Definition of luxury related terms

Year	Author	Definition of related terms
1998	Nueno& Quelch,	A brand that has a low functional utility to price is low ratio and a high intangible and situational utility to price ratio are considered as luxury brand.
2001	Dubois et al.	Those products or brands meeting these six facet characteristics are considered as luxury: (i)excellent quality (ii) scarcity and uniqueness (iii) high price (iv) aesthetics and polysensuality (v) ancestral heritage and personal history (vi) superfluousness
2003	Vickers & Renand	The goods that differ from other goods by the extent to which they exhibit a distinctive mix of three important dimensions of instrumental performance viz. Functionalism, Experientialism, and Symbolic interactionism are termed as luxury goods.
2009	Hagtvedt & Patrick	Those brandsoffering a premium product, providing pleasure as a central benefitand connecting with consumers emotionally are defined as luxury brands.
2009	Keller et al.	Luxury brands are defined as those having the following ten disguisable features: (1) maintaining a premium image, (2) creation of intangible brand associations, (3) aligned with quality, (4) logos, symbols, packaging are drivers of brand equity, (5) secondary associations from linked personalities, events, countries, and other entities, (6) controlled distribution,(7) premium pricing strategy, (8) carefully managed brand architecture, (9) broadly defined competition, and (10) legal protection of trademarks
2009	Berthon et al.	Luxury products are those which are made with material consisting

		of exquisite material and craftsmanship for high functionality, and impressive performance, comprising of consumers personal hedonic value of a brand and possessing a collective element in the form of value a brand signals to others and the value of that signal to the signaler.
2010	Tynan, Mckenchie, & Chuon,	Luxury brands are those having high quality, expensive and non-essential products and services that usually appears to be rare, exclusive, prestigious, and authentic and offers a very high level of symbolic and emotional/hedonic values through customer experiences.
2012	Heine	Those brands that have consumer perceptions of a high level of price, quality, aesthetics, rarity, extraordinariness, and a high degree of non-functional associations are termed as Luxury brands.
2015,	Wagner and Urkmez	Luxury is defined as a relativity concept that depends upon who one gets the subjective perception from.

THEORIES AND THEORETICAL FRAMEWORKS OF LUXURY CONSUMPTION

"Man is a luxury loving animal. Take away play, fancies, and luxuries and you will turn man into a dull, sluggish creature. A society becomes stagnant when its people are too rational or too serious to be tempted by baubles." - Eric Hofer

The phenomenon of luxury consumption can be understood by a general law in economics that has been developed by the German statistician Ernst Engel (1821 – 1896); Engel's Law. The law explains how and why at some particular point a consumer can/will turn towards luxury possession. The law was derived after examination of the family expenses in relation to their income. It was found the in a poor family the maximum part of the income was destined for buying goods to meet their primary needs(like food), but as soon as the income raises the constant proportional spending on primary goods is disrupted and the families take into consideration superior or luxury goods. There the law states that there is a fall in proportion of income spent on primary goods with raise in earnings rise (fig 2).

Fig. 2: Engel's Law of luxury consumption

(source: http://mavericksk.blogspot.com/2012/04/engels-law.html)

The relation in the graph depicts that on having a higher disposable income, consumers either stabilize their demand of primary good or adjust it accordingly so that can shift to some luxury item in order to showcase their enhanced income in the society. This is another power of the luxury industry. The constant appearance of luxury brands these days on social media platforms by existing consumers increase the popularity of these brands and makes it a target for the ones who don't posses them. Thus, adapting social media marketing for luxury brands is a tricky but successful plan in the current times.

However many authors have given various theories of luxury consumption which if properly understood and interpreted would prove the worth of careful social media marketing for luxury brands. Out of all the theories that are employed to explain the motivation for luxury consumption and thus branding, five most are prominently cited theories of the in the literature are conspicuous consumption, extended-self/consumer culture theory, theory of uniqueness, social comparison theory, Self- concept theory. The oldest of thses theories are that of Veblen's, theory of conspicuous consumption (1899) which states that others infer status, wealth and power through conspicuous consumption of luxury brands. Later in 1954, Mauss revealed that conspicuous consumption of luxury items as gifts were often preferred irrationally so as to gain prestige. In this notion, Bearden & Etzel (1982) also reported in their research that conspicuous goods were consumed more likely in

public to showcase wealth. This theory was later validated by many authors as conspicuousness was considered as a key aspect of luxury consumption and could be used as a marketing tactic for these brands (Bliege Bird & Smith, 2005; Vigneron & Johnson, 2004; Dubois, Laurent, & Czellar, 2001).

Post the conspicuous consumption theory came theory of uniqueness given by Snyder and Fromkin's (1977) which states in an environment when people find a lot of similarity around, they tend to differentiate themselves from others so as to remain influential in the crowd. This theory was accepted by marketers all across the world and thus most of the marketing of luxury brands revolves around the theory (Tian et al. 2001; Bian & Forsythe, 2012). Furthermore, another theory that got immense popularity was "extended-self/consumer culture theory" given by Belk in 1998 which states that in order to form or alter their identities so as to fit their projections of who they are or hope to be, consumers tend to use various possessions. These possessions could be very must relevant with luxury brands as they help users to showcase one's self in a particular way. Later many authors accepted this theory and it has also been one of its five factors which validates the importance of this theory in Brand Luxury Index (BLI) scale (Vigneron and Johnson's, 2004; Han et al. 2010; Hung et al. 2011).

With respect to inferences and perceptions of others, another prevalent theory in luxury consumption motivation is social comparison theory which is not that old but is being accepted by marketers of luxury brands because social comparisons is one of the driving force towards consumption of luxury items and thus marketing in this direction is found to be of great benefits (Mandel et al. 2006; Wiedemann et al. 2009). Apart from this the concept of Self-concept theory is also quite acceptable as it states that consumers with independent self-concept showcases a personal orientation in consumption of luxuries as these help in emphasizing hedonic, utilitarian, and self communication goals (Shukla &Purani, 2012; Kastanakis and Balabanis 2012). In last few years marketers of luxury brands have seem to foster these theories using social media as the tool (Kamal et al. 2013) which is quite relevant because social media could induce the behavioral principal of all these theories into new and existing luxury customers and motivate customers to purchase these items.

FACTORS AFFECTING LUXURY BRAND MARKETING
Being a specific and very sensitive field, the researchers in this discipline has explored many factors that influence the marketing of luxury brands. Thus, a consistent theme in the literature is that helps markets to understand various motives for buying luxury brands. Some of the streams of research in luxury brand marketing that been considered as that of highest attention for the marketers to designed and develop luxury brand in market are given below:

LUXURY VALUE
This factor is derived from the social comparison theory of luxury consumption which hypothesized that making comparisons with successful others lead to a constant imagination of achieving a similar level of success. This often alters their future expectations leading to orientation towards luxury brands (Mandel et al. 2006). As there is a positive relationship between conformity, influence of materialism and the need for uniqueness and purchase intentions, luxury value is one of the most important factor that influences the luxury market by causing a very high impact personal values and social recognition (Park et al. 2008). Some authors have also confirmed that people with higher social and financial status are more inclined towards luxury purchase as the gaining special attention to showcase their status through luxury value of these products becomes the key motive for consumption of luxury goods (Han et al. 2010; Hung et al. 2011; Kastanakis and Balabanis, 2012). It has often been noticed that in a collectivistic culture luxury is seen as a means of achieving social recognition consumers whereas in individualistic markets often finds difficulty in reflecting their self-image through luxury consumption (Shukla and Purani, 2012; Gil et al. 2012). Furthermore, a recent trend that has been observed in most of the countries by various researchers is that the young millennial population is more oriented towards the value of products due to higher need for uniqueness and susceptibility to influence due to materialistic and status-oriented aspects of luxury brands (Gil et al. 2012; Gentina et al. 2016 while some authors have found that in millennials, the role of self-content apart from conspicuous or hedonic benefits is the major reason that brings in the concept of luxury value of luxury products. Therefore, luxury brands provide opportunities to enlarge an individual's perspective that is why luxury value is a prime factor of concern in luxury marketing.

LUXURY CONSUMER BEHAVIOR
In order to market any product it is necessary to understand behavior of consumers towards that range of products, the same goes with luxury. Many researchers thus have made attempts to penetrate into luxury consumer behavior and reported that the out of many factors, authenticity which comprise of parameters like heritage and pedigree, relationship to a particular place, quality commitments, downplaying of commercial considerations & asserts, stylistic consistency etc play a major role in modulating the consumption behavior of

luxury consumers (Beverland, 2006, Godey et al. 2012). Other than it has also been reported that promise of pleasure helps people to believe in luxury as an inherently desirable product over a larger number of product categories, ascertaining that luxury brands have greater extendibility than value brands (Hagtvedt and Patrick, 2009) Apart from this, social-functions play a key role in varying the attitudes toward luxury goods (Bian and Forsythe, 2012; Li et al. 2012; Zhan and He, 2012). Authentic pride that is generated from hard work and success is also seen to be a strong motivator of luxury purchases (McFerran et al. 2014). In terms evolutionary psychology perspective; out of the two genders, it is seen that women are more inclined towards purchasing luxury products which influences other peer women as well as highlights their relationship status with their partner (Stokburger-Sauer and Teichmann, 2013; Wang and Griskevicius, 2014; Shahid & Farooqi, 2019). It is seen that the relationship between consumer purchase intention towards luxury goods and their actual purchase is mediated by brand attachment and thus Owner-based luxury value (OBLV) must be considered as a key that luxury brand managers should acknowledge as a potent driver of key to attitudinal outcomes and customers' value perceptions via targeted marketing and effective communication (Bachmann et al. 2018).

MISCELLANEOUS

Apart from the above stated factors many other factors in together affects the marketing of luxury brands. Functionalism, experientialism and symbolic have been stated to be few of those that makes marketing management activities effective (Vickers & Renand, 2003). Another area of extensive research in the field of luxury branding involves the segmentation of consumers and the luxury market could be divided into four segments viz. information seekers, utilitarian consumers, sensation seekers and conspicuous consumers (Ko et al. 2007; Ko et al. 2012). Other than this impact of materialism, experiential needs, and fashion involvement is often seen to be related to customer equity in terms of the luxury market (Kim et al. 2012). Attempts to raise brand equity by acquiring a prestigious store location, referring to the luxury strategy is also a influential factor in luxury marketing (Kumagai & Nagasawa, 2019). Moreover, different advertising allocation strategies that derive the corresponding local optimal pricing and advertising allocation policies could be used to maximize profits globally (Zeng et al. 2019). In recent times, thus social media has influenced the level of materialism and purchase intention in luxury business as well (Kamal et al. 2013; Kapferer and Laurent, 2016)

IMPACT OF ADVENT OF SOCIAL MEDIA IN THE LUXURY MARKET

Advent of social media has been a debatable subject in luxury business while many researchers have put forth their interest to research in this aspect which has been discussed in this section of the review.

CUSTOMER ENGAGEMENT AND RETENTION

Luxury brands have been highly influenced by the digital revolution. One of major reasons is the ability of social media to connect to the customers in a friendlier manner. Many authors by far has investigated the ability of social media marketing as an influential factor in customer engagement and retention for luxury brands which are been the two most difficult thing for managers of luxury brands to establish otherwise using conventional modes (Jin, 2012; Ng, 2014). The use of effective communication through social media platform would help in pointing out various aspects of luxury brands like high quality, rich pedigree, rarity, personality and placement especially engaging public figures through social media platforms to drive consumer attention and engagement even after high pricing often considered as a important factor to positively impacts customer engagement and retention (Dhaoui, 2014; Stokinger & Ozuem, 2014; Castellano & Khelladi, 2016). Furthermore, social media also imparts e-WOM which is one of the greatest advantages utilized by luxury brand managers while adopting social media marketing as a primary option for advertising their brand as it contributes positively towards customer loyalty and purchase intentions (Kim & Lee 2019).

BRAND EQUITY

Many researchers have concentrated on the influence of social media marketing on brand equity by analyzing the attributes of social media marketing activities as use of social media marketing to be both detrimental as well as influential in maintaining the brand equity for luxury brands and thus clear business approaches, pragmatic rules and practical concepts in social media platforms is must for luxury brands in building brand equity online (Kapferer et al. 2009). Furthermore, social media marketing in building brand equity taking into consideration customer intimacy and trust which ultimately influences the purchase intention has been studied by various authors who reported that the entertainment is the distinctive elements of social media marketing for luxury brand that helped in enhancing the brand equity and even attracting customers (Kim & Ko 2012; Phan and Park, 2014; Parrott et al. 2015; Godey et al. 2016). Therefore, social media could be considered as the link between brand equity and consumer behavior in a positive manner by providing a holistic arena of five key factors viz. entertainment, interaction, trendiness, customization, and word of mouth (Godey et al. 2016; Ko et al. 2016; Albrecht, 2016). Thus advent of social media in luxury business in a systematic and tactful manner

helps in developing three major parameters of a luxury business viz. brand equity, prestige and uniqueness values.

CO-CREATION

As discussed earlier, social media plays a very important role in building customer engagement. In the same notion, it has played a prominent role in collaborating with the customers on online platforms to generate a collaborative approach by presenting consumer-generated content. This approach has been investigated by few authors with regards to luxury brands and the findings indicates that the interaction of the luxury brand a various points with their customers helps in maintain a constant differentiation between their luxury brand to other non-luxury ones as it is a fact that co-creation has the ability to develop a superior value proposition (Tyan et al. 2010). Co-creation induces motives like monetary reward, recognition; challenge, self interest, and curiosity that lead the consumers to get connected for any co-creation activity of any brand on virtual platform which in turn helps the brand to feature and highlight their products (Fuller et al. 2010). As luxury consumption assumes semiotic meta-cognition from the clients, thus co-creation using digital tools have marked a great way to propagate the exclusiveness and rarity of the luxury products amongst their audiences (Phan et al. 2011; Maman et al. 2014). In this regards the ccase of Tiffany and Co.'s social media-based site that has used storygiving through 'What Makes Love True' campaign as a co-creation tool is the greatest example of all times that depicts the power of co-creation to enhnace brand images of luxury brands in a more revealing manner as compared to brands (Hughes et al. 2016). Therefore, it could be said that co-creation campaigns not just are able to establish customer relationship but also help in managing a brand image through a customer-centric insight which is a major role player in keeping the identity of the luxury intact.

DISCUSSION & CONCLUSION

The last decade has shown a major growth in the field of luxury marketing research. But when compared to other business research fields, this discipline is still at its infancy. Luxury has been studied in a multidisciplinary perspective since a very long time in disciplines like economic psychology (Mason 1981), sociology (Gil et al. 2012), history (Dion and Mazzalovo 2016) as well as marketing discipline many authors have also made attempts to define luxury (Nueno & Quelch, 1998; Keller et al. 2009; Heine et al. 2012, Wirtz et al. 2020); its consumption behaviors (Mauss 1954; Hung et al. 2011; Kamal et al. 2013); various factors determining luxury product possession (Dubois and Duquesne 1993; Fironda, 2009); market segmentation (Kapferer and Laurent 2016); geographical relevance of luxury (Godey et al. 2012); the insights of luxury markets (Dubois and Duquesne 1993); luxury advertising (Godey et al. 2016) etc. But these studies could not meet the practical aspect of marketing luxury due to lack of unified theoretical framework. Therefore in recent times, authors like Cristini et al. (2017) has made attempts to consolidate these researches to bring up the theoretical implications of luxury business and marketing research.

On the other hand, the recent years have seen a revolutionary change in the marketing field due to the emergence of a digital marketing arena which has been noticed to show multi-faceted interactions with multiple actors in a particular business (Larivière et al. 2017; Alexander et al. 2018). Due to its Omni-potent nature digital platforms are being extensively used by different businesses multidimensional manner but the luxury brand seems to be slower adapting to this digitization. As luxury has a core with values like heritage, rarity, exclusivity, these brands remain to be cautious for their digital presence (Kapferer & Bastien, 2009). Some brands are seen to have been active players on social media for building their brand, enhancing brand equity and awareness but often resist digital interaction with customers while some brand are involved in customer interaction through digital modes but are not completely utilizing the benefits of social media marketing to preserve their brand image (Stephen, 2020). For example Chanel is still reluctant in selling luxury fashion through online modes and has stated that they want to build a preserved emotion of customer's with the brand through in-store interaction while Apple is freely advertising and selling its items online. So it has been observed from the literature that in spite of extensive research in the field of luxury, (as in figure 3c) adaptation social media marketing is not quite successful such practices have chances to get backfired to the main concept of luxury.

Thus the review of literature deals with basic concept of luxury, its theories and various factors that plays an important role in luxury marketing. The literature depicts the fact that luxury business is different from that of traditional ones. It also highlights the fact that luxury has been a subject that has been studied since a very long time with its increasing interest in last decade (as in fig 3) but there is no definite definition of luxury due to the fact the meaning of luxury is different for different people according to their class, income, socio-cultural influence, historical background etc. The theories of luxury depicts that there are five theories that explains the consumption pattern of luxury which has been a subject of research from as early as 1899. Out of the five

theories viz. conspicuous consumption, self concept theory, theory of uniqueness, social comparison theory, extended self/ consumer culture theory; it has been noticed that conspicuous consumption theory is the oldest one whereas extended self or consumer culture theory is very relevant to the current status of the societies and thus could be considered by the luxury brands. Furthermore, on investigation of various factors affecting luxury brand marketing it was noted that luxury value, luxury consumer behavior, consumer segmentation, social media and digitization plays a significant role and thus has been extensively researched in last few years.
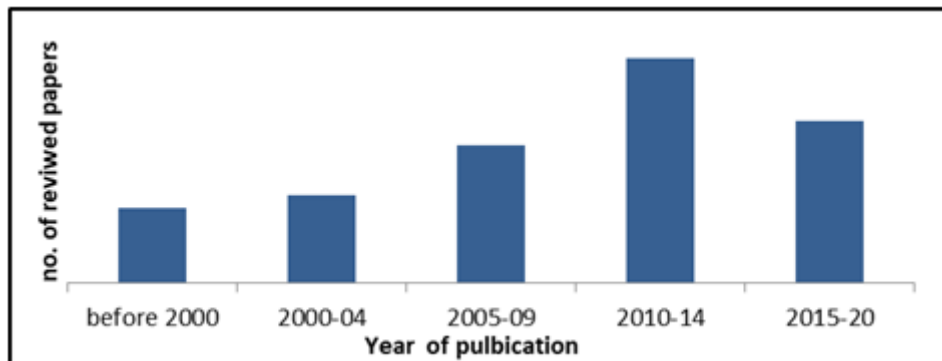
Figure 3: Year wise distribution of the papers reviewed under luxury brand & its marketing

The last section of literature deals with the interaction of social media marketing with luxury brands. It has been observed that adaptation of social media marketing in luxury business that is one of the least undertaken research works. The literature covers many reports that indicate the positive influence of social media in luxury business in terms of brand equity, customer engagement and retention as well as have also highlights the usefulness of social media as co-creation platforms for the luxury brands to influence potential customers through existing ones.

Apart from this the graphical representation of the authorship (fig 4) in the literature review also concludes that as the research in luxury market is growing in India but is not at par with the world's average and so is its penetration in the Indian markets. As estimated by Statista India's luxury goods segment is of $8 billion in 2019 as compared to $62 billion in annual sales of luxury in US market and $41 billion in China. Therefore, it is compulsory for the luxury brands to manage their brand presence both online and offline keeping values, sophisticated nature and exclusiveness of their products preserved. They should judiciously spend their marketing budget of luxury brands on both the channels. As selling of high-priced luxury product is quite a challenge, there is always a dire need for trained manpower which in turn adds up to extra cost.

Figure 4: Authorship distribution pattern corresponding to literature reviewed in the field of luxury marketing

Online social media marketing if did strategically can provide an affordable low priced solution for the selling high valued luxury products. Social media marketing must be used as a tool to build up a long term connection with existing customer as well as for acquiring new potential customers through personalized social media marketing campaigns. The review also highlights facts elements like e-WOM that is very effective in terms of online marketing. The review thus makes an attempt to highlight different touch points that are being directly affected by the presence of luxury brands on social media platforms which could be targeted in a strategic manner to promote their sales through social media marketing.

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SELECTION OF SHORTEST PATH IN A CONNECTED NETWORK GRAPH THROUGH THE APPLICATION OF PRIM'S ALGORITHM

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ABSTRACT
Communication link and data transmission path are required through a routing protocol between two nodes in a network so that data can be shared correctly between the source and destination node and at the same time maintain a synergy of the two nodes. However, graph theory involves the implementation of complex algorithms for selecting the shortest path, so that the choice of an optimal shortest path increases the time complexity of the algorithm and also increases the travel time. The time complexity of the minimized spanning tree is taken into the account for the processing of best route selection in any connected network or weighted graph. In this paper, prim's algorithm is used for finding the shortest path in a connected network graph G having 8 vertices. In this algorithm, the edges are ordered by increasing orders or lengths and are successively added without forming any cycles until 7 edges are added. A mathematical method has been used in this work that can easily select the shortest and optimal path for a minimal spanning tree through reducing complexity in a connected weighted graph. In the graph G, the minimal spanning tree is traversed for finding the shortest path through $O(E\log V)$ of time complexity. Finally, the shortest and optimal path is achieved by total distance of 19Km approximately from source point to destination point.

Keywords: Connected weighted graph; graph theory; prim's algorithm; minimal spanning tree; shortest path;

1. INTRODUCTION
The shortest path selection is a complex task in a closed dense network graph. This complex task of finding a minimal spanning tree of any closed and connected network graph is a great way for several graph algorithms. The minimal spanning tree problem for finding the shortest and optimal path between source and destination nodes is designed for complex network circuit or system such as pipelining network flow, transportation networks, communication links among several villages and cities, electrical wiring connections, fast delivery services, emergency services, shipping network, communication networks, data transmission between several networks, and many. The problem has applications in the design of distributed computer and communication networks, wiring connections, transportation networks among cities, and designing pipe capacities in flow networks [1]. The minimum spanning tree problem reduces such network problem by shortest path selection in closed graphs or networks which minimizes the cost and saves the time to reach at destination point. Determining the best trajectory can minimize shipping costs and time is more efficient [2]. A graph G consists of two parts; set of vertices V and edges E. The set of vertices and edges are denoted by $V = V(G)$ and $E = E(G)$. The edges or branches (e_m) is defined with an unordered pair of vertex (v_i, v_j), where i and j varies from 1 to (m-1). A graph of a group or set of objects, called the corner, some of the corners are connected by links, also known as the edges are represented [3]. The study of these graphs is often known as graph theory [3]. Thus, we can write the function of graph G through an example as $G(V, E)$, where $V = \{v_1, v_2, ..., v_m\}$ and $E = \{e_1, e_2, ..., e_{(m-1)}\}$.

2. LITERATURE SURVEY
The shortest path selection is a complex task of the graph theory. There are many algorithms are used by different authors or researchers for shortest path. The application of several algorithms on different problems is done in the past years. Previous researchers have made a lot of effort to find the path in the graph theory [4]. In this literature survey section, we highlighted the relative work on several algorithms by many researchers is shown in **Table-1**.

Table-1: The relative work on several algorithms by many researchers in the literature

Ref. No.	Author(s)	Algorithm used
[5]	Arogundade O.T. et al.	Prim
[2]	Erniyati et al.	Kruskal
[6]	Hamela K.	Dijkstra
[7]	Arogundade O. T. et al.	Prim

[8]	Rhyd Lewis	Dijkstra
[9]	Avnish Rana et al.	Kruskal
[10]	Dania Farooq	Prim & Dijkstra
[11]	Igor Baltić	Dijkstra
[12]	D.Kalpanadevi	Prim

3. METHODOLOGY

A minimum spanning tree is a connected or indirect subgraph for which the total weight of the edges is as small as possible. The physical application of the minimal spanning tree can be illustrated as, suppose in a rural area, we want to set up the data transmission system or communication links between the villages with minimum cost or weight. This would simply give rise to a problem of determining the minimal spanning tree. The prim's algorithm would clear the procedure that can be adopted to produce a minimal spanning tree for shortest path selection in a connected weighted graph or network. A graph G is connected if there is a path between any two of its vertices. In other word, a graph G is connected if we can reach any vertex from any other vertex along the edges. A connected weighted graph is shown in **Fig.1**

Let G is a connected graph. If G does not contain any circuit, then G is its own spanning tree. Now if G has a circuit then we can remove an edge from the circuit and this will till leave a connected subgraph. If G has more circuits then we repeat the operation for edge elimination till on edge from the last circuit is removed, thus leaving a connected, circuit free subgraph that contains all the vertices of G i.e., leaving a spanning tree. Thus, it is likely to clear that every connected circuit or graph has at least one spanning tree. The procedure for finding the shortest and optimal route or path from source point to destination point in graph G is given below:

Step-1: Intially, let P = {any origin or source point} and $T = (V - P)$ for each vertex t in edge T, let $l(t) = W(P, t)$.

Step-2: Choose the vertex in T of smallest index w.r.t. P. Let x denote this vertex.

Step-3: If x is vertex, then we wish to reach from P, stop. If not, let $P' = (P \: \tilde{O} \: \{x\})$ and $T' = (T - \{x\})$. For each vertex t in T', find its index w.r.t. P'.

Step-4: Repeat steps-2 and step-3 using P' as p and T' as T.

Let G= {V,E,W} be a weighted graph, when W is a function from edges E to the set of positive real numbers. Suppose V as a set of location and E as a set of pathway connecting these locations. The weighted of an edge {i,j}, W(i,j) is usually referred to as the length of the edge(i,j), which has an interpretation as the distance between locations i and j. The length of route in graph G is defined to be the sum of the lengths of the edges in the path. There are several well-known algorithms or methods such as Kruskal's algorithm, Prim's algorithm and Dijkstra's algorithm are discovered with the well functionality and procedures for finding the minimal spanning tree to selection the shortest path in a connected weighted graph or network. But, in this study, we present the working procedure of already one discovered method by Robert C Prim. In our study, we use graph traversal procedure for finding the minimum spanning tree in a connected weighted graph using prim's algorithm. This input is a graph G with m vertices. The stepwise procedure for finding the minimum spanning tree is given below:

Step-1: Order the all edges of graph G by ascending or increasing weights or lengths.

Step-2: Proceeding sequentially, adds one edge at a time to the m vertices of G such that no cycle is formed until (m-1) edges are added.

Step-3: Output the (m-1) edges that were added as they form a minimal spanning tree T of G.

4. RESULT AND DISCUSSIONS

For implementing the traversal of minimal spanning tree, we have considered the prim's method or algorithm. In this study, we have taken a graph G with 8 vertices **(see Fig.1)**. Hence, the spanning tree of G will have (8-1), i.e., 7 edges.
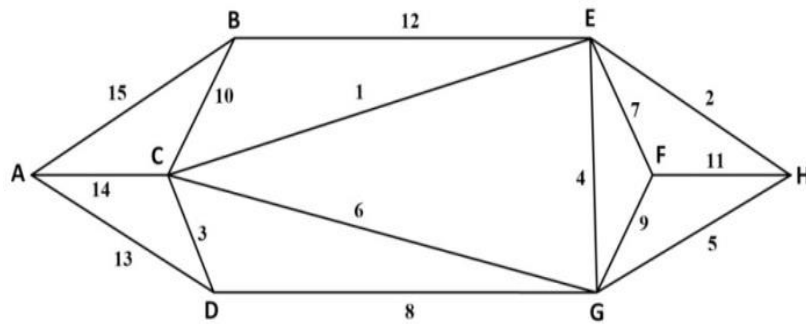
Fig.1: Connected weighted graph

If we have to determine a shortest route from node A to node H in graph G. In our procedure, a shortest route from A to some other vertex (node) is determined, and then a shortest path from A to still another vertex is determined, and so on. Eventually, our procedure stops when a shortest path from A to H is determined. Let us use prim's algorithm to obtain the minimal spanning tree. By the prim's algorithm, the edges of graph G are placed or ordered in an ascending or increasing order by their weights or lengths. Then, each edge is successively added one by one without forming any cycles until 7 edges are added. In the first step, let us choose an arbitrary a vertex 'A'. Then, the origin or source point is A. The subsequent steps are tabulated in **Table-2**.

Table-2: Subsequent steps of prim's method for finding the shortest path

Steps	Vertex that may be added	Edges	Weights (in Km)	Add ?
II	B	AB	15	No
	C	AC	14	No
	D	**AD**	**13**	*Yes*
III	B	AB	15	No
	C	AC, **DC**	14, **3**	*Yes*
	G	DG	8	No
IV	B	AB, CB	15, 10	No
	G	DG, CG	8, 6	No
	E	**CE**	**1**	*Yes*
V	B	AB, CB, EB	15, 10, 12	No
	G	DG, CG, EG	8, 6, 4	No
	F	EF	7	No
	H	**EH**	**2**	*Yes*
VI	B	AB, CB, EB	15, 10, 12	No
	F	EF, HF	7, 11	No
	G	DG, CG, **EG**, HG	8, 6, **4**, 5	*Yes*
VII	B	AB, CB, EB	15, 10, 12	No
	F	**EF**, HF, GF	**7**, 11, 9	*Yes*
VIII	**B**	AB, **CB**, EB	15, **10**, 12	*Yes*

Thus, the sequence of vertices that have been chosen from the graph G is:

A → D → C → E → H → G → F → B

and, the corresponding edges are:

AD → DC → CE → EH → EG → EF → CB

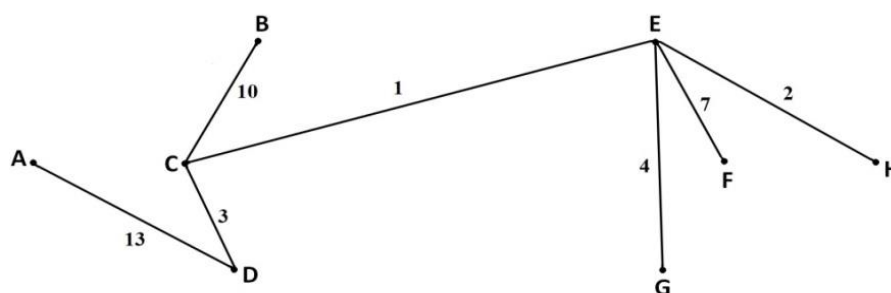The minimal spanning tree of graph G is shown in **Fig.2**, whose total weight is 40.

Fig.2: The shortest path of the minimal spanning tree

The corresponding edges between point A and H are (AD → DC → CE → EH) and the weight is (13+3+1+2). Thus, the shortest path from node A to node H is calculated by total distance of 19Km approximately. The prim's method is a simplest and reliable algorithm in greedy choice for the optimal and best path selection with shortest distance and minimum time duration. Also, it returns a graph as an argument and takes as a minimal spanning tree. The prim's method select edges of minimum weight on graph G. Thus, this shortest path $(AD \rightarrow DC \rightarrow CE \rightarrow EH)$ is a best way to reach at the destination point H from the source point A. The prim's algorithm gives not only an optimal path, rather also run effectively for the traversal of minimum spanning tree to find the shortest path in a traffic congested and connected graph or network within minimum time period and less time complexity.

5. CONCLUSION

In this paper we know that how to solve the graph by using prim's algorithm for shortest path selection. The prim's algorithm gives an optimal output for selection of optimal and shortest path in a connected network graph or circuit. The traversal of minimum spanning tree for finding the shortest route or path through prim's algorithm is quite simple and easy. The edges of graph are placed in an ascending or increasing order by their weights or length. Then, each edge is successively added one by one without forming any cycles until 7 edges are added. In this algorithm, we clearly have seen that the best and optimal way to find the shortest path. This algorithm can solve negative lengths or weights because it has no grip. This algorithm or method can easily find the best and shortest pathway by reducing time complexity in any connected weighted graph or network. To finding the minimum spanning tree in a connected weighted network or graph, prim's method accomplish $O(E \log V)$ time complexity for the shortest path selection from origin or source node to destination node. In this study, the total distance of 19km approximately achieved between source and destination point for finding the best route or path through minimal spanning tree traversal.

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A REVIEW ON VARIOUS METHODS OF DIGITAL SPEECH WATERMARKING

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ABSTRACT

Speech watermarking is a functioning research area from the most recent decades. The digital speech watermarking is a hearty method to cover up and consequently secure information such as audio and video from any purposeful or accidental control over the transmission. As far as some signal attributes, including bandwidth, voice/unvoiced, and creation model, a digital speech signal is unique in relation to audio, music, and other offbeat signals. Albeit different audit articles on an image, audio, and video watermarking are accessible, there are as yet hardly any survey papers on speech watermarking. This paper deliberated about indispensable features of speech watermarking, diverse speech watermarking techniques in speech watermarking. The paper likewise discusses about open research concern related to digital speech watermarking.

Keywords: Speech watermarking, Human Auditory System (HAS), Lapped orthogonal transforms (LOT), QIM, RDM.

I. INTRODUCTION

The traditional approach of a watermark is a pattern identification in the paper when it shows up as assorted shades of brightness or obscurity that perceive by disseminated light. Watermarks have been utilized on the postal emblem, cash, and alternative government archives to demoralize duplicating. It comprises predominantly two approaches to generate watermarks in the paper sheets, first dandy roll mechanism, and second perplexed cylinder mold mechanism. The digital watermark was conceived by Andrew Tirkel and Charles Osborne in the year 1992. The principal worthwhile implanting and extraction of the steno- graphic spread range watermark was showed in 1993. An advanced watermark is a connection of marker secretely inserted into a clamor permissive signal, for example, speech [1] [2], video [3], image, and audio information. It is customarily used to determine the ownership of such a signal.

II. REVIEW ANALYSIS OF SPEECH WATERMARKING

Hu et al. [4] introduced a peculiar approach assign as adaptive mean modulation (AMM) to execute binary embedding of collective information. Mean modulation is recursively derived from preceding DWT coefficients by using step quantization. The proposed alignment acquiesces for the direct assignment of embedding fortitude. The analysis of consequence spectacle is that the recommended DWT-AMM is capable of perpetuating speech quality at a level practically identical to that of two other DWT-based techniques, which additionally work at a payload limit of 200 bits for each second.

Merrad et al. [6] proposed an amalgam domain speech watermarking technique using a DCT, DWT, and sub-sampling. The subsampling is administered to a speech signal to get a segment speech signal. These hybrid coefficients of speech segments are altered by watermark image and the key to get its modified hybrid coefficients. To get a watermarked segmented speech signal, the reverse process of DCT and DWT are applied to this altered hybrid coefficients.

Liu et al. [7] proposed a speech content corroboration algorithm based on BesselFourier moments. The interpretation and fast estimation of Bessel-Fourier moments of a discrete sig- nal is inured, and the incursion on the synchronization codes embedding method is described.

Sarreshtedari et al. [8] introduced an advanced watermarking scheme to generate digital self-embedding speech signals enjoying the self-recovery feature. For this aspiration, the constrict version of the speech signal is generated by a speech codec and preserved in contrast to the tampering by the appropriate channel coding is embedded into the authentic speech signal. The empirical outcome appears that the self-embedding speech signal is rectifiable with appropriate speech quality for high tampering rates, without significant loss in the quality of the authentic speech signal.

III. SPEECH WATERMARKING TECHNIQUES

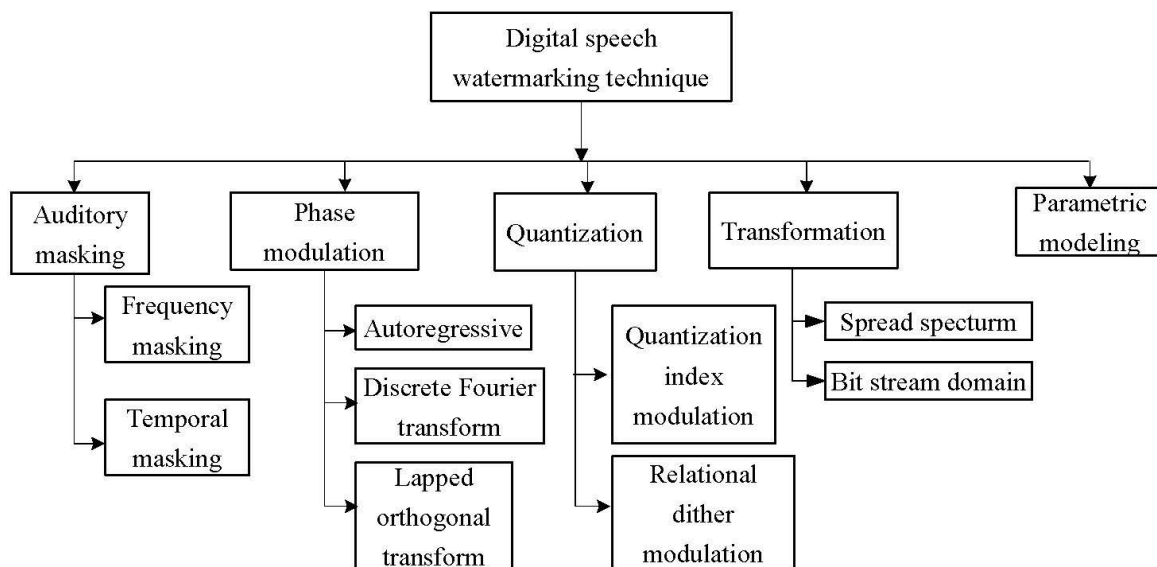Like audio watermarking, the speech watermarking procedures are applied. Different sys- tems are accessible, for example, patchwork strategy which applies measurable techniques to change the separation between two arrangements of the fluctuation, the vitality, or the mean of the signal for embedding the watermark information. For digital speech watermarking, a few spearheading arrangements depended on the joining and

modifications of existing procedures from other research territories. In the mid-2000s, the quantization index modulation (QIM), was presented in, for general multimedia groups. It may be seen from the numerous sound watermarking strategies that have been classified as indicated by the specific signal handling procedures for watermark embedding.

These incorporate yet not restrain to

- regardless of whether the watermarks are embedded in time area or change space.

- whether an added substance or a multiplicative model is utilized for watermark embedding.

- regardless of whether a psychoacoustic model is utilized in the structure,

- whether the watermarking framework is informed or non-informed.

The different arrangements of digital speech watermarking techniques are shown in Fig. I.

Fig. 1: Digital speech watermarking techniques

A. **Speech watermarking based on auditory masking:** In speech watermarking based on auditory masking techniques, a few pieces of the speech signal, which conveys immaterial perceptual data for HAS, are watermarked to boost the indiscernibleness of the watermarked data. The procedure by which the limit of perceptibility for one sound is raised by the presence of another sound and the sum by which the edge of discernibility of sound is raised by the presence of another sound. All digital speech watermarking dependent on masking has utilized irrelevant perceptual parts of speech sections to embed the watermark bits. Most of these strategies depend on the human auditory system (HAS) to protect the watermark that cant be heard. With in the sight of the stronger sound (masker), the lower sound (maskee) isnt heard as the sound is reliant on the temporal and spectral appearance of masker and maskee.

1) *Frequency Masking:* Every frequency has a base sound pressure level (SPL) [9] for hearing called as threshold which isnt constantly direct for all frequencies. Current techniques can adjust the amplitude of the watermark of original speech by expanding and diminishing the watermark of the first speech signal to guarantee that watermark bits are inserted at the most elevated conceivable vitality level.

2) *Temporal masking:* Temporal masking is the attribute of the auditory system where sounds are covered up because of maskers, which have quite recently vanished, or significantly after maskers, which are going to show up. There are two kinds of temporal masking in time domain. First post-masking and second pre-masking. The impact of masking after a strong sound is called post-masking and it can be as a result of up to 50-200 ms, whereas maskee cant be heard by the Human Auditory System (HAS). The pre-masking where a sound really is masked by something which shows up after it is generally short and may last up to 20 ms. The pre-masking impact is a lot harder to identify contrasted with the post-masking impact. The temporal masking can be identified by utilizing the time domain. We inexact temporal masking impacts utilizing the envelope of the host sound.

B. **Speech watermarking based on phase modulation:** Speech watermarking dependent on the phase

modulation technique embeds the watermark bits by changing the phase of speech, and the power spectrum is protected with no change. Rather than MSE mutilation as in different strategies, in the phase modulation technique, the watermarked speech and the original speech have a similar power spectrum. Phase modulation is actualized by applying a time-varying all-pass channel to the audio signal. The time-fluctuating all-pass channel can comprise of various time-differing FIR channels, the coefficients of which are easily changed. Despite the fact that it isnt conceivable to understand an ideal all-pass channel utilizing a limited finite impulse response (FIR) structure, despite everything, it has an advantage. By utilizing linear phase filters, the group delay of the filter gets steady all through the whole frequency extend. By controlling the group delay with a sinusoidal function, stage qualities of the channel consistently fluctuate.

C. **Speech watermarking based on quantization:** Rather than phase modulation systems and masking models, quantization procedures embed the watermark in the perceptually extraneous fragments of the speech signal. The quantization- based speech watermarking procedures have improved the limit because of the embedding of the watermark in perceptually inconsequential and significant parts of the speech signal. However, the constraint in the quantity of pertinent perceptual portions is another concern for watermarking in light of the fact that in certain applications, the capacity turns out to be progressively imperative to accomplish.

1) *Quantization Index Modulation (QIM):* QIM has recently been a mainstream type of watermarking dependent on the structure of communication with side data. A QIM based system embeds data by quantizing the first example esteems. Generally, QIM is proficient by modulating a signal with the embedded data. Quantization is then performed by utilizing the related quantizer. To enhance the presentation of customary QIM [10] [11], a number of variants of the fundamental QIM algorithm, to be specific distortion compensated dither modulation (DC-QIM), spread transform dither modulation (STDM), RDM and adaptive QIM have been proposed [12].

2) *Rational Dither Modulation:* RDM holds the majority of the candor of the traditional dither modulation (DM) [13] conspire, which is, to a great extent, susceptible against ampli- tude scalings and customize it so that the outcome gets invariant to accomplish the attack. RDM depends on utilizing an additional invariant versatile quantization step-size at both embedder and extractor. Scientific instruments are utilized to decide the stationary probability density function, which is used to evaluate the exhibition of RDM in Gaussian channels [14]. It is likewise demonstrated by expanding the memory of the framework. It is conceivable to asymptotically move toward the exhibition of DM, as yet keeping invariance against gain attack.

D. **Speech watermarking based on transformation:** All customary frequency transforms are used to disintegrate a signal into a standard or fundamental set. DWT is the most well known or customary method for audio watermarking. DWT speaks to a simple signal in the time-frequency domain with Sines and Cosines functions, and the coefficients are determined by utilizing recursive calculations.

E. **Speech watermarking based on parametric modeling:** For the dispose of image and audio, there is no ubiquitous signal miniature. Despite this, the speech generation model is accessible in speech handling. The human articulatory framework [15] can be displayed as an all-pole filter impelled by a replicating signal. This model gives a productive instrument in speech handling coding and acknowledgement. By adaptation of its parametrical portrayal, watermarks are embedded into speech signal, in which the reverse sine parameters imitated from LP coefficients are unambiguously customized, with the goal that the cohesion of the AR model can be assured. Furthermore, the intent of validation, the original speech signal is not obligatory. The advantages and disadvantages of speech watermarking techniques are summarized in Table I.

Table 1: Advantages and disadvantages of digital speech watermarking techniques

Watermarking Techniques	Digital Speech Watermarking	
	Advantages	Disadvantages
Frequency Masking	High imperceptibility	Less robust.
Temporal Masking	Easy to implement	Low capacity
Autoregressive (AR)	High capacity	Less robust
DFT Phase Model	Low distortion	Less robust
LOT	Low distortion	Computation complexity
QIM	Embed multiple bits	Affect host data
RDM	Blindness	Heavily quantized

Spread Spectrum	Good robustness	Rrequires more time
Bitstream Domain	Supports all bit rate	Low embedding capacity
Parametric Modeling	Low computation	Low capacity

IV. CONCLUSIONS

A comprehensive study on digital speech watermarking is administered in this paper. We efficiently categorized the extant speech watermarking techniques with meticulous analysis of the embedding as well as extraction patterns and significant features of each considered work utilizing conventional models. Specifically, all the current medications to ensure satisfactory imperceptibility properties are epitomized and investigated. We affirm that this paper may be conducive for analysts who are engrossed in developing and devise new methods.

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METHODOLOGY FOR ADVANCE RESEARCH IN INTERNATIONAL RELATIONS

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ABSTRACT

This paper explores how methodology as a particular and contested logic of research defined the development of International Relations discipline in the course of the great disciplinary debates. It argues that in the first debate, scientific method evoked by both realists and liberals legitimized the independent object of research. In the second debate, a behaviouralist approach to develop the discipline in line with natural sciences challenged more historical approaches. In the following, methodology, although confirming the dominance of quantitative-empiricist approach, was overshadowed by development of competing theories as worlds in itself. Finally, even though its boundaries were loosened to apply to more specific forms of being and knowing, in a second 'second' debate, methodology largely remained a dividing point between neopositivists and reflexivists.

Keywords: International Relations, Liberals, Methodology, Neopositivists, Realists.

1. INTRODUCTION

Following Sprinz and Wolinsky (2002: 10), methodology is essential for development of a scientific discipline, since, especially through proposing and testing hypotheses and falsification, it enables for progress of accumulated knowledge. However, methodology, defined as a logic and procedure of research (Landau 1972 in Waltz 1979/2010: 13), depends on knowledge which can be highly imperfect in terms of being partial, context dependent and biased, thus making methodology a political issue. This paper explores the role of methodology for development of the International Relations (IR) in the course of the so-called great disciplinary debates. While the historical status of these debates has been questioned (Schmidt 1998), the narrative of the debates seems equally important and as Wæver (1998: 715) notes, "there is no other established means of telling the history of the discipline". Secondly, there are different categorizations of the debates, especially concerning the period after the first debate (between realists and liberals) and the second one (between behaviouralists and traditionalists) (Schmidt 1998: 15) when there has been "fracturing of the debate" (Lake 2013: 570). Nevertheless, in this later stage, it is possible to identify two main dividing lines: (a) a theoretical between neo-realists, neo-liberals and critical theory (Weaver 1996) and (b) meta-theoretical between neopositivists and reflexivists (Keohane 1998; Lapid 1989). This makes our approach somehow similar to the one by Weaver (1996) which also identifies four debates. This paper argues that in the first debate, science was evoked to legitimize an independent object of research thus constituting the discipline. In the second debate, natural science methodology was employed to challenge more traditional approaches. In the theoretical debate, methodology, equated with quantitative-empiricist approach, has been overshadowed by theories as separate worlds. In the meta-theoretical debate, in spite of loosening of assumptions of object of inquiry and knowledge, methodology largely remained as a dividing line between neopositivists and post-positivists. The following paper reflects on the references to methodology in some of the key texts defining each of the debates from the perspective of its linkages with the debate and with the state of the discipline. It concludes by summarizing the findings in reflecting upon the central argument.

2. THE FIRST DEBATE AND THE EMERGENCE OF DISCIPLINE

International Relations as a discipline emerged in the between-the-wars period in a debate between realists and liberals on the issue of specific nature of international politics. While an argument by liberals was that international conflicts can be avoided through building of proper institutions, just as in domestic politics, realists argued that wars are a product of distribution of power as a mean in international politics and could be avoided only by taking this into account. Realists such as Carr and Morgenthau insisted on the objective constraints witnessed through past practice. The argument which was ontologically foundationalist (Weaver 1996: 157), pointed out limits of pure logic and idealism on one hand and the need for systematic historical research on the other.

2.1 Classical realists

2.1.1 Carr: E. H. Carr argued that one cannot simply deduce possibility of peace based on abstract assumption of pure possibility of social life, but needs to take into account objective constraints, grounded in the nature of things, such as egoism, thus evoking Hobbsean logic, which become visible through systematic historical investigation. For him, this was a basis for good abstraction. As pointed out by Jackson (2011), Carr recognized involvement of researcher in social science: "the purpose is not, as in the physical sciences,

irrelevant to the investigation and separable from it: it is in itself one of the facts" (Carr 1939/2001: 4-5). He criticized empiricism, idealism and moralism, while the history in his view encapsulated broader wisdom that could be brought forwards through research.

2.1.2 Morgenthau: In a later edition to Politics among nations introducing six principles of the discipline, Morgenthau argued for realistic criteria: "The test by which such a theory must be judged is not a priori and abstract but empirical and pragmatic" (ibid.: 3-4). This also reflected recognition of the role of researcher since he was needed in order "to bring order and meaning to a mass of phenomena that without it would remain disconnected and unintelligible" (ibid.). At the same time, he believed in conventional use of research methods, arguing that theories have to undergo dual test, empirical and logical in terms of posing the question "is the theory consistent with the fact and within itself?" (ibid.). He specifically believed in "objective laws" and need for "objective theory" that reflects, however one-sidedly and imperfectly, these objective laws. Objective science and approximation meant "possibility of distinguishing in politics between truth and opinion", "between what is true objectively and rationally, supported by evidence and illuminated by reason" (ibid.: 4).

3. THE SECOND DEBATE: TOWARDS EMPIRICIST-QUANTITATIVE SCIENCE

The 'traditional' line of research opposed, arguing that social sciences and IR in particular are based on intuition, motives, contexts and historical developments that cannot be simply quantified. However, for the behaviouralists, this was rather a question of subject matter and not of methodology as such. Thus, following Jackson (2011: 6), "the actual result of the 'second great debate' was to link 'science' with quantification".

3.1 Behaviouralists: The authors such as Morton Kaplan, David Singer and Marion Levy argued for rigorous analytical models and observation of regularities in behaviour by using exact methods of gathering and statistics. The approach was based on the so called 'logical positivism' developed by Vienna circle in the first half of the 20th century. According to the latter, science is the only true form of knowledge. All knowledge claims must be susceptible for logical verification to be scientific. Only analytical (true by definition) and synthetic statements (empirically verified) are scientific. Science should progress through data collection, systematic observation, measurement and discovery of laws (Stewart 2014). Behind it was Humean concept of causality, the idea that cause and effect exist only in observable regularities which stand in relationship of logical necessity, known as the Deductive Nomological model, which enables to rule out metaphors without cognitive content (Hempel 1965: 237 in ibid.).

3.1.1 Kaplan's response to traditionalists: In response to Bull's (1969: 20) "scientifically imperfect process of perception or intuition", Kaplan argued that "although systems involving purpose cannot be studied by the methods ordinarily used by physicists /…/ suitable defined, purpose need not distinguish the physical from human" (ibid.: 2). In Kaplan's view (ibid.: 7) "science needs to falsify and grow through precision, rigor, quantification, general theory and the cases where it cannot explain or predict should not be a case against science". Bull (1969: 36) did not object the general principles of science in terms of being "a coherent, precise, and orderly body of knowledge" but rather its objectives, which were opposed to developments in philosophy of science. However, for Kaplan (1966: 15-16) traditionalism posed a constant threat of over-particularization and unwarranted generalization while traditionalist view that science must achieve generality and completeness or lacks rigour was a 17th century view.

4. THE THIRD DEBATE: THEORIES AS SEPARATE WORLDS

The 1970s and 1980s were a period of theory and research refinement. Discipline was influenced by game theory and development of own data sets (Sprinz and Wolinsky 2002: 11). Both realism and liberalism were modernized. Persistence of security threats and power politics together with growing interdependence and cooperation in different areas resulted in diversification and specialization. According to Weaver (1996: 158) "American IR was marked by self-doubt after the Vietnam war, the student revolt and the Oil shock". Pluralism was response to that. Methodology was not really an issue; it was rather assumptions of the world. There was a lot of reference to Kuhn and notion of paradigms as worlds in itself.

4.1 Neorealism, neoliberalism and radicalism: Waltz (1979) gave realism a simple abstract logic in terms of anarchical decentralized structure of international system in which states strive for survival through self-help which has implications in terms of balancing of power and relations between polarity and stability. Liberalism also faced evolution, arguing that anarchy was overstated, pointing at cooperation based on institutions, rules and norms. Authors such as Robert Koheane and Joseph Nye through hegemonic stability theory and concepts such as complex interdependence demonstrated that hierarchy does exist. Furthermore, trans-governmental ties and actors were emerging and military force was abandoned. The main issue was not methodology but "vision of the world and state-centrism of realism's dominance in 1970s" (Weaver 1996: 150). While neo-neo were

rationalist and recognized each other's research programme, there was a third, radical line of thought that consisted of Leninism, dependence and world systems theories and other simplified versions of Marxism, which adhered to critical view of knowledge. According to Marx, the point was not to explain the world but to change it. However, critical theory was somehow 'outside' the discipline (ibid.: 151).

4.1.1 Waltz's theory of international politics: Waltz's work on the theory of international politics positioning instrumental view of the methodology (Dunne et al. 2013: 410) has been influential. Waltz (1979/2010: 1-2) adhered to definition of theories as "collections or sets of laws pertaining to a particular behaviour or phenomenon", with laws describing relations between variables having different values found repeatedly. According to Waltz (ibid.: 10), making of theory is based on logical performance, deduction as such cannot bring anything new. On the other hand, induction does not bring anything certain which is why both are necessary. Jackson (2011) later labelled this approach as "analyticism". The question of methods, e.g., those of classical physics with two or multiple variables and statistics was a question of subject matter. For Waltz (1979/2010: 12), IR required systemic approach, focused on structure, which is why he was critical towards liberal theories for being reductionist.

5. THE FOURTH DEBATE: ON BEING AND KNOWING

Following the 1980s was a period of intensive globalization. The fall of the Berlin wall marked end of history in terms of victory of liberal democracy as the only alternative. These landmark changes were largely unforeseen by the traditional theories. In addition to that, there were those who were left behind by the globalization and the new world order which implied limits of the existing theoretical knowledge and research. Questioning of the role of the state and turn away from the metanarrative of the high politics towards the way power was being experienced in terms of labour-capital relations, gender and post-colonialism, brought theoretical and methodological approaches from other disciplines such as sociology. Questioning of foundations of International Relations (IR) discipline went hand in hand with questioning of traditional view of science aiming at explaining exogenous preferences through empirical validation or falsification.

5.1 Post-positivism: According to Lapid (1989), the 1980s were marked by the beginning of third debate between positivists/rationalists on one hand, and reflexivists on the other. For Weaver (1996: 156), this was the fourth debate, which was epistemological, or "second debate on a higher level". It was also somehow close to the first debate in terms of reality versus utopia, interventions versus search for knowledge and relations between language, politics and practice. The debate inspired by Giddens' theory of structuration was more about meta-concepts than philosophy (Wendt 1987). It was informed by developments in the philosophy of science. Following widespread reference to Kuhn and paradigms during the later 1970s and early 1980s, there were now declarations of allegiance to Lakatos and his research programmes, which enabled for indirect comparisons (Weaver 1998: 693).

5.2 Qualitative science: Robert Keohane (1989: 173) in his widely cited presidential address to International Studies Association (ISA) of 1988 said that critical theorists should adopt rational premises if they do not want to be marginalized. The Designing social inquiry, co-authored by Gary King and Sidney Verba (1994), argued for subjecting 'qualitative research' to rigour of scientific inference.

5.2.1 Designing social inquiry: King et al. (1994: 3) focused on methodology as "essential logic underlying all social scientific research". For them, the only difference of qualitative research was that it does not rely on numerical measurements. In spite of dealing with one or smaller number of cases in terms of units or events, they argued that qualitative research still typically makes a number of observations (ibid.: 4) meaning that some general quantitative principles should apply. While descriptive inference refers to "using observation to learn about unobserved facts", causal is defined in terms of "causal effect". The reason is that conclusions are always unclear due to endless material of science which is why "the unity of science consists alone in its method, not in its material" (Pearson 1892: 16 in ibid.: 9). Further to that, researchers face limited time and resources and need to explain as much as possible with as little as possible to increase the leverage over problem (ibid.: 29). For King et al. (ibid.: 49), the model cannot be true or false; good model rather abstracts only the right features.

5.2.2 Limits to case studies: Between 1970s and 2000, share of descriptive historical research articles published in major IR journals declined from half to one third, share of case studies was constant at 13%, while number of articles using quantitative, formal or both methods increased (Sprinz and Wolinsky 2002: 12-14). Stiaution was a bit different in the European journals (Weaver 1998: 702). Following Bennett and Elman (2007) while case studies are good for introducing new variables and hypotheses, due to problems with case and variable selection, generalization is possible only when study indicates that variable is not a necessary or sufficient condition. In broader terms, there is also a potential in researching the least likely cases, known as

Sinatra inference for "if you can make it here you can make it everywhere" (ibid.: 173) or Mill's the most similar cases (ibid.: 174-5). Moreover, potential is in combining case studies with formal models and statistical analysis to develop more rigorous theories and new and testable counterintuitive insights (ibid.: 186).

5.3   Epistemology as methodology: Keohane's (and Mersheimer's, Walt's) call for a rationalistic research programme and testable theories resonated in the discursive community. Following Milliken (1999), some even labelled themselves foreign and distinct in discipline. For them, question was rather how knowledge produces the world: "to whom /.../ narrative authority is granted" and how it "affects people's lives by legitimizing practices" (Campbell 1993: 7 in ibid.: 236). Different methods were applicable such as counter-factual reasoning or comparisons to alternative explanations (ibid.: 237). What was specific was focus on two basic lines of research: production of common sense and production of policy practice, with aim of explaining "how a dominating discourse of IR producers the social reality that it defines (ibid.: 242). In response to Keohane's proposal that feminists should study foreign policies of more gender equal countries, Tickner (2005: 4) wrote that the point was that knowledge was problematic. It was more 'epistemological perspective' than methodology that indicated the research goals and orientation which aimed to "challenge and rethink knowledge" in terms of which research questions are asked and why, is the goal useful to women and man and how to use knowledge for emancipation, with socially specific objectives implying "hermeneutic, historical, case study orientations rather than causal analysis" (ibid.: 5-6).

5.3.1   Pragmatism: Following Friedrich and Kratochwil (2009: 707) pragmatism emerged on disciplinary agenda in 1990s. It was not new since many authors employed it at least implicitly but did not consider it as a philosophical and methodological position. Varieties of pragmatism involved (a) theory synthesis such as the one used by Moravcsik (b) analytic eclecticism of English school or (c) abduction (something might be) – personally favoured by Friedrich and Kratochwil (ibid.: 708-9).

Pragmatism focuses on objectives of research and the field instead of causal theorizing; it employs concepts instead of theories. It studies cases, especially those considered most important or typical. It recognizes existence of different subjects but also of same mechanisms. Pragmatism highlights interdependence of meaning and social structure and is therefore compatible with reflexive sociology or with constructivist accounts of knowledge production such as social epistemology (ibid.: 713).

5.3.2   Critical realism: Following Wight (2006: 14, 16-17) critical realism attempted to refocus on ontological issues but in a critical way in order to reclaim science from positivists. Critical realists were critical towards positivists for their empiricist, Humean concept of causality. They were equally critical towards interpretivists for endorsing the concept in a specific form close to social science, known as understanding. For critical realists, question was ontological: causal forces were real, but of different nature. They were potentialities, defined by structures, operating in open systems and not closed, laboratory type ones, resulting in possible asymmetry between explanation and prediction. In contrast to Hollis and Smith (1991), Patomäki and Wight (2000: 15) made distinction between philosophic (what is) and scientific ontology (how it emerges). The intention of critical realism was to come to a "deeper level of understanding" (Wight 2006: 18) against Humean account of causality as causal effect, defined as the difference between two measurements.

5.3.3   Deconstructing science: For P.T. Jackson, focusing on philosophy of science as "reflection on how we produce knowledge", science is defined by its goals and not methods. Methodology – the logical structure and procedure of scientific inquiry – simply "follows the scholars' hook-up to the world" (Neumann 2011: XII). Following Neumann (2011: XIII) Jackson favours this against other categories such as positivist vs. interpretivist and qualitative versus quantitative which "easily degenerate into question of methods", i.e., technics for analysing and gathering bits of data. Regarding the question how to overcome the world-mind split when approaching research subject, same position is shared by neopositivists arguing in favour of falsification and critical realists arguing in favour of the best approximation. Analysts who believe in reflexivity "do not want to put Descartes before the horse"; they employ ideal-types or use themselves as effects of structures (Neumann 2011: XIII). The problem with neo-positivism is that it actually evades falsification instead of searching it. Logical positivists faced problem of cause and induction in proceeding from observations to law like claims, encapsulated in Wittgenstein's argument that the only necessity is logical necessity. Popper's response to that was falsification. But, for Jackson (2011: 13-14) the problem is that falsification is not engaged to demark science from non-science.

6.   CONCLUSION

The aim of this paper was to explore the role of methodology for development of the International Relations (IR) discipline by observing its impact on the great debates. The analysis demonstrated that during the first

debate limits of logics and importance of systematic historical research were evoked by realists to confirm specific nature of object of inquiry. With limited research, philosophy and ontological assumptions played more important role at the time, also explaining high politicization of the issue. In the second debate, natural science methodology entered as a promise of development of science. It tried to purify International Relations (IR) from the politicization of founding fathers by subjecting the arguments to objective tests based on large number of units and observations. The question to what extent this is possible in a complex social world without misplacing cause and consequence and omitting variables was side of point. By the third debate, changes in the International Relations (IR) moved methodology to the side although still adhering to the general quantitative-empiricists principles. Abstraction and its internal potential to capture and manipulate the subject matter came more affront supporting instrumental, goal-oriented view of methodology. In the fourth debate, creative potential of analytical methods was questioned due to their inability to move beyond social structures through which knowledge was reproduced. While mainstream International Relations (IR) extended instrumentalism to small and qualitative cases thus saving science from complex and changing subject, critics pointed out the different views of cause-consequence relations which depended on the viewpoints that required more socially engaged approach. This was in principle not in contradiction with applying 'robust methodology' but due to dependence of the latter on fixed objects, models and standardized data, there seemed to be a practical contradiction between the two.

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APPLICATION OF Z-SCORE MODEL FOR FINANCIAL HEALTH CHECKUP: A CASE STUDY OF J.K. CEMENT COMPANY LTD.

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ABSTRACT

Various stake holders such as bankers, financial institutions, investors, employees, government etc. need to know about the financial health of the business. Financial Analysis and Financial Statements are the two main tools which can help the future availability and utilization of the firm. For arriving at the conclusions about the financial health of any business, there are several tools available. Out of all of them ratio analysis is one of the most widely used tool. Despite ratio is a powerful tool, combining different ratios into a single measurement is not possible. Prof. Edward I. Altman has made an effort to combine these ratios into a single model. This model is popularly known as 'Z score model' which is used to predict financial health of the business. The present paper is based on the secondary data of the company. The researcher have attempted to apply Z score model to check the financial health of J.K. Cement, one of the leading Cement Company. The analysis showed the good results of the company in terms of liquidity, profitability, long term solvency, operating efficiency and sales generating capacity.

Key Words: -Financial health, Ratio analysis, Single measurement, J.K. Cement, Z score

INTRODUCTION

The success of any company depends on effective financial practices which starts from proper procurement of funds and ends by proper utilization of funds, this is possible when the financial activities of the firms are analyzed. Thus, financial planning, financial analysis and financial statements helps the firms to know the strength and weakness of the companies. So, after financial planning, financial analysis is the crucial step for a company to be successful. The main tool for financial analysis is the financial statements of the companies. Preparation of financial statements is an important task for any business. With the help of these financial statements, the business can communicate about several aspects about the financial health of the business. Various stake holders are interested in knowing about the financial health of the business. These stake holders can be classified into two categories viz. internal and external. Internal stake holders such as employees, executives, various levels of management use the financial statements for various purposes. External stake holders such as investors, credit agencies, government agencies, bank, financial institutions, other creditors etc. are interested in financial statements to know about the financial soundness of the business. In order to arrive at the conclusions about the financial soundness of the business the users of financial statements apply various tools of financial analysis such as comparative financial statements, common-size financial statements, trend percentages, fund flow and cash flow analysis and ratio analysis. Out of all these tools of financial statement analysis, ratio analysis is the widely used tool because of its efficiency and effectiveness of arriving at the conclusions about the financial soundness of the business.

INTRODUCTION TO Z-SCORE MODEL

Z-Score Model has been established by Edward Altman in the 1960s, he was an assistant professor of finance at New York university during that period. The model was prepared by Altman based on the research work done by considering the data of banks and have provided the bankruptcy model. In his study he considered 22 ratios and finally stated or formed the model considering 5 ratios which help to measure bankruptcy of the firms. This model helps to evaluate the general trend in the financial health of an enterprise over a period. Many accounting ratios are used to know financial health of the enterprise. Edward Altman established Z-Score model, he combined many accounting ratios (liquidity, leverage, activity and profitability) to form an index of profitability. A lower score of Z-Score Models depicts higher odds of bankruptcy. The model helps to analyze the financial solvency status of the firms and helps to take correct decisions regarding not entering the solvency Zone or Distress Zone, with the help of parameters given by Edward Altman.

Table-1 A table Showing Comparison Between 2 Models

Prof. Edward I. Altman's Z score Model	Prof. K. B. Mehata's Z score Model [Altman's modified model for Indian condition]
Formulae: **Z Score = 0.012.T_1 + 0.014.T_2 + 0.03.T_3 + 0.006.T_4 + 0.999.T_5**	**Formulae:** Z Score = 0.712.X_1 + 0.842.X_2 + 3.107.X_3 + 0.42.X_4 + 0.995.X_5
T_1 = **Working capital / Total assets**	X_1 = Net working capital / Total assets
T_2 = **Retained earnings/ Total assets**	X_2 = Retained earnings / Total assets
T_3 = **Earnings Before Interest and Tax (EBIT) / Total assets**	X_3 = Earnings Before Interest and Tax (EBIT) / Total assets
T_4 = **Market value of equity / Book value of total liabilities ***	X_4 = **Book value of equity / Book value of total liabilities* (Refer note at the end of table)**
T_5 = **Sales / Total assets ***	X_5 = **Net sales / Total assets * (Refer note at the end of table)**
Z = Overall index/overall score	Z = Overall index/overall score
Benchmark for evaluation/zones for discrimination	Benchmark for evaluation/zones for discrimination

Z score < 1.81	'Distress' zone	Z score < 1.2	'Bankruptcy' zone
1.81 < Z score < 2.99	'Grey' zone	1.2 < Z score <2.9	'Grey' zone
Z score > 2.99	'Safe' zone	Z score > 2.9	'Safe' zone

Note:

*according to Prof. K.B. Mehata's model instead of market value of shares, book value of shares are considered for the calculation of fourth variable (X_4), because the shares of all companies are not listed in recognized stock exchange.

*according to Prof. K.B. Mehata's model instead of Sales, net sales are considered for the calculation of fifth variable (X_5). Here, net sales = sales turnover – excise duty.

REVIEW OF LITERATURE

Altman, E. (1968) has studied the theory of Traditional Ratio Analysis and Multiple Discriminant Analysis with the help of this method the researcher has developed Z-Score Model combining the ratios. The researcher has taken into consideration 66 corporations with 33 firms in each group. The researcher has analyzed the several factors which affect the firms. To measure the financial soundness the researcher has derived Z-Score Model. The researcher has reached the conclusion that discriminant ratio model proved to be accurate in predicting bankruptcy perfect in 94% of the sample of 1st 33 units and 95% of all firms in the bankrupt and non-bankrupt groups assigned to their actual group classification. The researcher also suggested the practical and theoretical implications of model. The researcher also told that the subject need to further researched and investigate the problems and even the model.

Devraj, T. and Gopalkrishnan, M. (2017) have taken into consideration IT companies for studying the financial performance of the companies with the help of Z-Score Model. The researcher has studied the data of 5 companies namely Wipro Ltd., Justdial Ltd., Mind Tree, Infosys Ltd., and Tata Elxsi Ltd. The researchers have studied financial performance to conclude the financial stability and strength and weakness of the selected companies. The researchers have found the results with the help of Z-Score model, they found that overall financial health of information technology is in healthy zone.

Geethalakshmi, A. and Jothi, K. (2017) have considered the field of Pharmaceutical Company for their research work. The main objective for their research work is to evaluate the financial health of the companies using Z-Score Model and to suggest for future growth and development of the selected companies in India. The researchers have taken into consideration the period of 2006-07 to 2015-16 for their study and they have

considered 5 pharmaceutical companies for their studies- Sun Pharmaceutical Ltd., Aurobino Pharma, Cipla Ltd., Reddy Laboratories and Cadila Health Care. They have used Edward I Altman Z-Score model for their study and to reach to conclusion. As per the research work, researchers found that Sun Pharmaceutical's overall financial health is good and will have good growth in future. The researchers found that mainly all the companies financial heath is good and will also prosper soon. They also found that overall pharmaceutical companies liquidity position is fluctuating, companies' asset value is declining, and liabilities are exceeding the assets. As per the researchers' suggestions if the sales generating capacity of the companies' assets increases they may improve their market position and may increase a competitive condition.

Objectives of Present Research Paper

1) To study the financial health of the company using Z-Score given by K.B. Mehata

2) To study the bankruptcy stage of the company.

RESEARCH METHODOLOGY

To carry out the research work properly and systematically, it is necessary to

prepare a research methodology first. In present research paper, following research

methodology is used.

Title of the Study

The title of the study is as under

"Application Of Z-Score Model for Financial Health Checkup: A Case Study of J.K. Cement Company Ltd."

Sample Size

The study is undertaken by considering the data of different companies associated with Cement Industry. The study includes the data of J.K. Cement.

Method of Data Collection

The researcher has used secondary data for the analysis. The details of different ratios are taken from www.moneycontrol.com. The details have been collected from the Annual Reports of the company. The researcher has considered the data of last 5 years for the study from 2016 to 2020.

Limitations of Present Research Paper

The main limitations of the present research project are.

1) The method of data collection is secondary, so the analysis has been done from the data that has been available in the financial statements of the company.

2) The data has been collected for 5 years only so the result is not applicable for coming years.

3) The outcomes are only available for the above company and not the other companies.

Analysis and Interpretation

Z-SCORE ANALYSIS

TABLE – 2 A table showing calculation of Z-Score of J.K.Cement

Z Score = $0.717X_1 + 0.842X_2 + 3.107X_3 + 0.420X_4 + 0.995X_5$						
Year	$0.717X_1$	$0.842X_2$	$3.107X_3$	$0.420X_4$	$0.995X_5$	Z Score
2020	0.0450	0.3271	0.3457	0.0068	0.6837	**1.4083**
2019	0.0470	0.3412	0.3108	0.0080	0.7045	**1.4116**
2018	0.0479	0.2924	0.3553	0.0076	0.7834	**1.4865**
2017	0.0266	0.2599	0.3136	0.0074	0.7379	**1.3454**
2016	0.0426	0.2438	0.2254	0.0073	0.7179	**1.2371**

Table – 3 A Table Showing Overall Interpretation of Z- Score

Year	2020	2019	2018	2017	2016
J.K. Cement	1.4127 (Grey Zone)	1.4161 (Grey Zone)	1.4910 (Grey Zone)	1.3493 (Grey Zone)	1.2410 (Grey Zone)

MAJOR FINDINGS

- From the present study the researcher found that the selected company lie in grey zone.

- It was found by the researcher that the company is financially sound.

CONCLUSION

The results shows that company is financially sound. The company has been successful in maintaining liquidity, operating efficiency, long run solvency and investors' confidence. As company lies in the grey zone with more analysis by the management for the factors affecting, they can improve the condition and enter the safe zone.

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UNDERSTANDING AND MANAGING THE ADVANCEMENT IN TECHNOLOGY & INNOVATION IN HUMAN RESOURCE MANAGEMENT

Dr. Supriya Paigude

ABSTRACT

In today's world people are using technology in some or the other ways and in various methods. The smart gadgets are helping us to lead a life a smarter way. This is also applicable not only in our personal lives but professional lives as well. And when we say professional Human Resource is the once industry in itself and the most values assets of the organization that make business grow by contributing to a large extent.

Today business are changing at lightening and so is the human resource management though it was not designed too. How is actually the human resources are getting impacted by technology and innovation? And the answer to this is the new technology and innovation like -

- *Augmented Reality & Virtual Reality*

- *Artificial Intelligence & Machine Learning*

- *IoT – Internet of Thigs*

- *Autonomous Agent*

- *Gadget or wearables*

These are the few examples cited but there may be many more technology advancements and innovation happening. Today technology is changing per minute and every new day is a new interaction with technology. Many of the HR activities like Recruitment, learning and development use the new technologies... virtual interviews and mobile working or managing the workforce and performance through the Work From Home are the classic example where there was huge shift in HR processes & where technology played a crucial role.

Today HR has become very dynamic, which requires a great amount of efficiency, accuracy and also effectiveness. Technological innovation has empowered HR Domain with right skillset and the technology came as a rescue to manage performance, people engagement, complex problems like diversity, organizational development. HR 's role got elevated from just being an administrator to a key contributor a strategic decision maker contributing to key organizational strategies and decision making.

Key Words – Technology, human resource , innovation , decision making,

INTRODUCTION

Human Resource Management – backbone of any organization managing its entire workforce across domain and across all the office which may include off shore offices and people working at client side. Such a huge task to manage people – *people with diverse experience, capabilities & abilities to perform the respective jobs, decision making, variety of aspiration toward career progression or growth, different perspective which also brings in a different thought processes with a various decision making and understanding a problem situation.* Ability to forecast, readiness to adapts and acquire new skills, which also define the quality of being 'agile'. Keep changing at the pace the business function. In a nutshell there so many things the HR Function has to consider even for a single employee. And the bug does not stop here – *the culture of the organization, policies and procedures, fitment, market competition, sustainability of business, overhead & profits* are also the aspects that the HR Function has to cater too. Hence the organization which has better HR Policies stand a better chance of survival and sustainability and the employees are more productive, effective and the efficiency of employee is high which help the organization to yield better result and ultimately the efficiency of the organization is at its best.

Two decade ago the HR Function was only restricted to Personnel Management & documentation and in initial or old day it was more physical record keeping. But globalization and computerization the concepts of Personnel Management got completely revamped and 'Human Resource Management ' as a complete holistic function was evolved with a gamut of allied / combination of various important crucial facets like – recruitment & selection, performance management, ' compensation & benefits (appraisals), learning and development, employee engagement & welfare (today also known as employee wellbeing), corporate social responsibility , employer branding.

Factor	Personnel Management	Human Resource Management
Time and planning perspective	Short term, reactive, *ad hoc*, marginal	Long term, proactive, strategic, integrated
Psychological contract	Compliance	Commitment
Employee relations perspective	Pluralist, collective, low trust	Unitarist, individual, high trust
Preferred structure/system	Bureaucratic/mechanistic, centralized, formal/defined roles	Organic, devolved, flexible roles
Roles	Specialized/professional	Largely integrated into line management
Evaluation	Cost minimization	Maximum utilization (human asset accounting)

Table 1: The Differences between Personnel Management and Human Resource Management

With coming year all these function gradually got digitized and there was complete revolution with the HR Function and there was a complete transformation happening and is termed as ' Digital Transformation' . All the documents and records maintained in hard copy occupied the space virtually. Concepts like networked organization came into existence, and global interaction with global counterpart became a part of regular interaction. There is a big lead the HR Function had to take and lot technological advancement & innovation took place at all allied functions in Human Resource Management. The technological platforms suddenly made it ways and came to the rescue to HR Professional which also helped the HR Function & HR professional gain tremendous importance making it inseparable from business. Business orientation became a key consideration in HR Function. Companies started speaking about profits through workforce by inculcating the necessary competency with like agility, technological knowhow which also introduced the concept of 'Perform or perish' . Performa or perish gave importance to KPI & KRA. Key performance index & key result areas. KPI & KRA are considered as yardsticks for measuring the performance and segregating the workforce into various basket. Again technology played a significant role in heling the professional to develop new concepts by the use of software's, technological platforms etc.

Technological advancement helped organization and HR professionals to think and innovate more on ideas and concepts. Innovation became important and change became constant for businesses and people and agility an important quality. HR as a function witness a huge technological advancement and innovation as function in itself. Data management (MIS), data analytics, Human Resource Information System (HRIS).

LITERATURE REVIEW

The main objective and purpose of this paper is to understand the technological and innovationce advancement and managing the same. Primarily the HR function is mainly managing operation on daily basis. Today it is HR Functions is known for 'Backend Operations' or 'HR Operations'. Today the development of any organization or the growth of any organization is measured by the innovation and technological advancement they bring in their business. The ability to innovate and adapt or switch to new technologies speaks about the strength of the organization. This also reflects on the knowledge capital the organization has and the effectiveness towards knowledge management within the organization.

And as rightly quoted by Edward L. Gubman in Journal of Business Strategy, "the basic mission of human resources will always be to *acquire, develop, and retain talent; align the workforce with the business;* and be an excellent contributor to the business. Those three challenges will never change".

Today the organization's health and well-being is dependent on how well the human resource management happens within the organization. As Irving Burstiner commented in The Small Business Handbook, "Hiring the right people—and training them well—can often mean the difference between scratching out the barest of livelihoods and steady business growth…. Personnel problems do not discriminate between small and big business. You find them in all businesses, regardless of size."

R. Broderick and J. W. Boudreau (1992, p. 13) state that technology can thus free up some time to pursue more productive work. The firms will standardize their HR systems and use the shared HR services which will provide them with a competitive advantage (Hendrickson, 2003, p. 389).

Few impacts of technology are mentioned below –

Negative Impacts on HRM	Positive Impacts on HRM
Initial cost & investments	Long term savings
Reduction in the number of employees	Forming new department – Strategic role
Data security a challenged (data protection compromised)	Time saving
Outsourcing	Enhanced or better quality
Responsibility shifted to employees (line managers)	Standardization of processes
Work Life Balance	Ensure better performance (enhanced performance)
Technology know how (incompetence)	New perspective (technological advancement & innovation)

Source: Hendrickson, 2003, pp. 391 – 392; Ruel et al., 2004, pp. 367 – 378; Sushi, 2008; Parry, Tyson, 2007, p. 24

It is also said in Human Resource Management (HR) (Gueutal & Stone, 2005; Kavanagh, Thite, & Johnson, 2015; Parry & Tyson, 2011, Strohmeier, 2007), and transformed the way that organizations recruit, select, motivate, and retain employees. One of the survey of leading consulting firms indicated that "…there are two primary drivers of change in HR: technology and talent management. …Continuous innovations in technology will fundamentally change the way HR work is accomplished." (Society for Human Resource Management [SHRM], 2002, p. ii). The technology meant was computers (desktops & now laptops), mobile (telecommunication) – the devices used to collect / store / disseminate & retrieve data required for the business purposes.

Today knowing the goals and objective of Human Resource function is very important. As rightly said HR Strategy should be synchronized with Organizational Strategy & Business strategy. These goals have become extremely important in recent years because organizations compete on the basis of the skills and talents of their workers (Huselid, 1995). Technology has completely transformed the HR Function in terms of methods of collecting and gathering data, working team across offices and location – virtual work processes (implement remote working) – a cultural change mainly in IT Industry - networked organization, web-based job application, innovation across processes including performance management & compensation – benefits. With the advent of technology HR function went in for revamp of its functions. HR has become a crucial aspect relating to the web development commonly identified as an electronic human resource (e-HR) (Looise, Ruël, & Bondarouk, 2011, pp. 121).

Technological developments have made it possible for even small and mid-sized businesses to have access to HR information systems and electronic HR services (Yu, 2009). Globalization has also had a great impact on HR, to bring more focus on talent management, hiring internationally, inclusion and diversity (Tubey, R., Rotich, K. J., & Kurgat, A.,2015). At the 4th Digital Revolution, technological advancement Artificial Intelligence & machine learning (AI & ML) is getting implement in HR eg – gauging the interviewer's facial expression and mapping the thoughts process of the candidate.

MANAGING TECHNOLOGICAL ADVANCEMENT IN HRM

In last few years it has been observed that there is modern technology used in HRM. Information Technology (IT) is used to an extent in various field of HR. New software getting designed which are operationally effective, enterprise resource planning (ERP) is one such platform which definitely is used in may organization.

Recruitment the most important aspect of any organization had to go in for a change, and traditional methods of recruitment were changed with modern technologies, E recruitment are taking placing. Online tracking of application brought in effectiveness and efficiency to the process. This became a solution to global business to build a effective workforce.

The new trends and technology also speaks about Mobile recruitment, Video interviews & assessment. Today the technology is used at an extent where you (organization) can monitor the movement, sound, rolling of eye ball can be capture, attempt to use alternate browser can also be monitored in both static & dynamic modes. This ensure a complete check on candidate and leave no room for any malpractices. With such security

(virtually) with advance assessment tools, help in doing remote recruiting, large scale hiring becomes comparatively much easier, save time and energy of talent acquisition team & people can be more productive and efficiency levels will be high.

The concept of **'Gamification'** brought a new thought process to create a favorable experience for prospective candidates. This is something unusual of the regular or traditional recruitment process. Gamification introduced simulation environment & game mechanics which can help the employer to test the skill sets (hand on skills) of the prospective candidates. This is a great innovation which can replaced to understand the candidate on his / her theoretical know to practical knowledge. Ability to apply the knowledge can be understood to a great extent. It may also help companies to create their employer branding and can showcase the company's ability to adapt to technology and innovate.

With Millennials being a part of the business, today is said that one chair should be left for a millennial, with this organization will have to new thought process and will have to innovate the process in terms of **performance management & learning and development** too. Millennial expect better opportunities as work place, challenging work & look toward recognition of their work, mentoring & guidance rather that monitoring. Development is important which happen through a holistic or 360 Feedback process.

Augmented Reality & Virtual reality is also one of the key technological innovation and advancement happening in Human Resource Management. Giving a virtual tour of office premises to the prospective candidates … this add the look and feel of the candidate and motivates him or her to give to join the organization. **AR & VR has also added a great value to interview processes.** It helps to capture the candidate's face and can highlights key details including the expression and emotional responses, these details can be stored as data.

Learning & Development, Induction program / process , employee engagement have become better because of AR / VR. Candidates can attend the L & D program from any location, induction process can also take place remotely and candidate from across location can be a part of the same.

AR / VR technologies has a potential to replicate the real world in all the domain of HRM. It is not restricted only to game and simulation but can be used as a strong tool of transformation of process and application development.

CONCLUSION –

The purpose of technology is to ease and bring in perfection to all the processes and functions. This fundamental is also applicable to the Human Resource Management as well. With innovation and implementation of new technology HR Professionals will get more time and bandwidth for strategic decision making. HR function have evolved as **HR Business Partners.**

Technology & Innovation has help HR Function to be more effective, efficient and even cost effective and HR Technologies have greater scope. Taking this thread new business are starting off with the concept of E- HRM , which can attract new generation employee , millennials (Gen Y & Z) employees.

The e- HRM Model –
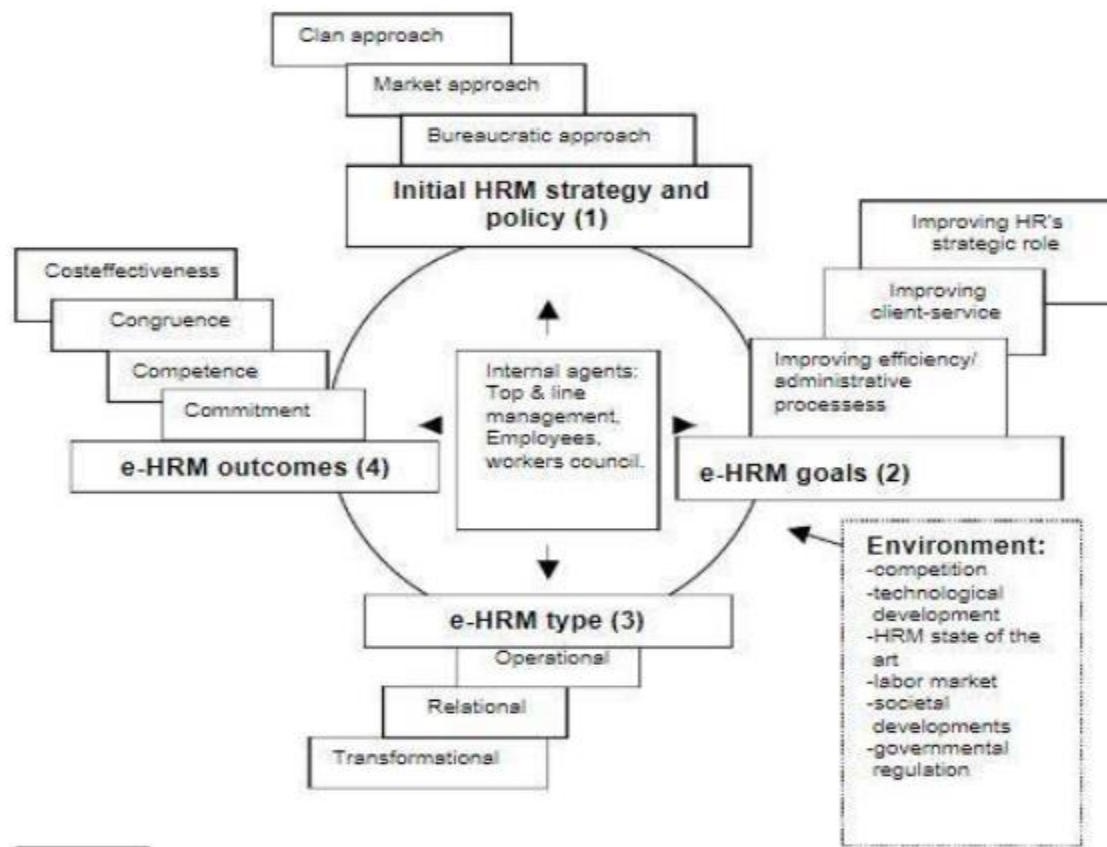
e-HRM Model

The organization which have a quantum amount of clerical work (banking, education sector) should adopt the e-HRM Model.

The purpose of the study was to understand better insights on HR Technologies and how the new technologies are changing the HR Function and the HR Roles. The student also could find out that the technologies have not just change the roles but also evolved as a Function by contribution more to *'strategic decision making'* which becomes very crucial for every business.

As HR becomes a very crucial function of any business as its deals with the most sensitive yet very important part of the business that is people – most values asset of the organization, HR technologies should be implement to take utmost care of employees and ensure a better career progression by offering tools in learning and development, professional development, reward systems and better representation of the employee interests within top management.

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RECEIVABLE MANAGEMENT PRACTICES: THE PAST AND THE FUTURE

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ABSTRACT

The success of any organization depends on the appropriate allocation of the resources. Hence, whenever the receivable management is concerned every organization has to be very careful while extending credit to the customers. The credit sales will definitely help to enhance the sales volume and simultaneously help to increase the profit. At the same time, we have to very careful regarding the cost involved in extending the credit. The cost of credit is very high if the receivables are not collected in due time and if it converts into bad debts. In this paper an attempt has been made in this regard to study the practices of the receivable management that has been practiced for a long period of time and what are the future possible practices. This paper is an exploratory paper which tries to identify the benefits and demerits of the various practice adopted till now and the future possible trends of the receivable management. For this we have collected and compared the various methods and practices and presented in this paper.

Key words: Receivable management, profitability, credit sales, future trends

INTRODUCTION:

Trade credit is a regular and pretty standard practice globally and divides many businesses with their clients. The pursuit of this concept is beneficial to both buyers and suppliers in several ways. Despite the numerous attaining benefits, trade credit is also characterized by several challenges. Though some clients adhere to the terms and conditions strictly, many are the cases where clients, especially buyers, are in default and in a manner that violates and dislocates the stipulated terms and conditions been it documented or not. Mention could be made of delay in payments, payments defaults, and in extreme cases, some individuals and entities deliberately refuse to pay, and others even wind up and bolt. This is due to the informal nature of trade credit pursuit that dominates the practice of this concept. The motives behind the use of trade credit, according to Petersen & Rajan (1997), are grouped into three classes: financial advantage theory, price discrimination theory (commercial motives), and transaction costs theory (operational motives). Macroeconomic and firm-specific factors are the key elements that impact trade credit. A robust credit control system slashes the amount of capital locked up with debtors and minimizes terrible and doubtful debts. Prudent credit management involves optimizing cash flow to stabilize the firm finances and make room for increased potential growth, culminating in profitability. Credit occurs when an entity does not receive such cash immediately for goods sold or service provided to a client. It is an important marketing tool that makes way for the movement of goods on the supply chain. Thus, from production, till it gets to the final consumer. A firm may offer credit sales to preserve and protect its market share from competing forces around and entice and invite new clients to its market and products at reasonable terms. Account receivables to be collected or received later in the near future come about due to credit sales activities.

LITERATURE REVIEW

The Commercial Theory contends that trade credit enhances the marketability of products. Thus trade credit makes it relatively easy for firms to sell (Nandiri, 1969). Credit sales can also increase profitability through price discrimination (Bannan, Makismovrc and Zenchar, 1998). This refers to the offer of the same product at different prices to various customers. The International Financial and Reporting Standards (IFRS) and International Accounting Standards (IAS) acknowledge accounts that are measured according to IAS(39) and are disclosed following IFRS(7).

According to IAS (39) on Financial Instruments Recognition and Measurement, trade debtors are measured at their fair value. In addition, IFSR(7) spells out disclosure requirements intended to enable users to assess the importance of financial instruments for an entity's financial position and comprehend the nature and quantum of risks arising from the financial instruments in question the entity is exposed. These risks include credit risks, liquidity risks and market risks.

Jain (2001) proposed trade credit to function as a second layer among financial intermediaries and users. Suppliers and banks have to be well informed to determine the creditworthiness of clients and ascertain their default risk rates. Suppliers tend to have quite an easy and cheaper access to financial information regarding customers. Due to this, it is likely for banks to prefer lending monies to suppliers to cut costs. According to

Frank & Maksimovic (2004), trade credit also plays a role in helping suppliers and their customers the opportunity for buyers to reduce their dependence on external sources of funding, especially in a market with suppliers being more assertive. Fisman & Love (2003) believe that firms that suppliers grant credit grow faster than those without access to a credit facility. Wilson & Summers (2002) also buttress the above point by contending that entities in their stage of growing faster yet with financial difficulties often depend on trade credit.

Several theories attempt to explain why suppliers are willing to offer credit to buyers and why buyers would like to use this expensive form of credit. Frank & Maksimovic (2004) explain that motivation for trade credit concentrates on two aspects: the first facet is related to actual operations. It spells the motives of using trade credit. It includes the Theory of transaction cost reduction, price discrimination, and quality assurance; the other facet has to do with the financial function of trade credit. The authors believe that suppliers would like to grant trade credit to their buyers: those in financial constraint to keep long-term relationships with them. Emery (1984) states that in a financial market, which is not well developed, suppliers need reserves in liquidity to extend trade credit to make profits. In addition, in a market with less competition, in which the suppliers have substantial market power, they attempt to sell goods as much as possible, especially when the profit is higher. Fisman & Love (2003) project the view that reliance on trade credit is an industrial characteristic. They have outlined trade credit provision into four categories based on industry characteristics of the United States: (i) the liquidation of industry, (ii) price discrimination, (iii) guarantee for product quality and (iv) customized products. While to another research source Biais & Gollier (1997), firms depending on trade credit indicate that they possess enough creditworthiness from suppliers, and they trust them. Therefore, outside investors can take this as a signal to provide finance to buyers.

THE OBJECTIVE OF THE STUDY
This paper has the following objectives

To study the existing as well as the new trends of the receivable management and compare them.

RESEARCH METHODS
This paper is a exploratory and descriptive paper based on the previous literatures on the receivable management.

EXISTING RECEIVABLE MANAGEMENT PRACTICES:
The underlining principles for managing account receivables are discussed further below.

a. **Credit Extension Policy:** A credit policy is a blueprint that firms rely on to arrive at decisions as to whether to extend credit to a customer or not. The primary aim of the credit policy is to avoid the extension of credit to customers who will be unable to pay their debts. More prominent entities usually have a formal credit policy, while small firms tend to be relatively informal, with many small business owners relying on their instincts. A good credit policy should seek to bring in and keep good customers with no adverse impact on the cash flow. In addition, the policy should be able to drive sales as well. A good credit extension policy has the following essential variables as follows

i. Credit standard

ii. Credit Terms

i. **Credit standard:** Credit standard could be explained as the level of financial strength and all other minimum qualities and the characteristics of the creditworthiness of a credit applicant required to be considered for credits. Credit standard requirements of a firm could either be liberal or restrictive. With a firm that has lenient credit standards, the minimum conditions to be met by the customers to be considered for credit are pretty flexible and relaxed. Firms with a liberal credit standard tend to stimulate sales to attract more customers; an increase in sales volumes often comes additional costs such as clerical expenses for investigating additional accounts; It requires enormous capital investment in receivables; Default rates tend to be higher due to the inability of firms to pay their debts and the likeliness of extending credit facility to entities and individuals that are not creditworthy customers; There may be prolonged average collection period and lastly increase in profit as a result of increased sales (Persiamy, 2009). With restrictive credit standards, the minimum conditions required for credit are heightened by the supply firms. Therefore, a firm pursuing strict credit standard is likely to face the following: Low sales as few customers are attracted; fewer cases of bad and doubtful debt loss; decrease in the amount of working capital required to finance receivables; credit standards of the firm are generally high; Low costs of maintaining accounts receivable; Extension of credit facilities to more creditworthy customers; Decrease in profit due to

decreased sales (Periasamy, 2009). From the discussions above, it could be deduced that sales volumes are expected to increase with relaxed standards for trade credits, whereas volumes of sales are likely to decline with stringent standards for credits; the impacts of liberalizing the credit standards on profit may be analyzed based on the correlation between the cost of loosening the credit standards and the profit realized or to be made due to the increase in sales via lenient standards. Therefore, it becomes incumbent on the credit manager and the credit team to determine an appropriate credit standard for the firm based on diligent cost and benefit analysis.

ii. **Credit Terms:** Credit terms could be defined as the precise terms and conditions surrounding credit sale by a firm to its customers. For this reason, it could be deduced that credit terms impact the size of the accounts receivable. Credit period refers to the number of days given to a client to pay for the debt. Except for a very few, most customers often prefer more extended credit days periods, so the extension of the payment period is likely to stimulate sales but would adversely affect the cash conversion cycle. Therefore, it locks up much capital in receivables with attending cost (Brigham, Houston 2009). There is always a high probability of default payment, leading to bad debt arising whenever a receivable stays outstanding and unpaid for a more extended period. The onus is on the manager and the department in charge to develop an optimum payment period for credit. The firm should stick to it to ascertain the trade-off between cost and profitability. Trade discounts refer to a cut in price offered to facilitate early payments by debtors. The discount spells out the exact price cut-rate and the time payment must be made to merit it. For example, a discount of 5/14 net 30 means that a 5% cut in price will be allowed for payment made within fourteen days, out of the thirty(30) days credit period (Periasamy, 2009). The discount comes with two benefits; one has to do with price cuts which tend to stimulate sales. The other benefits have to do with the quickening of payments by debtors. This also helps in reducing the cash conversion cycle and helps the cash flow of entities at the supply end. However, the discount tends to reduce prices, which culminates in lower revenue unless trade volumes rise much enough to cater to a cut in prices in the name of discounts. Therefore, the costs and benefits of discount must be balanced in establishing the credit policy (Periasamy 2009).

b. **Credit risk analysis and evaluation:** The principal objective of receivables management is to ensure minimum or optimum investment in accounts receivable and a considerable reduction in bad debt losses. To arrive at this achievement, the financial manager has to follow definite principles and procedures to ascertain whether a customer is worthy of credit or not, taking into consideration the credit ceiling to be granted as well as the credit period. Granting credit in trade is a mechanism for promoting sales, but it becomes useless when due payment cannot be guaranteed. Credit analysis determines the customers to be granted credit and all the surrounding conditions that are easier for existing customers, usually because the experience provides considerable information. For new customers, credit analysis is a challenging exercise (Weaver and Weston, 2008). As alternative sources of funds become costly and unavailable due to increasing lending rates, customers tend to look at trade credit as funding sources. Customers already owing are likely to request an extension of payment days and perhaps review other terms to stretch out relief payments. New customers tend to request and negotiate for credit account and terms. Here the onus behoves on firms at the supply end, especially to exercise caution in credit decisions. Every credit transaction should initially be considered a potentially bad or doubtful debt. It is prudent to ascertain the actual reasons for which customers request credits even by asking the customer one-on-one; visit the premise if possible and find out from the owners and managers whether the company is in difficulty or not.

c. **Financial Review:** It is helpful to focus on whether the firm is increasingly piling up stock and is unable to sell it. What is the cash position of the firm in question, negative or positive? Has the firm utilized all borrowing space? Do they have an excellent working capital strength to handle short-term debts even though they may be recording losses? It is prudent also to assess the recent trade history in terms of credit volumes and payment patterns; assessing the promptness of the latest trade payments can paint a clearer picture of the entity's finances. Considering the entire picture might grant you a better view as if it is being considered for acquisition. Make objective considerations and consider other vital elements that are subjective, for instance, analyzing the relationship of managers and subordinates. It is very prudent and essential to ascertain the firm's commitment and efforts in re-organizing things for a positive turnaround to merit suppliers and customers. There might even be the need to visit the firm and engage management in facial conversation to discover the activities and inputs being made by the firm to improve the challenging situation of the firm. The absence of relevant and significant steps to revive and improve cash flow and profitability to deal with debt payment issues and the general health of the firm are enough signs of concluding the inability of the firms to deal with its challenges. And this makes it not worth risking. The

onus is on the management of a firm to determine the distinction between customer losses due to non-granting of credit and revenue losses due to non-payment of debts by customers. In the long run, the benefits of customer loyalty should come into play in a firm's decision to support the company through challenging times or not. It is appropriate to find avenues to protect sales when the film finally decides to grant credit to keep and work with it, valuable customers. It is appropriate to review customers' creditworthiness very important to the firm from time to time, and not dwell on customers' reliable historical performance since situations keep changing.

d. **Credit collection policy:** A credit collection policy could be explained as formally organized elements and processes that guide the collection of overdue and delinquent debts (Megginson and Scott 2008). The credit collection policy manual has the procedures used to collect past due accounts depicting the level of firmness exhibited through the process. For example, in times of delay or refusal to honour a payment obligation, the firm might write a series of polite letters or send personnel periodically to customers as a means to facilitate payment. Other firms may immediately turn overdue and delinquent debts to factor agency to ensure quick and easy collection (Brigham et al., 2012). It has become increasingly difficult for firms in recent times to excessively write off bad and doubtful debts. Lack of operating cash essentially led to many U.S "dot-coms" collapse in the early 2000s. Weak and improper cash flow management still leads to the principal cause of the fall of many entities. A firm can radically improve its cash flow by cutting the days credit stays outstanding through customer sensitization and motivation. These require regular attention and follow up. Firms need to be rigid but devoid of excessive pressure, which may culminate in customer loss. Balance must be established between the costs and benefits of varying collection strategies (Brigham et al., 2009). A company has to determine the tenets of its collection policy and specify how to put it to use. According to Megginson and Scott (2008), it has always been the case that the standards and terms of credit and the approach are functions of the industry type and the business surroundings. It is incumbent on firms to issue and or deliver invoices immediately and constantly seek ways to enhance invoicing accuracy with time since there is a direct relationship between invoicing times and payment periods. The earlier delivery of accurate invoice tend to influence the customer to pay earlier; grant financial motivation to induce customers to agree to pay invoices electronically; initiate collection moves earlier than due dates on customers with late paying records. Follow up on invoices not provided upfront to ensure they have clients and are satisfied with the details as well, deal with concerns promptly and in cases where a customer indicates a problem with a part of the whole invoice, request partial payments while addressing the consent immediately. Customers identified with overdue debts should be notified immediately and frequently by personal visits, delinquency letters, or phone calls. Regular follow up on delinquent accounts enhances the chances of retrieving them. Many customers tend to prioritize payment based on the amount of anticipated pressure. It is good to send a polite and friendly reminder to customers who are a few days late with their payment. A more toned severe letter may follow as the debts stay outstanding for more extended periods (Kent et al., 2005). The firm has to call on the delinquent customer to discuss payment and agree to revise payment schedules when customers have genuine and reasonable excuses. Penalize delinquent accounts, for it is one effective way of ensuring payments on time. This can be done by taking off discounts and charging interest on overdue balances (Richard 2008). In situations where the transaction was conducted with sureties or guarantees, it is just a matter of utilizing the options for obtaining payment (Megginson and Scott 2008). In the cases where all efforts geared towards debt collection prove futile, the firm can opt to engage a factoring agency to do so. Though this is not the optimal best practice in handling clients, it guarantees payments but at a cost, usually a percentage of the amounts involved with no demand upfront cash outlay. If the amount involved has been captured as bad debt already, the firm is at an economic advantage. The firm can also institute legal action against the delinquent customer and seek legal judgment against the debtor. It is advisable to opt for this if the cash sums involved are enormous since it comes at a substantial cost. Furthermore, legal action may push the indebted customer into bankruptcy, with no guarantee of payment soon. A cost-benefit analysis would be advisable to be made at each stage of debt collection actions to compare the cost of further collection actions against just writing off the account as a bad debt.

e. **Credit control and monitoring:** The relevance and vested authority in the credit department of a firm determines the level of efficiency in accounts receivable management. This emanates right from the formulation and execution of credit and collection policies. Since credit business is a significant finance function, it will be sensible and prudent to make the chief finance officer if any officer at the helm of affairs in finance is responsible and in constant touch with the credit department in all their dealings. All other departments and individuals responsible for the solvency and cash flow of the firm should be pulled

together when it comes to the issue of credit since it has a relationship with the entity's solvency. Curtis (1959) contends that the sales department at all times should be pressed to ensure that value for money is realized out of every sales transaction before it is closed. Given this, it is reasonable and advisable for the sales and finance departments to merge efforts to administer sales, especially when credits come into play. A written credit policy gives relevance to the existence of the credit department as a unique entity (Miler, 2002). Therefore, an organization needs to set up an autonomous credit department equipped with modern technology and run by personnel qualified in credit management who can address the needs in various inter-related functions professionally. This helps to ensure adequate coordination that will lead to the synergy among the three departments aforementioned. The essential responsibilities of a credit department as portrayed by several scholars include the following:

(i)   Institution of credit terms and the ceiling.

(ii)   Assessing credit risk from time to time and teaming with the marketing department in credit transactions.

(iii) Analyzing credit risk and ensuring compliance to credit terms by customers through monitoring and control.

(iv)   Ensuring customer records update and accuracy to avoid trade disputes and doubts.

(v)   Collection of payment in due time and ensuring business continues, especially with loyal customers.

f.   Techniques for monitoring quality of accounts receivable: This paper considers three primary techniques for monitoring the quality of accounts receivables, and they are (i) Average-collection-period, (ii) Aging of accounts receivables and (iii) Payment pattern monitoring. These techniques are further discussed below.

(i)   Average Collection Period: The Average Collection Period (ACP) represents the average number of days' accrued debt resulting from sales remains outstanding. According to Graham, Scott (2010), the first components is when time sales are realized to the period the customer initiates payment. The second component deals with the receipt, processing and collection of the payment once initiated by the customer. On the assumption that the receipt, processing and collection time is constant, then the Average Collection Period project to the firm, the number of days (on average) it takes customers to pay their debts (Graham et al., 2010). The firm may use the estimated average collection period for trend analysis to compare the collection period over time. Secondly, it may be used to compare with the firm's set target and compare with the industry average. It is mathematically represented as shown below;

$$ACP = \frac{Average\ accounts\ receivable}{Credit\ sales} \times 365$$

(ii)   Accounts Receivable Aging Schedule: This method is used to monitor accounts receivable by segmenting receivables by their ages, thus the number of days outstanding using an ageing schedule. It provides valuable information about the state of a firm's accounts receivable.

(iii) Payment Pattern Technique: Payment pattern is the trends customers usually follow in settling their debts. It is expressed as the percentage of the total collection of sales made within the month. One approach to determine the payment pattern is to analyze the company's sales and resulting collections every month. Thus, for each month's sales, the firm computes the amount collected within the period and subsequent months. Every business has a pattern in which its receivables are paid; if changes occur in the payment pattern, the firm should consider reviewing its credit policies. By tracking these patterns over time, the company can determine the average pattern of its collection using either a spreadsheet or regression analysis. These patterns tend to be reasonably stable for most companies over time, even as sales volumes fluctuate (Megginson, 2010).

NEW TRENDS/METHODS OF RECEIVABLE MANAGEMENT
RISK MANAGEMENT WILL BE FRONT AND CENTRE.

The only way for A/R departments to successfully identify and mitigate risk is by establishing an objective, data-driven view of likelihood to pay, and that's something we expect to see companies dedicate themselves to in 2021. We also anticipate A/R enhancing their current customer breakdown by using some of the segmentation techniques often seen in Marketing and Sales to help categorize customers and identify not just who is unlikely to pay but how to go after them differently.

If these things are done correctly, departments will gain a better understanding of their whole customer landscape and will be able to take better-targeted actions and collect more as a result.

INCREASED FORECASTING FREQUENCY

With the business landscape changing day-to-day and the fortunes of companies sometimes shifting overnight, forecasting needs to be both more regular and more accurate. After all, there's no point looking a month down the line when you don't know what tomorrow will bring. Instead, A/R departments need to know where they are today, where they're likely to be the day after, and what the next week might look like as a result.

Improving the quality of forecasting takes time and resources. But the good news is, most A/R departments already have the data they need to create more vital forecasts – it's just a matter of finding it all, bringing it all together, and building some repeatable processes around it. For that reason, we fully expect to see significant investments in this area over the year.

FINALLY, MASTERING MASTER DATA.

Not every change has to be about wide-scale transformation. There are also some more straightforward actions A/R can undertake to improve cash flow. An excellent place to start is going back to basics and correcting all of the small, inefficient process elements that can add up to have a measurable, negative impact on payment times.

The fact is, incorrect details in master data can delay payments by weeks. And in the current environment, any payment delay can have significant consequences. That means all these ugly, monotonous tasks, like reconciling customer records, need to be addressed promptly. And that requires a certain level of investment.

The good news is if A/R departments can dedicate the required resources to it, correcting master data d can have a significant impact on cash flow. That's why we expect to see messy master data finally addressed in 2021.

AR WILL ENTER THE AGE OF AUTOMATION.

Automation is currently a hot topic in every industry, promising increased efficiency, lower operating costs, and reduced human error. But when such a big part of A/R is getting on the phone to collect payments, you might ask what there is to automate.

The answer is all of those small, time-consuming tasks that surround the core job of collection. Correcting master data — and keeping it up to date — can be one of these tasks. Data gathering efforts — which often span multiple systems — can also be automated to generate and send invoices.

We expect to see A/R departments gain two significant advantages from embracing automation over the coming year. Firstly, data accuracy will be improved, and the chances of errors leading to late payments all but eradicated.

Secondly, employees will no longer have to focus on time-consuming rudimentary tasks like data entry, which means they'll have more time to focus on what they're best at – collecting payments.

PARER LESS TRASACTIONS.

It seems remarkable that we're talking about paper invoices in 2021, but Accounts Receivable – and Accounts Payable, for that matter – is a function that still relies heavily on paper processes.

With workforces over the last year becoming decentralized, the digitization of these processes has never been more in focus. The last year has made it very clear that sending and mailing paper invoices, which requires going into the office and expecting that someone else on the other end is also at the office to process that paper — is unsustainable. And there are some considerable benefits to be gained in doing so.

Digital invoices are quicker to create and reach the customer electronically, which means cash comes in faster, and A/R professionals can spend more time focused on more critical tasks. This is one area where automation can play an important role, taking over invoice creation entirely, reducing manual errors, and improving efficiency.

Perhaps the most significant benefit of digital invoices, though, is that they can be a vital source of data to fuel other initiatives, like gaining greater visibility into likelihood-to-pay. With that in mind, don't be surprised to see paper invoices filed away for good this year.

A RISE IN FACTORING

Not knowing where or when the following payments are coming from can be scary, especially when margins are tight. So often, selling A/R can feel like a last resort— you simply aren't going to get as much as you would if everybody paid upfront. But these are unique times, and there are some significant benefits to factoring that we think may turn some heads in 2021.

Namely, the risk of non-payment is eradicated, forecasting becomes a lot easier, and the resources you're currently dedicating to chasing non-payments can all be put to better use within the organization.

Of course, all of this comes at a price. That's why many organizations may see factoring as a short-term solution while they address the other considerations we've covered above. But when unpredictability reigns, sometimes the devil you know can provide a certain amount of reassurance.

CONCLUSIONS:

We have examined the both the practices carefully. We have understood that the existing practices and the future trends. We have understood the support that has been provided by the existing practices is good enough to support the receivable management activity. But along with the existing practices we have to adopt the new methods so that the profitability of the organization will increase.

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AN ANALYTICAL STUDY ON THE IMPACT OF CELEBRITY ENDORSEMENT AND REPETITVE ADVERTISMENTS ON CONSUMER OF RAJKOT CITY.

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ABSTRACT

Every company invest in various media platforms to influence consumer behaviour (CB). Advertisement on every media platform has a different composition that engages the consumers in a distinct way and different impact on consumers mind. Televisions advertisements are one of most successful and most persuasive means of communication, almost each and every individual are watching TV advertisements, and purchase something because of TV advertisements. There are so many factors which makes advertisements persuasive. The article is focus on effects of television advertisement with celebrity endorsement on consumer buying behaviour and to identify the effects of repetitive television advertisement in consumer's mind.

Key words: Persuasive advertisements, Celebrity endorsement, Repetitive TV ads.

INTRODUCTION:

Television advertising is the sending of promotional messages or media content to one or more potential program viewers. The viewers are influenced by the messages which results in actions that benefit the advertiser.

Advertisers desire to provide messages to people who are interested in their products or services. Advertisers pay media companies (such as broadcasters) to send their promotional messages. Advertisers coordinate the selection of broadcasters and transmission of their promotional messages using advertising campaigns.

Broadcasters operate systems that gat her, organize, and provide people with content that they want to see. The broadcaster may purchase license rights for content they send through their systems or create new (original) programming.

Viewers select programs they want to view and some of these programs contain promotional messages which motivate some of them to take actions that satisfy advertiser's business objectives.

DEFINATIONS OF TELEVISION ADVERTISEMENTS:

➢ "Television means an electric communication medium that allows the transmission of real time visual images, and also sound."

➢ Tele means "from far away." And vision means " to see."

➢ " a television advertisements or television commercial often just commercial, advert, ad, or ad film, (India) is a span of television programming produced and paid by an organization, which conveys a message, typically to a market a product or service."

Television means a device to which a picture and sound can be broadcast by means of radio waves or a cable.

REASONS WHY TV ADS ARE EFFECTIVE:

➢ **Massive reach:** Television advertisements have massive reach than other medium, because audio and video effects have lot of impact on consumer's mind.

➢ **We watch a lot of TV:** According to survey we spent majority time on social media and TV ads so Television advertisements with good script and Background of advertisements effects on consumer's mind.

➢ **Water cooler gossip:** This might sound terribly old fashioned, but it is still alive and well and, in fact, probably even more so than in the past. When something happens on TV and especially when it is one of those "you won't believe this" moments, tweets are instantaneous!

➢ **Responsive:** Any brand advertiser will tell you that when they are on TV they see a positive reaction from consumers. It has great impact on viewer's mind.

➢ **Emotion:** TV has the ability to create deep, long-held emotional brand associations and this is an almost unique quality. But this only happens if you have great creative, and if you have both, this combination will lead to a more effective and compelling campaign.

> **Fame:** Everyone wants to be famous, as does every brand, and TV is the best medium for making and keeping brands famous! An example would be (and I'm sure that most readers are too young to remember this example) the old Cremora ad: "It's not inside, it's on top". It's the buzz, the talk ability. Brands can buy awareness, but you can't buy fame, and again this comes down to great memorable creative.

> **Audio and Video combination:** In Television advertisements the combination of Audio and video have great impact n consumer's because TV ads have Script of ad, background music and jingles so it create curiosity in viewer's mind.

LITERATURE REVIEW

1. **D. Shanthi And Dr. Ashok Kumar M. (2016):** The author compares the **"Influence Of Television Advertisements On Buying Behavior Among Rural And Urban College Girls." objective** of the study is to find out the relationship between residence of the respondent and purchase based on advertised products and to study the difference in decision making on the basis of price and nature of selected products among the rural and urban college girls. Researcher c**onclude that** the girls viewed TV advertisements with an interest found them entertaining and informative.

2. **Ahmed nasbeel siddiqui (2014):** Researcher Presented study entitled" **Tv Ads Impact On Consumer Purchase Decision. Researcher Highlights The Influence Of Different Contents Of Advertisements On The Consumer Purchase Intention In Uht Milk." Objective** of the study is to identify the impact of TV ads on purchase decision. researcher **concluded that** youngsters purchase goods or gathered information of product through television advertisements, so to attract the youngster television advertisements should be attractive, and for that they can use jingles, good script and attractive people.

3. **Nidhi Rani And Dr. Vikas Sharma (2016):** Conducted study on **"IMPACT OF TELEVISION COMMERCIALS ON PURCHASING BEHAVIOR OF MASSES." Objective** of the study is to find out that how commercial influence purchasing decision of masses. And how T.V. advertisements changes the standard of living of consumer. For that researcher has **collected** the data of **225 respondents** through **questionnaire** in Rajasthan, by the way of random sampling. Data were **analyzed** by using **Simple Percentage Analysis** and researcher **concluded** that adult have strong belief that T.V. commercials has considerably influenced their buying behavior

4. **Agwo m Edwin, ikpefan, ochei alimen atuma okpara, achugamonu, bede ,u (2014):** Conducted the study on **"CONCEPTUAL REVIEW OF THE EFFECTS OF ADVERTISING ON CONSUMER BUYING BEHAVIOR." objective** of the study is to examine the usefulness of advertising in persuading consumers to adopt a new or an existing product in Nigeria. After the study researcher **concluded** that a good advertisement will surely persuade consumer to experiment the particular product. But advertisement should be executed long enough to generate such curiosity that will motive consumers to buy.

5. **Dr. R. Khader Mohideen And P. Saravanam (2015):** Conducted study on **"A STUDY ON FACTORS DETERMINING BUYING DECISIONS THROUGH TELEVISION ADVERTISEMENTS FOR CONSUMER DURABLES GOODS." Objective** of the study is to analyze the impact of television advertisements, on the purchase decision of customers towards durable goods. researcher **concluded** that attractive advertisements are welcomed by respondents likable elements in advertisement engage the audience and will create the desired result.

OBJECTIVES OF THE STUDY

- To identify the impact of television advertisements on consumers.
- To identify the effect of celebrity endorsements in TV advertisements.
- To identify the effect of repetitive TV advertisements on consumer's mind.
- To identify overall influence of TV advertisements on consumer buying behaviour.

SIGNIFICANCE OF THE STUDY:

This study gives clear cut picture about the impact of Television advertiisments on consumer's mind of Rajkot city.

RESEARCH METHODOLOGY:

The research design of a study outlines the nature of information required for the purpose of the study, the method of data collection, the technique used for the analysis and interpretation of the data for the study.

- **Types of the Study:** This research work is in the form of empirical study, in which the researcher tried to study the overall impact of Television Advertisements on consumer's mind and in their buying behaviour.

- **Sample Design**: Keeping in view the problem and scope of the study. Convenience sampling method was adopted to selected respondents in Rajkot city to represent an overall picture of the city.

- **Sample size:** For this study the researcher has taken 100 respondents for the study. convenient sampling method is used.

Tools & Techniques: Percentage analysis.

ANALYSIS AND INTERPRETATION:

**Respondent's Statement Regarding Advertisements Are Effective Tool Of Communication?**
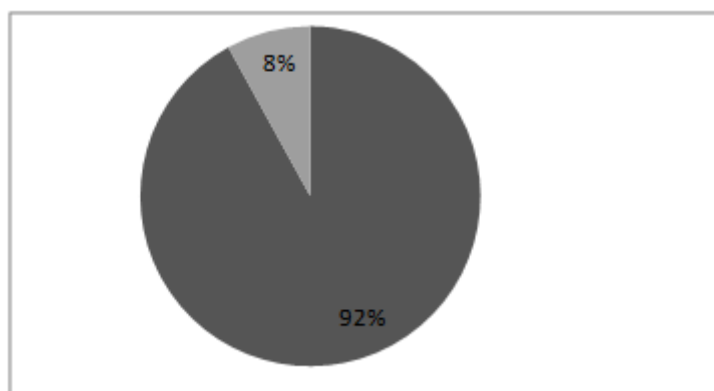
(**Source:** primary data from survey

Interpretation:

From the above graph we can interpreted that majority of the respondents 92% are think that advertisements are effective tool of communication only 8% respondents thinks that television advertisements are not effective tool of communication.

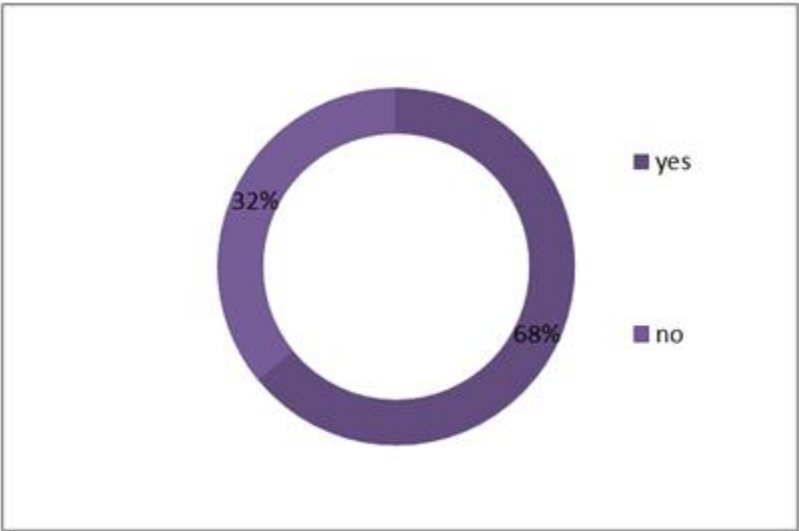**Respondent's Statement Regarding Whether They Buy A Product Because Of Advertisements?**
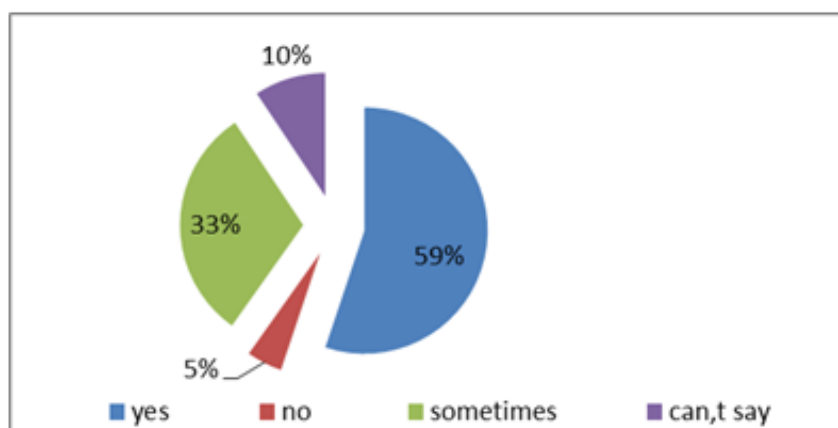
(**Source:** primary data from survey)

Interpretation:

The above figure are represents the statement that whether respondents are buy product or services because of their advertisements? And majority of respondents are purchasing product or services because of their advertisements that is 59%. 33% respondents are sometimes buys a products because of advertisements. We can interpret that there is greater impact of advertisement on consumer buying behaviour.

Respondent's Statement Regarding Whether They Purchase Product Because Their Favourite Celebrities Appears In The Advertisements?
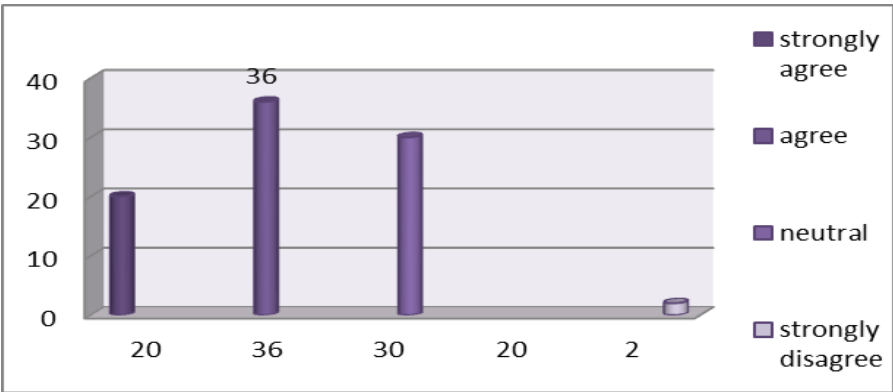
(**Source:** primary data from survey)

Interpretation:

The above figure represents the classification of respondent's statement whether they they are purchasing product because of their favourite celebrity appears in the advertisement? And 68% the majority of respondents are buys a product because of their favourite celebrity appears in the advertisement. 32% respondents does not have any impact of celebrity appears in the television advertisements.

**More And More Advertisement Viewed By Consumer More Likely They Go And Buy A Product**

(**Source:** primary data from survey)

Interpretation:

The above chart represents the statement that repetition of advertisements affect consumer to buy that product. And from chart and can interpret that 20% of respondents are strongly agree with the statement. 36% of respondents are agreeing with the statement, so Repetitive advertisements have great impact on consumer's mind.

They Purchase Something Because Of Their Advertisements
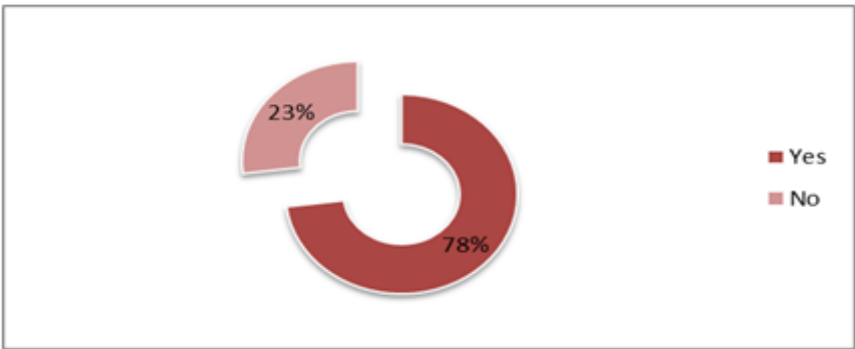
(**source:** primary data from survey)

Interpretation:

The above figure We can interpret that majority of respondents are purchase something because they saw the advertisement of that product. Only 27% respondents says that they are not purchasing product because of their advertisements.

FINDINGS:

- Based on the study it can be concluded that, majority of respondents believe that advertisements are effective tool of communication.

- Based on the study it is also concluded that impact of celebrities appears in television advertisement is affect the buying behaviour of consumer.

- Based on above findings it is also conclude that more and more television advertisements are viewed by consumer more likely the consumer is go and buy the a product.

CONCLUSION:

Consumer find television advertisements effective. Consumer like advertisements with celebrity endorsement, Television advertisements play a very important role in consumer buying behaviour so company should more focus script of advertisements.

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A STUDY ON FINANCIAL LITERACY ACROSS WORKING CLASS IN MUMBAI

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ABSTRACT
*Financial literacy is the ability to comprehend **finance**. It refers to the set of skills and awareness that allows an **individual** to make conversant and effective **decisions** through their understanding of **finance**.*

*Several experiential studies have found that poor risk divergence, little levels of **investments**, high cost liabilities and lack of **financial** plans for retirement are the results of lack of **financial literacy**.*

*Also one of the major reasons of **Financial Crisis** is recognized as lack of **Financial Literacy**. Thus enhancement of **financial** awareness in the **state** of **Maharashtra** is vital for economic wellbeing of individuals as well as for the **economy** of the **state**.*

*The implication of **financial literacy** as a transformation agent on the **financial inclusion** agenda of the state is undisputed in academic as well as practitioner's circle.*

*The fact needs be emphasized that in today's world that promotes gender equality, both **women** and **men** need to be sufficiently **financially literate** and also create awareness in young children about **financial literacy**.*

*However, **children** often are observed to be playing a passive role in case of **financial decision** making and are avoided by elder members of the family.*

*This paper takes a literature analysis of definitional and in depth phases of **financial literacy**.*

*It makes an attempt to identify the various aspects involved in defining and measuring **financial literacy** in the **state** of **Maharashtra**.*

*Ample level of **financial literacy** is essential for **financial** welfare of the individual and that of the family.*

It effects short term requisite like day to day money management as well as long term requirement like buying home, children education, and safe and sound retirement.

*Ineffective money management can also result in behavior that make consumers more vulnerable to a **financial crisis**.*

*However, after conducting the **survey** and applying **Annona** testing it is concluded that there is no significant difference between the **literacy** rate among **male** and **female**.*

INTRODUCTION
People in the economy criticize about a lot of things. The topics are varied such as politics, rising onion prices, loss of humanity and most importantly; shortage for funds. They have an infinite list of wants but they don't have an infinite backup. As it was mentioned by Robert Kiyosaki in his famous book named 'Rich Dad Poor Dad', "It's not how much money you create but instead It's how much money you save." The main rules of management of money like preparing a budget, drawing all the income and expenditures, choosing the best investment substitute etc. are somewhat looked upon as human instinct but in fact it is an art which has to be finalized and maintained.

Financial Literacy is the intellectual understanding of financial constituents and skills such as make financial arrangements, investing, borrowing, taxation, and personal financial management. The absence of such important skill is being referred to Financial Illiteracy. Financial literacy is therefore arrangement of a person's skills, knowledge, attitudes and ultimately their behaviors in relation to money". It is most commonly viewed as a specialized kind of consumer expertise pertaining to how one manages one's financial affairs successfully or a personal finance-specific form of human capital. It is a measure of the degree to which one understands key financial conceptions and possesses the ability and self-confidence to manage personal finances through suitable short-term decision-making and sound, long-range financial planning, while mindful of life events and changing economic conditions. Though conceptually, financial literacy refers to skills, existing measures **of monetary** literacy are dominated by measures of objective knowledge. The skills of financial literacy turn around some diverse concepts which are Earning, Savings, Investing Spending, Budgeting, Borrowing, and Protecting. The main advantage **of monetary** literacy is that it enables us **to form** clever financial decisions. Being financially literate **may be a** skill that brings forth an

assortment **of advantages which will** improve **the quality** of living **for people** through **a rise** in financial stability. This are the benefits of being financially literate:

❖ Ability to make better financial decisions.

❖ Effective management of money and debt.

❖ Greater equipped to reach financial goals.

❖ Reduction of expenses through better regulation.

❖ Less financial stress and anxiety.

❖ Increase in decent and ethical decision-making when selecting insurance, loans, investments, and using a credit card.

❖ Effective creation of a structured budget. According to the report conducted by **the worldwide** Financial Literacy Excellence Center, only 24% of the Indian adult population is financially literate. In contrast to other major developing economies, the financial literacy rate of India is the lowest. This is because of inter-state disparities, lack of formal training and awareness. While many other emerging economies have better financial literacy rates, there's quiet opportunity for more development. It in fact have emotional impact on your ability to provide for yourself and family, your attitude to money and investment, as well as your contribution to your community. Financial literacy empowers people to recognize what is needed to achieve a lifestyle that is financially balanced, supportable, ethical and responsible.

One can improve their financial literacy by reading business papers, magazines or publications. And also one can make a habit of reading about sections of finance in newspapers and journals from where they can get abundant information. Another way to develop your awareness is to read finance books suggested by any finance expert. Financial literacy would help to develop the quality of financial services and contribute to the economic growth and improvement of a country. Also Women and children are less financially literate than men and are aware of finance and the related concepts. They are being not allowed to involve in the financial decisions taken in family in many cases. Due to growing in complexity of the economy, individual needs and financial products, the individual must have financial literacy to manage his personal finances and select the correct option for his own selves.

OBJECTIVES OF THE STUDY

The present study is intended to achieve the following objectives: -

❖ To study how an individual, plans his/ her finances for their personal as well as professional lives.

❖ To assess the awareness of the financial concepts among Males and females across Mumbai.

❖ To gauge the level of understanding of investment, insurance and budgeting habits.

❖ To know the participation preferences of an individual in financial activities.

❖ To analyses what factors contribute towards increasing the financial literacy of an individual as a whole.

❖ To make awareness and inform individuals on access to financial services, to educate the public or investors on the Financial Literacy, to protect the interest of the investors, to create awareness on availability of various types of Financial Products and their features, provide necessary infrastructure for public or investors to develop the necessary skills and knowledge to become financially literate.

❖ To change attitudes for interpreting knowledge into behavior, to provide assistance to public or investors to develop and maintain suitable standards of competence for monetary education and literacy through examination and continuing education, and to make individuals understand their rights and responsibilities as clients' of financial services.

RESEARCH METHODOLOGY

For the purpose of the study, data was collected from primary as well secondary sources. Secondary data was taken in order to analyze the literacy level in city of Mumbai. In order to further analyze how much is the

literacy level in Mumbai and to understand the importance of financial literacy education in individual investors, Society as a whole and each and every person belonging to all age groups which is very essential. Therefore, primary data is collected by the way of standard structured questionnaire.

DATA COLLECTION
A structured questionnaire was circulated to a sample of 100 of which 70 responded completely filled.

TOOLS TO ANALYZE DATA
❖ **Descriptive Analysis:** A combination of pie charts, bar graph, percentages was the tools used for the descriptive analysis of the data.

❖ **Inferential Analysis:** For the inferential of the data use of Hypothesis testing was used.

DATA ANALYSIS AND INTERPRETATION
Descriptive Analysis: The Paper examines the level of **Financial Literacy** amongst the population across Mumbai. The Data collected for study has following Demographic Composition.
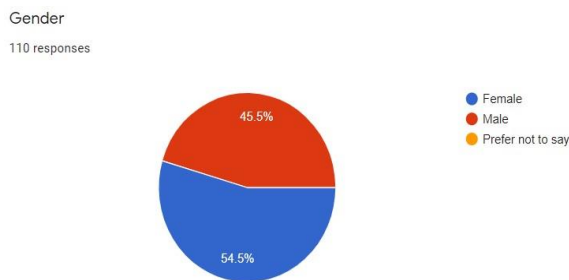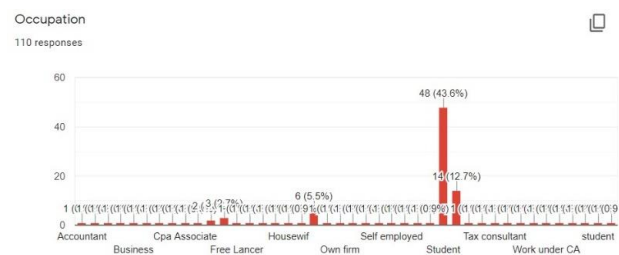

Fig.01

Fig.02

The data for the research has been collected from 110 respondents across the city of Mumbai. The Survey samples comprises of respondents with different Occupations. There were 50 Male and 60 Female respondents. It has found out from the study that 45.5% Male and 54.5% Female are well versed with the knowledge of Finance.

Fig.03

Fig.04

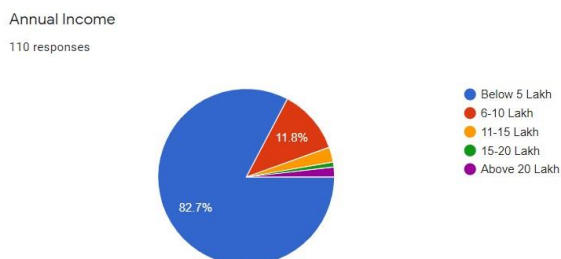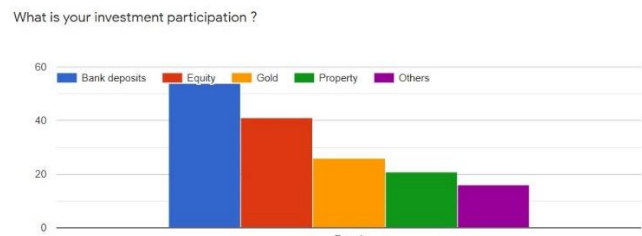The above figure, (03) indicates the distribution of respondents on the basis of income, of which 82.7% were having income to be less than Rs. 5,00,000 p.a. and10% were with more than Rs. 20,00,000. And in figure, (04) more that 50% of respondents are investing through bank deposits, whereas 40% of overall respondents invests in Equity segment of the market and less than 20% invests in other segments.
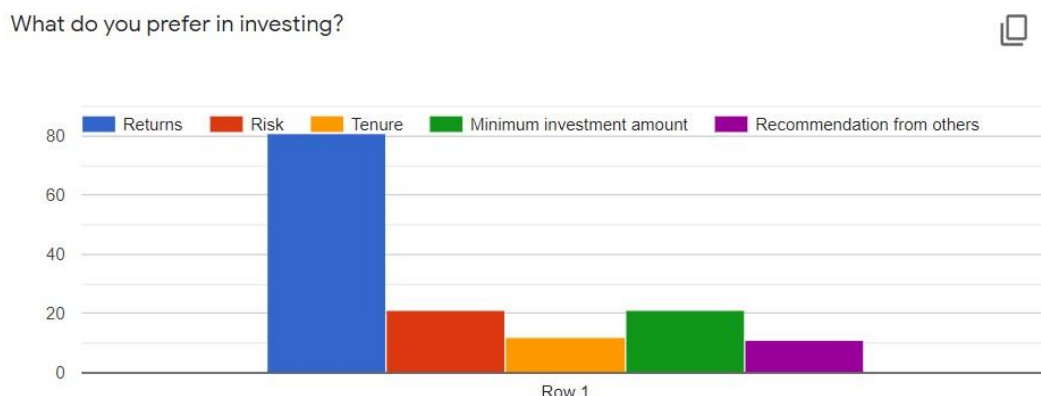

Fig.05

The above figure (05) shows that 80% of total population give preference to Returns on Investment while 20% consider risk factor and 10% invests on the basis of recommendation from others.

Inferential Analysis: In order to study the level of Financial Literacy across working professionals, hypothesis testing was conducted on the data collected. Following hypothesis were formulated for the purpose of study.

H01: There is no significant difference in the level of Financial Literacy between males and females across the city of Mumbai.

H1: There is a significant difference in the level of Financial Literacy between males and females across the city of Mumbai.

ANOVA

Source of Variation	SS	Df	MS	F	P-value	F crit
Between Groups	169.4	4	42.35	0.325269	0.850449	5.192168
Within Groups	651	5	130.2			
Total	820.4	9				

F critical values between groups 5.192168

As F calculated value between groups (0.325269) is less than F critical value (5.192168). Thus, we accept the null hypothesis and can conclude that there is no significant difference in the level of Financial Literacy between males and females across the city of Mumbai.

CONCLUSION

Financial Literacy has become one among the topmost priorities for many nations today as understanding basic financial concepts allows people to manage their wealth in a more organized way which in turn helps in the economic growth of the nation. It is proved that individuals with appropriate financial education and knowledge make better financial planning and makes the foremost of the available financial resources for optimum benefit. It helps in improving the financial knowledge of people. It brings clarity on basic financial concepts and principles such as sound investment decisions, debt management, financial planning etc. It enables to manage personal finances efficiently. It helps in making appropriate financial decisions about investing, saving, insurance, managing debts, buying a house, child education, retirement planning etc. It helps individuals to achieve financial stability and financial freedom.

It helps in understanding the difference between assets and liabilities. It helps in developing the skill sets required for better financial planning and managing your money. It provides in-depth knowledge on financial education and strategies which are indispensable for achieving financial growth and success. It helps you in generating, managing, saving, spending and investing money. It enables you to be debt free by inculcating financial knowledge. Financial literacy is a main ability one needs to have as it increases your financial proficiency. Planning finances, managing budgets and savings should be taught right from the graduate school days.

Altogether one has to do is to established their goals and plan their finances and manage all. The findings of the research conducted shows a lacking in an arena of different concepts amongst the respondents representing the working population of Mumbai. 45.5% males and 54.5% females participated in the survey. The respondents are literate enough as 82% of total respondents are students of finance. More than 50% of respondents still look upon the traditional method of investing which are bank deposits. Here financial illiteracy is seen as they are not much aware about the other investment methods like company deposits, retirement funds, etc.

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❖ Asian, jurnal of Research in Banking and Finance Vol.2 Issue 4, ISSN2247323Journal of Asian Research Consortium financial literacy: an indian scenario dean roy nash. International Journal of Engineering, Business and Enterprise Applications (IJEBEA) www.iasir.net IJEBEA 13-145; Page 155 Financial Literacy and its Determinants Puneet Bhushan

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THE IMPACT OF WOMEN IN WAR AND ARMED CONFLICT AND THE ROLE OF THE UNITED NATIONS PEACEKEEPING MISSION

Dr. Sachin S. Werulkar

ABSTRACT

This paper discusses the problems faced by women in war and conflict zones. It also explores sexual exploitation and gender-based violence, displacement of girls and young women in refugee camps, public health effects, and social effects, Human rights violations in the war and conflict society. A society that is known to have witnessed many civil wars and armed conflicts . In addition, the study also discusses humanitarian assistance, human security and international peace and security. Which is most relevant in the conflict affected area from the Women and UN Peacekeeping perspective.

Keywords: war and conflicts, Peacekeeping, Security Council Resolution 1325, Peace and Security (WPS)

INTRODUCTION:

A study of world history shows that women never wanted war .Because of war, women are greatly harmed. Whether killing their children or killing their husbands. They are considered as a tool In war, aggression or rape of women by the winner is considered as a weapon to defame enemy birds. Sometimes it is considered as a means of consumption and luxury. The effect of which remains on women from lifetime . Then she has to endure degrading treatment from her own community. This makes women always show their preference for peace situations

The nature of warfare has changed in the present times; it is fought by full time, trained soldiers. But when war or armed violence goes out of control, all rules, morality are put aside. Victory is based on revenge, hatred and violence, and the soft target is the women and children of the enemy. Sexual abuse and rape of women are widely used as a weapon, be it the Lebanon War or the Bangladesh Liberation War.

Women experience war differently than men. They see for the first time the unique effects of conflict, increasing militarization and violent extremism on their communities, their families and their own bodies.[1]

Women usually don't start wars, but they do suffer heavily from the consequences. Conflict spurs much higher rates of sexual violence. It renders women acutely vulnerable to poverty, the loss of jobs and the destruction of assets such as homes. Essential health services crumble, underlined by a maternal mortality rate that is 2.5 times higher on average, in conflict and post-conflict countries.[2]

Violence around them has a different effect on them than men, more than the scenes in which women, shoulder to shoulder with men in timely struggles, maintain a family system even after enduring unjustified atrocities, and maintain their modesty, take care of their existence by following the rules of society. You also have to fight on the battlefield. Sometimes they travel long distances to bring their children to safety.

SOME GLOBAL ISSUES AND EFFECT SINCE THE FOUNDING OF THE UNITED NATIONS

Nigeria is in a state of chaos. There is a large-scale drug trade for weapons of mass destruction. Protesters are targeted here. Terrorist rebel groups such as Boko Haram have killed scores of civilians, including women. the abduction of women and girls has become commonplace. the rebel group has destroyed civilian homes and schools.[3]

Syria's civil war, which has been raging since 2011, has killed more than 200,000 people, displaced more than 5 million and displaced more than 6 million internally displaced people, mostly women and children, because of the endless civil war and It is divided into two parts and there is a huge aerial bombardment on both sides. In which the life value of the citizen has become zero.[4]

Since 2015, as the ISIS group has gained ground in the region, sexual exploitation, trafficking, abduction, and murder of women have become a common occurrence. It is necessary to understand the numerous roles played by women in conflict and to look at the root causes of conflict and to design sustainable disarmament and reconstruction programs that respond to their needs.[5]

During the Khmer Rouge regime, millions of people were brutally murdered, not to mention men and women .It was a matter of human cost .In the Khmer Rouge regime, genocide and crimes against humanity were investigated and brought under international law.[6]

WOMEN OF STATUS DURING WAR AND ARMS CONFLICT

1) **Sexual Exploitation And Gender-Based Violence:** conflict and displacement significantly increase a country's risk of becoming a source of human trafficking, enforced prostitution and other crimes. Moreover, sexual and gender-based violence has persisted in some countries long after the end of conflict. These problems can be exacerbated by cultures of impunity that often arise out of conflict, as well as by the absence of effective institutions to protect citizens and bring perpetrators to justice.[7] Thoughts, religions, ethnicities and separate spheres of controversy, although the time is different, the pain of women in the field of war and violence is the same. Bosnia-Herzegovina, Colombia, Kosovo, Cambodia, Liberia, the Democratic Republic of Congo, Rwanda, Angola, Sierra Leone, Somalia and East Timor, thousands of women in these war zones live in general violence such as abduction, rape camps and forced abortions. Intentionally infected with HIV / AIDS and their uterus damaged by AK47s. On the battlefield, violence was used against women, men, families, communities and insulting women's bodies.[8]

2) **Displacement Of Girls And Young Women In Refugee Camps:** Violent wars target women and children, they face physical and sexual abuse, they have to live as refugees, and they have to face persecution camps. Persecution of Jews by Second World War Germany. The atrocities perpetrated by the United States on Vietnamese citizens in the Vietnam War are notorious.[9] Between 2000 and 2011, the Security Council adopted five important resolutions (1325, 1820, 1888, 1889, 1960) to prevent sexual and other crimes committed during and after violence against women and girls in refugee status.[10] Syria has witnessed unprecedented and unimaginable devastation and destruction since the start of the civil war in March 2011. At the same time a large number of people have become homeless. More than 5 million Syrians have fled the country and about 6 million have been displaced within the country.[11] Violence erupted in August 2017 in Myanmar's Rakhine state, creating a serious humanitarian crisis that has created a mountain of misery for millions of Rohingya. By May 2018 alone, more than nine million Rohingya have arrived in the Cox's Bazar, Bangladesh, as refugees.[12] at present an estimated 25 percent of internally displaced peoples are young women, with pregnant women making up another four percent. There are 70.8 million people around the world who have been forcibly displaced—the highest level of displacement since World War II. Among the forcibly displaced, there are 25.9 million refugees, 41.3 million people displaced in their own country, and 3.5 million asylum-seekers awaiting determination on refugee status. More than half of the world's 25.9 million refugees are under 18.[13]

3) **Public Health Effects:** In war and violence areas, all systems fall through the cracks. Health systems are affected by insufficient manpower and resources. As a result, the injured, the sick, children and pregnant women are deprived of health services. To address this issue, a number of international organizations, including the United Nations (UNICEF,WHO) and the N.G.O. But for general health care, people affected by war and violence face many problems. *n*o drinking water or sanitation facilities are available in the area. no nutritious food is available. babies cannot get enough milk and other necessities. "It takes us out of the clinic to look for evidence of physical, mental, sexual, spiritual, and social harm within the multiple environments of deprivation and violence that accompany war and that can fester and worsen during post-conflict periods." [14]

4(**Social Effects:** Conflict affects men and women differently. Women are victimized three times. First , by the offense and second, after the crime with no access to justice or health and psychological assistance. Thirdly, by segregation within the local community and shame for families and a loss of dignity [15]. Mostly within an environment of collapsed or failing states, poverty and violence prevail. Violence against women is a human rights violation and a serious impediment to women's progress in any area of life. It undercuts women's health, prospects for education and productive work, and ability to participate as full members of their societies, among other consequences.[16]

5(**Human rights violations:** No human rights are seen in the war-torn region. Human rights abuses are rampant, especially in the civil war.The genocide in Serbia, Cambodia, Somalia and Uganda, Congo, Rwanda is unforgettable in human history. In some of these areas, even with the presence of the International Security Assistance Force (ISAF), the massacre could not be prevented .In such a situation, it is difficult to imagine the human rights of an individual.

EFFORTS BY THE UNITED NATIONS RESOLUTION AND RULES

Women and children should be protected from violence and war, they should not be sexually abused, their human rights should be protected and humanitarian assistance should be provided to them so that they can live in a peaceful society. The UN Security Council passed some resolutions and with the provision of training, necessary coordination and monitoring institutes for their proper implementation, we are seeing the right results.

Some important resolutions passed by the security council resolutions on women, peace and security [17]

- UNSC resolution 1325 (2000) Women, Peace and Security

- UNSC resolution 1820 (2008) Sexual Violence

- UNSC resolution 1888 (2009) Protecting women & girls from sexual violence

- UNSC resolution 1889 (2009) Improvement in Women's participation in peace processes

- UNSC resolution 1960 (2010) Reiterates call to end sexual violence

- UNSC resolution 2106 (2013) Operationalizing current obligations

- UNSC resolution 2122 (2013) Affirms an "integrated approach" to sustainable peace

- UNSC resolution 2242 (2015) Strategies and resources regarding the implementation of the WPS Agenda

- UNSC resolution 2467 (2019) enhancing support for survivors and civil society

9 missions with a direct mandate to protect civilians, notably women and girls[18]

THE ROLE OF THE UNITED NATIONS PEACEKEEPING MISSION.

The DPKO had taken concrete steps to implement resolution 1325 (2000), particularly in multidimensional peacekeeping operations such as those in Sierra Leone, Democratic Republic of the Congo, Kosovo, Timor-Leste and Afghanistan. In those missions, gender experts working either alone or as part of a Gender Affairs Unit –- were playing an active role, putting gender issues at the centre of peacekeeping.[19]The Peacekeeping Department had been working on: increasing the number of women in peacekeeping operations; integrating a gender perspective in peacekeeping operations; training in gender awareness and HIV/AIDS issues; preventing and responding to serious misconduct by peacekeeping personnel; and trafficking.[20]

WHY IS IT SO IMPORTANT TO HAVE MORE WOMEN PEACEKEEPERS IN UN PEACEKEEPING MISSIONS?

Women peacekeepers act as role models in the local environment, motivating women and girls in male-dominated societies to push for their rights and participate in peace processes. They instill confidence in women who are frustrated by the violence, and raise their voices against their oppression. Their hopes for future peace are even stronger.

The UN Secretary General stated that the main priority is to increase the number of women - uniformed and civilian personnel - in peacekeeping operations, where the greatest improvement is needed. The strategy aims to increase the representation of women in military, police, judicial, and correctional services personnel from 15 percent to 35 percent by 2028. Achieving this goal will be a big step towards gender equality. [21]

"UN peacekeeping is working towards achieving those goals. The Action for Peacekeeping Initiative appeals for the full, equal and meaningful participation of women in every phase of the peace process. As well as incorporating gender perspectives in the stages of analysis, planning, implementation and reporting. So far, more than 150 member countries have taken up the resolution. " [22]

- The number of female staff officers and military observers has doubled since the first ministerial peacekeeping meeting in November 2017. Since that meeting, 27 countries have changed and started deploying women. Representation of women in the police force has increased by three percent - 30 women. The Armed Police Unit has 9% women.

- The presence of female peacekeepers in patrol squads helps to reach out to local women and men, gather vital information and better understand security challenges. [23]

- Referring to the role of women peacekeepers, the UN Secretary General said, "The deployment of women has been credited for reducing the atmosphere of confrontation at check posts. The reduction in cases of sexual and gender-based violence and the reduction in cases of sexual abuse and abuse are also attributed to the presence of more women in the military. " [24]

- Secretary General Guterres mentioned the Gender Responsive Peacekeeping Operations Policy, which seeks to promote leadership and accountability on the gender, peace and security agenda from the perspective of gender equality.[25]

More Womans Participated In Peacekiping PROCESS

As the inclusion of a broader humanitarian approach to peacekeeping efforts grows, so does the number of women in the peacekeeping family. Women are being deployed in all areas of police, military and civilian, which has had a positive impact on both the role of women in peace building and the protection of women's rights..

One percent of the total uniformed peacekeepers deployed in 1993 were women. Of the approximately 1,25,000 peacekeepers in the United Nations peacekeeping operations in 2014, three percent of the military personnel and 10 percent of the police personnel were women.[26]

The United Nations promotes and advocates the deployment of women in the work of uniformed peacekeepers. But member countries are responsible for the more deployment of women in the police and army.[27]

Women made up 4 per cent of the total police personnel in DPKO missions, and figures were equally low for the military, In its 15 missions, women represented one third of all professional staff. The DPKO intended to be more effective in the coming year in identifying suitable women candidates for senior positions.[28]

WOMEN IN LEADING GOVERNMENT POSITIONS

women preventing conflict Sudan in 2019, 22% of ministerial positions were held by women. including the first ever woman foreign minister central African republic in October 2019, [29] Sudan the first ever woman chief justice was appointed in 2019. UNAMID's mission patrol planning and help prevent sexual and gender based violence (2014 – 2019) Kosovo Ministerial posts held by women increased from 5% TO 14% (2017 – 2019)[30]

It is a great achievement to call women signatories during the 'Juba Peace Talks. 'this is the first time in the history of the Central African Republic that women took part in the 'Khartoum peace talks' and one woman signed a peace agreement last year. in Mali, women are playing important political roles, while in Cyprus, from 2015 to 2017, women from both sides participated in the talks.[31] in Mali, women are playing important political roles, while in Cyprus, from 2015 to 2017, women from both sides participated in the talks. despite this, due to political failures, lack of investment in women's organizations and deeply embodied patriarchal mentality and dominance, women's progress is being hampered which needs to be changed.[32]

PARTICIPATE IN PEACE TALKS (DELEGATES IN PEACE NEGOTIATIONS MEMBERS OF FORMAL PEACE COMMITTEES SIGNATORIES TO PEACE AGREEMENTS.)[33]

- Central African Republic 10% women participants in the February 2019 peace talks. the previous 2018 peace talks included no women

- Central African Republic one-woman ex-combatant signed the February 2019 political accord for peace and reconciliation

- Central African Republic in October 2019, 17% of members of formal monitoring committees at the national level were women and 23% of members of formal monitoring committees at the local level were women

- South Sudan 25% women signatories to the October 2018 revitalized peace agreement south Sudan 28% women participants in local peace negotiations as of July 2019 Cyprus 30% women participants in the peace negotiations that concluded in 2017

Security sector reform (SSR): is essential to post-conflict peace building in order to prevent the reoccurrence of conflict, to enhance public security, and to create the conditions for reconstruction and development. [34]

Post-conflict SSR processes and women's participation.[35]

- In Afghanistan, Kosovo and Liberia SSR measures to recruit and retain women, and to make security institutions more responsive to gender issues presented challenges but also yielded positive results.

- In Peru, Sierra Leone and Timor- Leste truth and reconciliation commissions included mechanisms to address the experiences and justice needs of women.

- Rwandan women parliamentarians made distinctive contributions to SSR by uniting across party and ethnic lines to address issues of women's security.

WOMEN DISARMAMENT, DEMOBILIZATION AND REINTEGRATION (DDR) PROCESSES

Through a process of removing weapons from the hands of members of armed groups, taking these combatants out of their groups and helping them to reintegrate as civilians into society, disarmament, demobilization and

reintegration seeks to support ex-combatants and those associated with armed groups, so that they can become active participants in the peace process..[36]

Women are increasingly involved in combat or are associated with armed groups and forces in other roles, work as community peace-builders, and play essential roles in disarmament, demobilization and reintegration (DDR) processes. Since 2000, the United Nations (UN) and all other agencies involved in DDR and other post-conflict reconstruction activities have been in a better position to change this state of affairs by using Security Council resolution 1325.[37]especially demobilization and reintegration, urges women's informed and active participation in disarmament exercises, and insists on the right of women to carry out their post-conflict reconstruction activities in an environment free from threat, especially of sexualized violence.[38]

The Disarmament, Demobilization and Reintegration Section also supports Special Political Missions in Burundi (OSASG-B), Colombia, Ethiopia (UNOAU), the Great Lakes (OSESG-GL), Haiti (BINUH), Iraq (UNAMI), Libya (UNSMIL), Somalia (UNSOM), and Yemen (OSESGY), as well as non-mission settings such as Cameroon, Burkina Faso, Ethiopia, Ivory Coast, Lake Chad Basin, Mozambique, Republic of Congo and Sierra Leone.[39]

INCREASING PARTICIPATION OF WOMEN IN THE POLITICAL PROCESS

It also increases the probability of a peace agreement lasting 15 years by 35%. Women's leadership is fundamental. In conflict-affected countries, women's share of seats in parliament is four percentage points below the global average of 22%, and women occupy only 14.8% of ministerial positions [40].

After more than 10 years of civil war in Nepal and a large number of armed conflicts in Nepal, the transition has given women ample opportunities to engage in peace. U.N. Security Council Resolution 1325 and six subsequent resolutions recognize women's participation in the peace-building process as important for lasting peace, economic recovery, social harmony and political legitimacy. [41]

INCREASING REPRESENTATION IN THE LEGISLATURE

Facilitate women's participation across all functions and components of peacekeeping operations. This includes supporting women: as candidates and voters in political processes; as participants in national governance and security sector structures; as oversight observers in ceasefire agreements and in conflict management; and as participants and negotiators in prevention and in peace processes

Rwanda. during the genocide in 1994 during which around one million people died. one example of the vital role played by women in the efforts to build a new society. In Rwanda's 2003 parliamentary elections women secured 49 per cent of seats in the legislature—the highest number of women parliamentarians anywhere in the world, overtaking Sweden with 45 per cent and way above the world average of 15 per cent. In May 2003, Rwandans ratified a new constitution allotting 30 per cent of decision-making positions to women, a step inspired by the United Nations Convention on the Elimination of All Forms of Discrimination against Women.[42]

PARTICIPATION IN THE CONSTITUTION AND LAW MAKING PROCESS

Conflict and displacement significantly increase a country's risk of becoming a source of human trafficking, enforced prostitution and other crimes. Moreover, sexual and gender-based violence has persisted in some countries long after the end of conflict. These problems can be exacerbated by cultures of impunity that often arise out of conflict, as well as by the absence of effective institutions to protect citizens and bring perpetrators to justice.[43]

The UN Secretary General Kofi Annan had a special contribution of this proposal. Following the implementation of this proposal, there has been a steady increase in the number of women participating in the peace process. [44]

CONCLUSIONS :

This paper discusses the plight of women in war and conflict zones. It will help to draw some conclusions from this chapter. Sexual exploitation and gender-based violence, the displacement of girls and young women in refugee camps, the impact on public health, the social consequences, the war and the violation of human rights in conflict societies are all the result of war and armed conflict. We must prevent any domestic or international dispute from escalating into a conflict .This will prevent overall human security from being jeopardized.

Women and children face the greatest suffering in war and armed conflict because they are the easiest targets. This is evident from studies of wars and civil wars that have taken place so far. 'Preventive diplomacy' should be used by the United Nations. More pressure should be put on struggling birds to use it.in any civil war or

conflict, the United Nations and the international community must pressurize or intervene in a timely manner that does not endanger the safety of women and children.

The important contribution of UN Security Council Resolution 1325 in working against injustice against women in conflict situations is clear. This has created awareness around the world about gender equality, a sincere effort to increase women's participation in UN's efforts. If you look at the ground level, the patrols of women peacekeepers in the conflict zone have shown fearlessness among women and the rate of sexual violence is declining .This is a great achievement.

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THE CHALLENGES OF ELECTRIC CARS IN INDIA, AN INSIGHT INTO PEOPLE'S PERSPECTIVE, AND WAYAHEAD.

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ABSTRACT

With Consistent Growth in its GDP over past two decades India's automobile sector has expanded significantly with more increasing requirement for mobility.

This however has also increased fuel consumption and has also led to severe rise in pollution levels particularly in big cities.

With advent of Electric Cars an important option for reducing the greenhouse pollutants is becoming available for mobility.

Electric cars are not just more Eco-friendly over conventional cars but the overall lifecycle cost is also lower considering the high fuel prices in India.

However, there are several challenges and concerns with the Electric cars that could hinder the potential of market penetration of electric cars into the Indian market despite several advantages.

First and foremost, the biggest challenge that the Electric Cars will face in near future are technical in nature like lack of charging infrastructure, range and high charging time.

Then there is also the problem of availability of fewer or no options at all in desired car segment or a particular brand a buyer may prefer.

The most important thing is whether the consumers are prepared to consider Electric Cars as an option over the conventional fuel cars.

It is also important to understand perspective of consumers across the age group and profession to analyze the degree of awareness consumers have about electric cars.

In this research we have conducted a survey to collect the opinion of people to understand whether and why would they prefer an electric car and challenges they would face upon preferring an electric car over a I.C. Engine Cars.

Upon collecting this data, we tried to analyze the perspective of people on electric cars. We have also conducted a hypothesis testing using Z-test to find out whether there is significance difference between preference of responders while making a choice between Electric Cars and I.C. Engine Cars.

This research aims at finding out the challenges that people, of different age groups with different market segment preferences and with different brand loyalty, perceive with respect to electric cars and evaluate some plausible solutions.

Keywords: Electric Vehicles, Electric Cars, Survey, Batteries, Hypothesis.

INTRODUCTION

India's automobile market has increased at an unprecedented rate following the tremendous growth in its economy. With the increase in purchasing power during this period the demand for personal vehicles increased owing to better infrastructure, urge to maintain social status and genuine requirement for convenient mobility. Annual car sale in India in 2018 was 3,394,700 units [7].

Annual car sales in year 2000 was 517,957 units that means car sales increased to 6.5 times with in the span of 18 years [8]. This tremendous increase in automobile market obviously brought a greater number of vehicles on road which thus became one of the prime reasons for high level of pollution in Indian cities. India was the third largest greenhouse gas emitter in 2020 and had 22 of world's 30 most polluted [9].

Apart from pollution India is third largest crude oil importer in the world and imports 82 percent of its requirement; automobile sector contributes approximately 55 percent of India's crude consumption [10]. This obviously is burden to both India's fiscal budget and forex reserves. For a more sustainable economy and

environment it is necessary that mobility in India should go electric. This will not only help to bring down the pollution levels but also save a lot of budgets which could for development at home.

From people's point of view the ever- increasing rate of fuel (Petrol/Diesel) is also forcing people to think of an alternative and an electric vehicle could be the just needed solution in this case. Let's take an example of TATA Nexon and

TATA Nexon EV. The average claim of TATA Nexon petrol manual variant is 17 km/litre. Now petrol price in Delhi is nearly 90 Rs/litre. This means 5.29 Rs/km will be cost of travelling with TATA Nexon petrol manual variant. On the other hand, the range claim for TATA Nexon EV is nearly 300 kms [11]. The cost of charging a 30KWH battery is nearly 250 Rs. Which means 0.7 Rs/Km. Even if practical range turns out to be less than the claimed range still economically it is far viable solution to petrol variant. Also, EVs are much cleaner as they emit 67 percent less emissions than conventional cars [20]. Thus, the economic and environmental benefits of EVs can drive demand for Electric Cars in common masses.

But at present there are several concerns with the EVs like inadequate charging infrastructure, range of vehicle, few options are only available in some selective brands. These issues might refrain people from exploiting the benefits of EVs. Although EVs have far fewer moving parts than their conventional counter parts and hence has less maintenance requirement still the battery related expertise are only available with few in the market. The battery that is predominantly being used in EVs is Lithium-ion battery. Lithium is not a very abundant material in environment and this might become a problem for EVs in long run. The alternatives of Lithium-ion batteries are being worked upon and some other batteries like Sodium-ion batteries, Aluminium-air batteries and Hydrogen Fuel Cells are being worked on globally. In this research we have analysed a survey that we conducted to understand concerns of people on EVs and battery related issues. We have also conducted a Hypothesis testing on 100 responders to find out whether there is a significance difference in their preference while making a choice between Electric Cars over I.C. Engine Cars based on three parameters which are purchasing cost, refuelling and cost of travelling. We then have evaluated some alternatives considering the recent developments in this fields.

LITERATURE REVIEW

The study focuses on the need of Electric Vehicles as an alternative the opportunities it brings and challenges it faces.

The extensive use of fossil fuels has created the problem of pollution and also fossil fuels are non-renewable in nature. The average carbon emission from a typical passenger vehicle is 4.7 metric tons per year. It is hence necessary to look forward to Electric Vehicles to bring down these numbers associated with carbon emission. Electric Vehicles are good alternatives and right now two types of Electric Vehicles are available battery Electric Vehicles (BEVs) which predominantly works on Lithium-ion batteries and Hybrid Electric Vehicles (HEVs) use a combination of Internal Combustion Engine and Batteries as well. The study emphasizes on benefits of Electric Vehicles which are low operating cost, low maintenance cost, environment friendly, safety and health benefits. The paper also elaborates the entire timeline of development of Electric Vehicles and provides information about implementation of Electric Vehicle related schemes in India. The study then discusses briefly about the challenges like cost of Electric Vehicles, demand, efficiency, land availability, electricity generation and vehicle quality.

The Study then concludes citing the India's obligation to efficiently implementing schemes related to Electric vehicles and suggests Indian Government to take more steps.

The biggest limitations of this study are that it does not consider the peoples first hand opinion on electric vehicles and there is no mention of pollution or limitations associated with Lithium-ion batteries [1].

This study also puts impetus on use of Electric Vehicles so as to reduce the carbon emission. It also mentions Indian Government's National Electric Mobility Mission Plan 2020 (NEMMP 2020).

Overall, this study focusses more on technical aspects of Electric Vehicles related to charging and explain different important components of Electric Vehicles.

The study explains different type of charging like home charging and public charging, AC charging and DC charging. The study then explains different types of batteries like lead-acid battery, Nickel- Metal Hydride battery, Lithium-ion (Li- on) battery and also provides detailed information on different types, Lithium- ion (Li-on) batteries. It then explains battery Management System and power electronics and finally study provides information on different motors.

This study concludes emphasizing need ofElectric Vehicles and advices more steps for Government to take.

The primary research gap of this manuscript is that it focusses only on technical part without suggesting best alternatives among them and doesn't take into account the recently developed batteries like Aluminium-air battery or Sodium-ion battery. The study also doesn'tmention the challenges with respect to Electric Vehicles [2].

This research manuscript focusses on Smart Solar Charging of Electric Vehicles.The research emphasizes need to focus on renewable energy to power future mobility. The development of Solar powered Electric Vehicle charging station can just be the key to a new and clean ecosystem. The research manuscript is highly technical in nature where the operation of a Solar powered Smart Charging Station is explained and it has supposedly generating the required power output of 180 watts. This study also explains required electrical circuits and equipment in pretty detail.

The limitation of this study is it is a theoretical concept with no practical demonstration yet. The authors have citedbudgeting issues due to lack of sponsors [3].

This research manuscripts explicitly focusses on complete technical aspects ofAluminium-air batteries.

The study focuses of technically understanding the working of Aluminium-air batteries for electric vehicles as an alternative due to the limitation of

Lithium-ion batteries. The study is focusedon electrolysis and chemical reactions of Aluminium which acts as anode and Air that acts as cathode during the electrolysis.It also throws light on practical applications and some limitations of Aluminium-air batteries. It also gives comparison of different metal air batteries on various technical parameters like energy density and operating voltage.

This study is highly technical in nature andit gave us a lot of understanding for a part of our research work [4].

This research manuscript focusses on technical understanding of Lithium-ion batteries as almost 125 million ElectricVehicles are projected to be on road by 2030 which will be mostly powered byLithium-ion batteries.

This study is highly focused on electrolysis of Lithium-ion batteries and chemical reactions associated with it alongwith second-use and degree of recycling possible, grid stabilization, and improvements.

This study has helped us understand the technical aspect of Lithium-ion batteries ina deep manner [5].

This research manuscript focusses on technical analysis of Hydrogen Fuel Cell as an alternative to different batteries in Electric Vehicles for clean mobility.

This study emphasizes on the analysis of Hydrogen Fuel Cells and the potential energy density and power it can provide on per kg basis and how can it be used for various applications and limitations that needs to be overcome in order to completely exploit the benefits of Hydrogen Fuel Cell.

This study has helped us a lot in somespecific parts of research [6].

OBJECTIVES

1. To carry out a survey to collectdata on opinion of people on Electric Cars.

2. To analyze data and identify critical area of concerns based on survey and to perform hypothesis using Z-test to find out whether there is significance difference between preference of Electric Carsand I.C. Engine Cars based on certain parameters.

3. To evaluate alternatives based onrecent developments in field of Electric Cars.

4. To propose plausible solutions addressing concerns of people thatis reflected in the survey.

RESEARCH METHODOLOGY

We conducted a survey based on convenient sampling method and collected600 responses. In this survey a total of twelve questions were asked. Four questions were based on personal information like name, age group, profession and country & city they belong.Two questions were related car brands, which the responder might prefer buying over other brands, and favorite car segment of responders. Four out of the remaining six questions were their opinionon whether electric cars would replace the conventional fuel cars in future, their preference on considering electric cars over conventional fuel cars, their opinion on which aspect electric car triumph over conventional fuel cars and main problems according to them with electric cars.

Finally last two questions were based on their concern on pollution due to Lithium-ion batteries and their awareness about other batteries that are being developed in different electric vehicles. We have also conducted a Hypothesis testing in which 100 responders were selected based on random sampling method. Samples were drawn from the data of 600 respondents and were requested to rate their preference of an Electric Car or I.C. Engine car anywhere between 1 to 5, 1 being least preferred and 5 being most preferred, on the basis 3 parameters which are cost of car, refueling and cost of travelling. After analyzing the collected data in graphical form, we then try to understand the challenges associated with electric cars and suggest some plausible solutions to overcome these challenges by analyzing several theoretical information pertaining to this field.

ANALYSIS OF RESULTS AND INFERENCES

1. As mentioned earlier this survey was done on basis of convenient sampling method and over 600 responses were studied. Almost 52.7 percent of respondents belonged to age group of 15 to 25 that means the youth that is future potential consumer base for electric car market. Nearly 25.9 percent of respondents were from age group 25 to 35 that means one who would either own a car soon or already own one and are the current potential buyers of electric cars and this particular population might also be a regular commuter. The 9.2 percent respondents fall in age group of 35 to 45 and 10 percent other respondents fall under age group to 45 to 55. This category of 35 to 55 that together accounts for almost 19.2 percent are more hot prospects when it comes to owning a car. Remaining minority respondents fall in age group of 55 to 65 and above. We can convincingly say that our survey has response from all age groups with majority responses from young and middle age population.
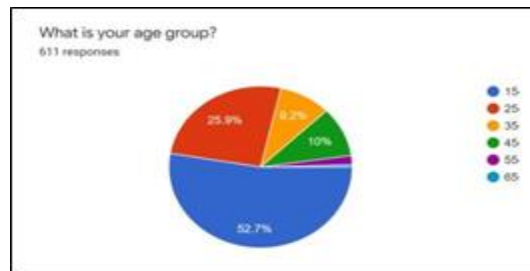
2. In this survey 46.2 percent of respondents are students with possibly more knowledge and awareness on electric cars, 36.3 percent are working professionals and 13.1 percent are businessmen which means 49.4 percent of respondents are people with good purchasing power and remaining 4.4 percent are homemakers. The number of male respondents are 400 and female respondents are 214.
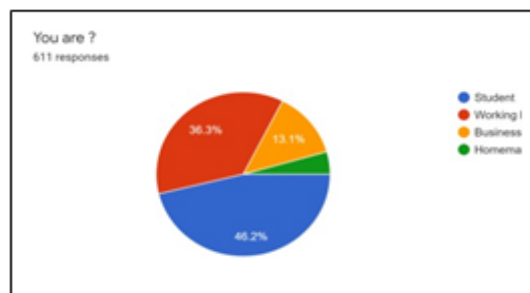
3. A total of 73.6 percent respondents, according to our survey, were positive about electric cars replacing the conventional cars in near future with 21.8 percent believed that electric cars might replace conventional cars in future and merely 4.6 percent respondents believed that electric cars will not replace conventional cars in future. This clearly implies that 95.4 percent respondents are positive about possibility of electric cars driving future of mobility in India. This shows a lot of acceptance and awareness with respect to electric cars in India.
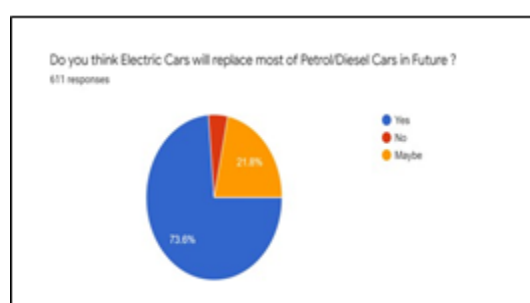
4. In our survey a total of 63.3 percent respondents preferred their next car to be electric and

27.7 percent respondents definitely considered it as an option and only 9 percent respondents were not very optimistic about electric car astheir next preference.
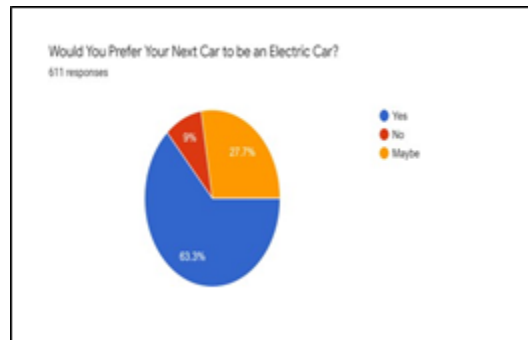
5. A total of 69.9 percent respondents believe that electric cars have an edge over conventional cars in both low daily commutation cost due to cheap electricity and low carbon emission. 21.1 percent respondents believe that electric cars outperforms conventional cars in low carbonemission that is the primary strength of electric cars over conventional cars whereas 9 percent respondents believe that low daily commutation cost due to cheap electricity isUSP of electric cars.
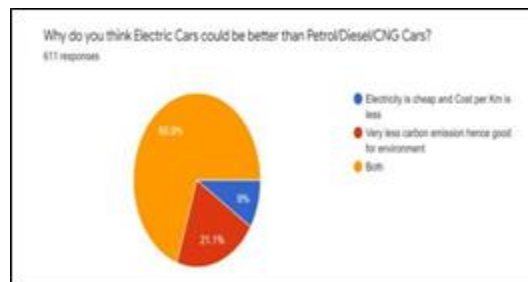
6. A whopping 59.4 percent of respondents in survey claimedthat availability of charging infrastructure, high charging time and few options were themain problem with the electriccars whereas 26 percent respondents claimed that availability of charging infrastructure was only their primary concern, 9.5 percent respondents claimed high charging time was actually themajor problem and only 5.1 percent respondents believed that fewer options are only major concern for them.
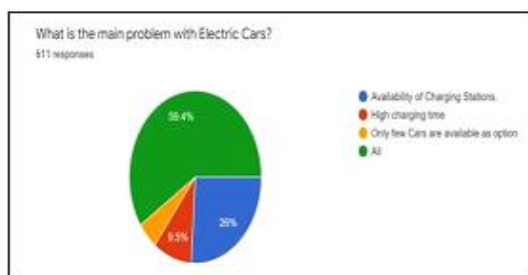
7. Around 43.7 percent respondents were not aware of pollution associated with production of Lithium-ion batteries while a majority 47.6 percent respondents agreed that they were concerned with pollution associated with production of Lithium-ion batteries and a minority of respondents 8.7 percent to be precise claimed that associatedwith production of Lithium-ionbatteries was not a matter of concern for them.
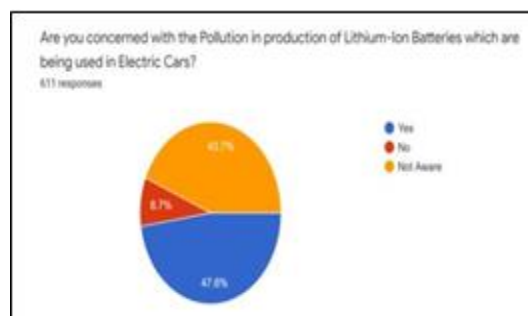
8. Upon probing the knowledge of our respondents on different alternatives to Lithium-ion batteries a 30.6 percent respondents only knew about Lithium-ion batteries, 5.75 percent respondents knew about Aluminium-air batteries, 1.5 percent respondents knew about Sodium-ion batteries, 6.2percent respondents knew about Hydrogen fuel cells where as 29.5 percent people were aware about all the batteries mentioned above and approximately 26.5 percent respondents didn't knew about any of the batteries.
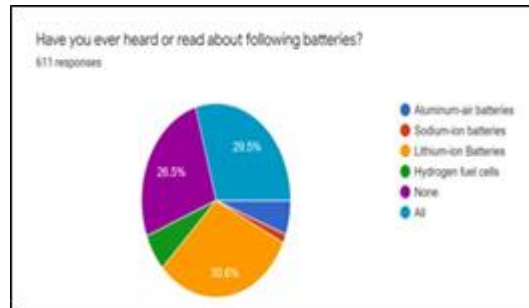
9. Upon asking about the favorite car segments, 54.8 percent respondents considered SUV as their favorite segment while for 29.5 percent respondents it wassedan and 11.8 percent respondents liked hatchback cars a minority remaining preferred MPV as their preferred segments. The future of electric car market thus largely depends on the options available in SUV and Sedan segment as most people liked this segment while many would still prefer hatchback due to fianancial obligations, the hatchback segment is equally important.

10. Upon probing on favorite car brands, the data is highly scattered across different brands so we will not put muchemphasis on this particularly.

HYPOTHESIS TESTING

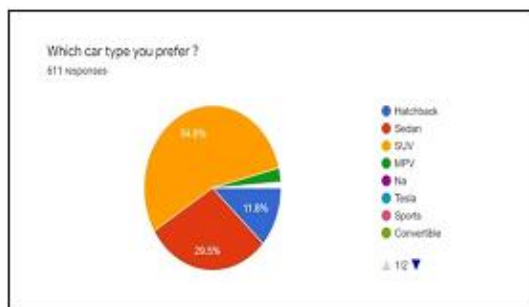We have used random sampling method to collect responses from 100 responders of our survey to rate their preference from a rating of 1 (being least preferred) and 5 (being most preferred) on 3 parameters which are, cost price of cars, refueling and cost of travelling. We collected the data and tabulated it in Excel sheets to analyze data and perform Z-test.

Hypothesis Statements:

Null Hypothesis H01: There is no significant difference between preference of people on basis of Cost of cars betweenElectric Cars and I.C. Engine Cars.

Alternate Hypothesis H1: There is significant difference between preference of people on basis of Cost of cars betweenElectric Cars and I.C. Engine Cars.

Null Hypothesis H02: There is no significant difference between preference of people on basis of Refueling (charging)between Electric Cars and I.C. Engine Cars.

Alternate Hypothesis H2: There is significant difference between preference of people on basis of Refueling (charging)between Electric Cars and I.C. Engine Cars.

Null Hypothesis H03: There is no significant difference between preference of people on basis of Cost of travelling between Electric Cars and I.C. Engine Cars.

Alternate Hypothesis H3: There is significant difference between preference of people on basis of Cost of travelling between Electric Cars and I.C. Engine Cars.

Test: We use Z-Test since data set is above30 and it is a Two-Tailed Test.

Level of Significance: 5%.

Formula for Calculated Z-Value:

Two-Sided Test
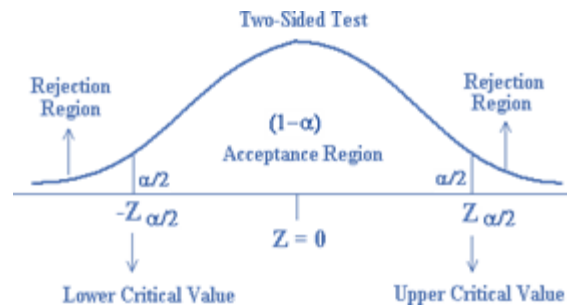
$Z = (X_1 - X_2)/$ (Square Root $(\sigma_1^2/n_1 + \sigma_2^2/n_2)$).

Calculation for Z-Value:

(We will represent all the values for Electric cars by suffix E and I.C. Enginecars by suffix I)

For First Hypothesis:

Mean for preference ratings on Electric cars based on Cost of Cars: $X_E = 3.699$ Standard Deviation for preference ratingson Electric cars based on Cost of Cars: σ_E

$= 0.893$

Mean for preference ratings on I.C. Engines cars based on Cost of Cars: $X_I = 3.091$

Standard Deviation for preference ratingson I.C. Engines cars based on Cost of Cars: $\sigma_I = 1.12$

Z – Calculated for First Hypothesis is:4.244

Z – Critical for First Hypothesis is: -1.96to 1.96

Graphical Representation for Data ofHypothesis:

Since our Calculated Z value is not in the acceptance range that means we reject NullHypothesis and accept the Alternate Hypothesis that means there is significant difference between the preference while choosing between Electric Car and I.C. Engine Car on the basis of Cost of Car.

For Second Hypothesis:

Mean for preference ratings on Electric cars based on Refueling: $X_E = 3.131$ Standard Deviation for preference ratingson Electric cars based on Refueling: $\sigma_E = 1.115$

Mean for preference ratings on I.C. Engines cars based on Refueling: $X_I = 3.727$

Standard Deviation for preference ratings on I.C. Engines cars based on Refueling: σ_I

$= 1.108$

Z – Calculated for Second Hypothesis is:3.792

Z – Critical for Second Hypothesis is: -

1.96 to 1.96

Graphical Representation for Data ofHypothesis:

Electric Cars

How will you rate Electric vehicle on the basis on refueling(Charging)

Electric Cars

How will you rate Conventional vehicle on the basis on refueling(Petrol / Diesel)

I.C. Engine Cars

How will you rate electric vehicle on the basis on Cost price

I.C. Engine Cars

How will you rate Petrol diesel on the basis on Cost price

Since our Calculated Z value is not in the acceptance range that means we reject NullHypothesis and accept the Alternate Hypothesis that means there is significant difference between the preference while choosing between Electric Car and I.C. Engine Car on the basis of Refueling (Charging).

For Third Hypothesis:

Mean for preference ratings on Electriccars based on Cost of Travelling: $X_E = 2.707$

Standard Deviation for preference ratingson Electric cars based on Cost of Travelling: $\sigma_E = 1.191$

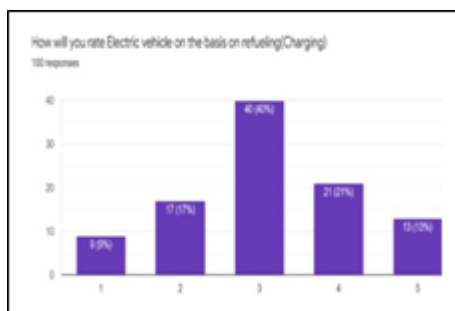Mean for preference ratings on I.C. Engines cars based on Cost of Travelling: $X_I = 3.374$

Standard Deviation for preference ratingson I.C. Engines cars based on Cost of Travelling: $\sigma_I = 1.079$

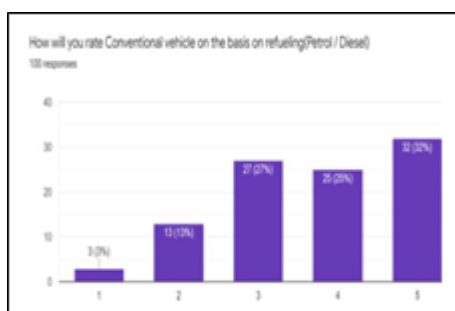Z – Calculated for Third Hypothesis is:4.15

Z – Critical for Third Hypothesis is: -1.96to 1.96
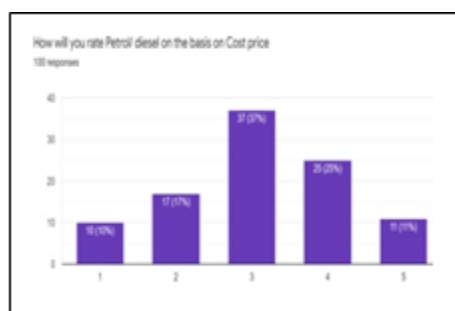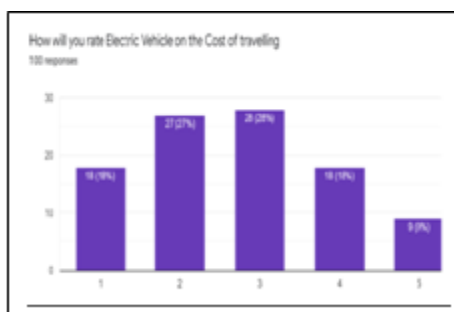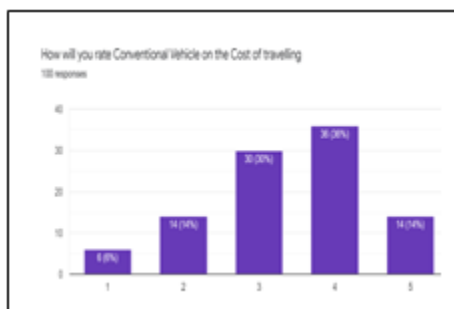
Electric Cars
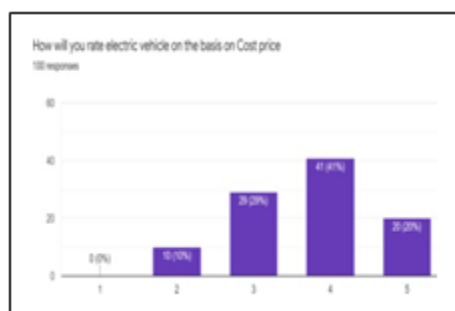
I.C. Engine Cars

Since our Calculated Z value is not in the acceptance range that means we reject NullHypothesis and accept the Alternate Hypothesis that means there is significant difference between the preference while choosing between Electric Car and I.C. Engine Car on the basis of Cost of Travelling.

EVALUATION OF ALTERNATE SOLUTIONS

Firstly, the biggest and most immediate challenge in development of ecosystem of electric cars is availability of charging infrastructure. It is estimated that for large- scale electrification to be a reality, the availability of adequate charging infrastructure is of utmost importance.

Global precedents show that charging infrastructure drives EV adoption, instead of playing a demand-based catch-up. It also said India would need a network of over 2.9 million public charging points by FY30, beyond the in-home charging points. This could create another massive market opportunity requiring cumulative investments of up to USD 2.9 billion (about 20,600 Rs crore) until 2030 [13]. It said adding currently, there are around 1,800 public charging points across the country. Hence more and more private andpublic investments is needed to be for development of charging infrastructure.

Such charging stations should be developed at different levels and charging facility should be provided at big housing societies, parks, automobile service centres and at big charging compounds. Charging slots should be booked from mobile based apps and slot should be booked with onlinemode of payment so that consumer do not have to spend time in queue. All the data related to entire charging infrastructure of a city should be available, monitored, controlled and updated at centralized data centres that will provide support to this app based smart charging network. Since overall consumption of electricity is also expected to increase for supporting this ecosystem of electric vehicles, hence thisecosystem also needs to be powered on alarge scale by solar grids and individual solar charging stations should also be a priority.

Secondly, the production of Lithium-ion batteries is associated with significant pollution also lithium which is the primaryconstituent of Lithium-ion batteries is scarce in environment [19]. Hence it cannot be completely relied on for future of electric vehicles and our survey also shows concern of our respondents in this direction. Some alternatives for Lithium- ion batteries are Aluminium-air batteries, Sodium-ion batteries and Hydrogen fuel cells. The energy density of state-of-the-artLIBs is approximately 130 Wh/kg [14].

The practical energy density of the Aluminium-air battery is approximately300-500 Wh/Kg [14].

Aluminium which is primary metal used inthis battery is highly recyclable and abundant in nature. Aluminium-air battery uses water as an electrode hence it is also safe from fire hazards. However, the fundamental problem with Aluminium-air battery is that it can be recycled but not recharged hence consumer will have to replace

battery after every few days and also once the process of electrolysis starts it cannot be stopped since water is continuously supplied to battery and unless this battery technology develops to a point where water supply to battery is stopped and started with stop and start of vehicle.

Recently Israeli company Phinergy collaborated with Indian Company Mahindra to come up with an electric three-wheeler Mahindra Treo [15]. This recent development might make Aluminium-air battery a plausible alternative to Lithium-ion battery.

The energy density of Sodium-ion battery is approximately 97.5 Watt/kg [21].

Sodium like Aluminium is also available abundant in nature and it is also safe and Sodium-ion battery is also rechargeable. The problem with Sodium-ion battery is that it is three times heavier than Lithium-ion battery and has lesser energy density. The UK company Faradion is working on integration of EV with Sodium-ion battery [17]. Hence there are possibilities of sodium-ion batteries emerging as alternative to Lithium-ion batteries.

One litre of hydrogen can produce electricity of about 39.39Kwh/kg of energy [6]. But this capacity reduces when hydrogen is taken in kg. It requires to pressurize hydrogen to a good extent to get enough power which is not suitable for cars however it is suitable for big vehicles like trucks. Also, an entire hydrogen re-filing infrastructure will have to be developed for hydrogen fuel cells to become an alternative to Lithium-ion batteries.

Finally, the concerns of availability of options across brands will be addressed as the time passes as in when new car models based on different battery technology will be launched in market.

CONCLUSION

Through our survey across different age groups and professions it is very much clear that there is great degree of acceptance and optimism with respect to electric cars with 95.4 percent positive about electric cars replacing petrol/diesel/CNG cars in future and 91 percent considering electric car as their next cars. Also, our survey shows a significant degree of awareness regarding concern with both charging and battery related issues. Hence it can be considered that India has a huge potential for exploitation of future market of mobility which will be driven by electricity provided right steps are taken with respect to concerns of people.

Also, our Hypothesis Testing revealed that there is significant difference of preference of people between Electric Cars and I.C. Engine Cars based on all 3 parameters, Cost of Cars, Refuelling, and Cost of Travelling. In our Hypothesis Testing it is also very surprising to see that most people have preferred I.C. Engine Cars over Electric Cars which is contrary to what our data showed in larger survey of 600 people. This can very well mean that despite a lot of people being aware about economic benefits of Electric Cars it is still necessary to emphasize more on this economical part to increase awareness.

Through our studies of various research paper and articles we have tried to brief about alternate solutions to Lithium-ion batteries which are Sodium-ion Batteries, Aluminium-air batteries and Hydrogen fuel cell. We came to conclusion, after considering all advantages and disadvantages of alternate batteries, that Hydrogen fuel cell should be developed for heavy vehicles like trucks and cars and three-wheelers can consider both Aluminium-air batteries and Sodium-ion batteries with improvement in practical energy efficiencies whereas Lithium-ion battery can be continued in two-wheelers.

The charging infrastructure should be software application based and data driven smart charging infrastructure along with significant use of renewable energy like solar energy being actively used in them to cater the charging demand. These according to us are some plausible solutions to tackle the challenges related to electric cars in future.

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TRIBUTE TO KR GOURI AMMA AN ECONOMIC THOUGHT OVER POLITICAL EMPOWERMENT OF WOMEN IN INDIA

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India, the sixth largest economy in the world after USA, China, Japan, Germany and France, has a of credit being the largest democratic country and also second most populous country in the world. According to Larry Diamond, the American political scientist, democracy is based on four key pillars such as (1) a political system for choosing and replacing the government through free and fair elections, (2) the active participation of the people, as citizens, in politics and civic life (3) protection of the human rights of all citizens, (4) a Rule of Law, in which the laws and procedures apply equally to all citizens. These democratic pillars are not similar to the "Five Pillars" of "Atmanirbhar Bharat or Self Reliance" policy of the government of India such as the economy, infrastructure, technology driven system, vibrant demography and demand. These five pillars are for economic development. And Those four pillars are for rights, fairness and equal opportunities.

The core points of the above democratic principles and philosophy is "equality", equity, balanced development, gender justice , equal opportunities , and inclusive growth". But in reality what is experienced is just opposite to what one expects from the democratic system. India's democratic system to large extend has not been properly exercised/utilised/benefited by women political leaders and political aspirants in India. It is the fact that women are better of socially and economically at present compared to 1950s. They are playing their roles in service sector and agricultural sector equally that of men. It is well and good to see that women educational level has increased to 65 per cent as per the Census 2011. It is quite common to see that the women are there everywhere in the job market because of this educational facilities and employment opportunities. Though women reached new heights in the economic and social ladders/sectors, still they miserably failed in landing and playing a major role of their own in the democratic political sector in India.

The objective of this paper is to bring out how the social, economic, political and cultural factors/issues/problems which are standing as a block on the way of empowerment of women in politics and Indian Political system in India. This work tries to answers certain basic and fundamental issues which are standing as hurdles on the way to political empowerment of women in this democratic country. The relevant questions are why women are not able to succeed in politics in a mass scale? What are the social factors, cultural factors and economic factors preventing women play a major role in politics? Why women entry in politics is not encouraged in large scale? Who are the beneficiaries and who are the losers of entry of women in politics? Why their legal rights are denied? Whether women are weak in India? What are the opportunities existing for the new generation women in politics? How the male political leaders as well as the political system look into the political talents/knowledge/commitments of the women political leaders in Indian political system? Indian political system is fully dominated/occupied by male political members at the Central as well as states level. This research paper tries to answer these questions in a very simple manner.

The oxford learners dictionary defined the term empowerment as "the act of giving somebody more control over their own life or the situation they are in". Women empowerment is a Process by which women gain power and control over their own lives and acquire the ability to make strategic choices. Women's empowerment has five components: women's sense of self-worth; their right to have and to determine choices; their right to have access to opportunities and resources; their right to have power to control their own lives, both within and outside the home; and their ability to influence the direction of social change to create a more just social and economic order, nationally and internationally. In this context, education, training, awareness raising, building self-confidence, expansion of choices, increased access to and control over resources, and actions to transform the structures and institutions that reinforce and perpetuate gender discrimination and inequality are important tools for empowering women and girls to claim their rights (empowerment of women,).

The term emperor is used to glorify a powerful King. While studying Indian history we could have come across terms like "Ashoka the Great", Emperor of the Maurya Dynasty and "Akbar the Great", the third Mughal Emperor are some example for that. The King, who is so powerful in taking right decisions of his own or in consultation with a group of well wishers/Ministers in his kingdom, is considered as an "Empowered Person or King". His words are laws and would be final and should be implemented. Now a days empowerment is used loosely for many activities such as economic empowerment, social empowerment, and political empowerment etc.

But actually empowerment is very much associated with enlightenment and on the other hand enlightenment is very much associated with education. If you want to ascertain your rights, if you want to raise your concerns and grievances you need education. Education will teach you what is right? what is wrong? What to do? What not to do? This knowledge is generally described as enlightenment. An enlightened person knows everything right from top to bottom and or has complete knowledge about a particular topic or particular area or particular subject in which he is associated. He could clear the doubts raised by the students or public in a right way. Now a days many research works are going on in many Universities in India titled " women empowerment through micro finance programme"/ "through self help programmes"/ "through micro-finance programmes"/ and "Maghatma Gandhi National Rural Employment Guarantee Programmeis (MGNREGP)" etc. Even opening a bank account under Prime Ministers Jandhan Yojana programme also considered as an economic empowerment of women. So removal of vicious circle of poverty, providing education to illiterate innocent people, and creating employment opportunities for unskilled and semiskilled workers also considered as empowerment. This empowerment should be looked from poverty eradication point of view or livelihood point of view. This empowerment fulfils the basic requirements. Getting good education, getting a regular job and income job, assertiveness, participating the public meetings along with men and participating the political activities are all considered as social and economic empowerment of women.

But political empowerment is different from economic and social empowerments. Political empowerment can be attained through contesting in the Ward level elections, Panchayat level elections, Assembly elections and Parliament elections. Women should contest in these elections and entered into the State Assemblies and Central Parliament where state level and country level issues are discussed and policy decisions are taken. If more women were elected as members of Assemblies and Parliament, their issues and problems would be discussed and decisions would be taken in favour of them. Why women play less roles in Indian politics? There are reasons. It starts from home itself. Women used to face discrimination, exploitation, harassment and marginalisation in getting education, employment and empowerment in public services. Women organisations in general used to blame the governments or industries or the public for these discriminations. But the fact is that the discrimination is started taking place right from the home where the girl born, right from the parents particularly the mother who gave birth the girl child and the family members. In a family structure we have certain set of rules and regulations to be followed as well as practiced in each member of the our family system. These unwritten regulations are varied between boys and girls in our family system. So the discriminatory unwritten regulations are forcefully imposed on the girl child right from the early morning to one goes to the bed at night. The regulations are framed in such a way that the girls never feel they are being discriminated by their own parents and family members. They were forced to adopt or accept these regulations in the name of protecting the honour of the family as well as getting good name of the girl. Here this discrimination would take place in a friendly, lovely and affectionate atmosphere. A girl children is not allowed to sleep after 6 AM. At the same time a boy who sleeping in the next bedroom is permitted to sleep up to 11AM according to his will and wish. The duties and responsibilities are dictated to the girls again and again. Obedience is the basic magic mandra/slogan for them. Their opinions and concerns are completely been neglected. The parents used to mould the girls with duties and responsibilities in such a way that "they should be good girls when they are child", "they should be a good wife's when they are married", "they should be a good mothers when they attained the motherhood status", "they should be good daughter-in-laws, mother-in-laws and good grandmother". A discriminatory net is woven around their life process. They cannot easily break the system because it is taking place in a lovely, friendly and affectionate atmosphere.

Girl children are forced to think that this is their like and they have to live like that. These unwritten regulations are so powerful than the written constitution. Women should be under "the protection of parents first, husband in the middle and children at later stage". Whether these regulations are breakable? Definitely "no" at present. These regulations are vary from girls to boys. Boys have certain set rules and regulations to be followed in the family completely opposite to what is prescribed for girls. The existing Indian social system compelled the families go with all these unwritten regulations which are discriminatory in nature and the girls could not realise they are being discriminated and marginalised in the family itself.

A clear example one can state here is that when a middle class family wanted to buy a car or two wheeler, there is a registration process "whose name the vehicle should be registered", the family suggest either the father's name or sons name not the girls name. The family will never think of registering any vehicles in the girls name. The vehicles will be registered in the girls name only when there are compulsions due to certain loan schemes meant for women or no male members. It is quite common even in socially advanced states like Kerala also.

So the girl children in our society never and ever allowed to think of the freedom enjoyed by her brother (s) in the family itself. They face controls after controls, restrictions after restrictions, from the parents as well as the family members. By the time when they grown up into a womenhood they are like a "trained elephant", though very large in size with lot of powr, which is under the control of a small mahout with a stick. They never face the society boldly, confidently and courageously. Even after getting good education, getting into very good job with good amount of income they restrict themselves involving any social and political activities thinking that they are not for that. Even if you compel them get into political issues they will miserably fail due to lack of confidence. This is an advantage for men and this is what they want?

The impact of this family training is very much reflected in our political system. Even after 74 years of independence, adopting 30 years of Liberalisation, Privatisation and Globalisation (LPG) policies, implementation of 12 Five Year Plans not much change took place in our social system and customs. India's female population at present is about 662.90 million in 2020. The sex ratio of the total population in India is 108.18 males per 100 females. As per the Census 2011 female constitute 48.5 per cent of the total population. Women political members are supposed to occupy nearly 270 Parliament seats of the total parliament seats. But what is in reality? In the 17th Parliament election only 78 women Member were elected out of a total of 543 Members in the Parliament. It is only 14 per cent of the total MPs. About 192 women members are missing in the Parliament. India has at present 28 States and 8 Union Territories. But there is only one women, Ms. Mamatha Banerjee, occupied the post of Chief Ministership out of 30 Chief Ministers at present. There are only two women ministers in the Tamil Nadu government. India has only 3 women Cabinet Ministers out of 24 Ministers. There are only six women governors in India at present.

Political participation is the hall mark of a democratic set up. Effectiveness of democracy depends on the extent to which equal and effective participation is provided to all its citizens. Women comprise about half of the population in India. This requires proper attention and due share in the political process. citizens active participation in political affairs strengthens the democratic fabric. Since women's presence is seemed to be low in Indian politics, it is the necessary to make women aware of their rights and motivate them for participation in mainstream politics. The constitution of India under Articles 325 and 326 guarantee equal right to participate in political activities effectively. However, lack of space for participation in political process has not only resulted in their absence in numbers of decision making bodies but also neglect their common issues and problems. For strong and effective democratic system, the participation of women is essential. There cannot be any real democracy if the voices and issues of women ignored or sidelined (Zakir Hussain Naik, 2017).

Exploitation to Empowerment:

It is in practice in our social system within India as well as outside India also to identify and celebrate a particular day as Fathers Day, Mothers Day, Doctors Day, Nurses Day, Valentine's Day, Teachers Day, Doctors Day, Nurses Day and something. All the 364 days are associated with some days to express the significance of that work to the world. Similarly every year women all over the world used to celebrate 8th of March as "International Women's Day". This celebration started from the year 2011 onwards. In fact in the year 2010 only this day was identified as the day for international women. What is the significance of this day in women's history? why so particular about this day out of 364 days in a year? There is an economic history behind it. On this particular day only a group of women workers in textile mills joined together and took a procession in the year 1857 in New York City against the then exploitative and discriminatory work and wage policies in America. During the industrial revolution period particularly in the case of textile industrial sector only men were employed with good salary on monthly basis with all the additional benefits. When demand for mill made cotton cloths were keep on increasing in USA, European countries and the colonies of various European countries, the industrialists started operating the industries through shift system. But workers were not available to work continuously because only the male workers were employed in this sector. At this juncture only women got an opportunity to enter into the industrial sector. Under the shift system women were appointed on part-time/contract work system basis with less wage under piece rate system, long hours of work under hazardous work conditions, contract nature of work, without much labour security benefits. Against these particular discriminatory and exploitative work practices a group of women workers took a "procession on 8th March 1857" and " raised their voices for their protection" for the first time in the women's development history. It was a historical record. In the year 1910 the German Socialist leader Ms. Clara Zetkin who got an opportunity to identify/select a day to be celebrated as an International Women's Day. She rightly identified history and brought out the significance of 8th March, 1857 and declared that day as an "International Day for Women". More than one hundred and ten years over after started celebrating the international day for women, not much developments have been recorded as for as political empowerment of women is concerned.

India has seen powerful empowered women leaders like Smt. Indira Gandhi, Smt. Soniya Gandhi, Ms. Jayalalitha, Ms. Mamatha Banerjee, Ms. Mayavathi, Smt. KR Gouri Amma etc, but considering the women population in India, improvement of women educational level is concerned, social development of India is concerned, economic development of India is concerned the role of women in Indian politics is very meagre /limited/or highly negligible. At present about 20 States such as Andhra Pradesh, Assam, Bihar, Chhattisgarh, Gujarat, Himachal Pradesh, Jharkhand, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Odisha, Punjab, Rajasthan, Sikkim, Tamil Nadu, Telangana, Tripura, Uttarakhand and West Bengal have already made provision of 50 per cent reservation for women in Panchayati Raj Institutions in their respective State Panchayati Raj Acts. Hariyana is bringing a bill to reserve 50:50 reservation for both men and women in Panchayati Raj Institutions. This 50 per cent reservation is a welcome development. Though 50 per cent of reservation is ensured for women in these Panchayati Raj Institutions still they have to go a long way. Panchayati Raj institutions are functioning at the bottom level of the political structure. They have no decision making power and what they do is only implement the programmes and schemes designed by the respective governments. This 50 per cent reservation ensures more women participation at the bottom level of political system. But it will not empower the women. Women needed 50 per cent reservation at the Assembly level, and at the Parliament level where policy decisions are taken with respect to social development, environment development, infrastructural development, industrial development, service sector development, women development and economic development.

Are Women Physically weak compared to men?

Generally an impression is created in the society for generations after generations in such a way that compared to women, men are considered as strong people by looking into their physical structure, work culture and have the responsibility to take care of the families. But in reality the women are equally powerful/full of energy in handling issues which are handled by men. In Hindu system "Goddess Parvathi", the wife of Lord Siva, is also known as "Adiparasakthi"/ "Sakthi" that means "the ancient or original power/energy" in this Universe. It is being described that She only provides "energy to Siva" and Without her or "sakthi" "sivam" is powerless. Recognising the power of Goddess Parvathy, Lord Siva accommodated her in his physique itself by offering 50 per cent of his physique to his wife Parvathi. Lord Siva himself practiced/implemented of what we call in economics is "equality or gender justice". But the human race /common people/human beings who were created by these God and Goddess are not ready to share, not only sharing 50 per cent of the physique but also not allowed the women to inherit the properties of the parents. Most of the women's were forced to ignore it/give it up the property rights of parents by compulsions/pressures. Those who already inherited the properties of the parents got it only after knocking the door of the court. Though women have inherent powers within themselves that is never been recognised and never been allowed to exercise the power like how a trained elephant which never recognise its power it has and never exercise the power it owns. Our society or the social system would not/ never allow women to exercise their powers in our society. They should be under the control/supervision/direction of men and men consider/treat them as a commodity that has no life. So men brought so many unwritten rules and regulations to make women submissive/obedient/voiceless in the family as well as in the society. This is what reflecting in politics. They are hesitant to come out of the social barriers imposed on their movements as well as developments. So women are not weak as far as their strength is concerned. But our social system suppressed their power and did not allow them to utilise the power they have with them.

According to the Sustainable Development Goals (SDGs) set by the United Nations, Secure and impartial land rights for women are crucial for a country to achieve sustainable developments goals such as ending poverty, ensuring food security, achieving gender equality, and making cities and human settlements inclusive. According to the Center for Land Governance, Lakshadweep and Meghalaya are the best among all states and union territories of India at providing land rights to women, while Punjab and West Bengal are the worst, is considered emancipation of power. In the southern states, an average of 15.4% of women hold land, and in the north-eastern states, 14.1%. With these low figures, these states outperform the northern states where 9.8% of women hold land, and the eastern states where 9.2% of women do. According to the gender and land rights database of the Food and Agriculture Organization of the United Nations (FAO) Women constitute a third (32%) of India's agricultural labour force and contribute 55-66% to farm production. Yet, women hold only 12.8% of operational holdings in India–lower than the 17 per cent in China–over an area constituting a 10th (10.3%) of the total area of India's operational holdings, according to the Center for Land Governance index. The trend that sees men shifting to nonfarm activities further increases the responsibility of women in agriculture, a 2013 policy brief by Oxfam-India, "Without land titles, women are not recognised as farmers, and thus are not able to access credits and government benefits,"(Angel Mohan and Bhasker Tripathi, 2018).

According to Oxfam in Uttar Pradesh, the largest state in India, women own less than 18 per cent of agricultural land. In Kerala, the most literate state in the country, the percentage of women owning agricultural land is a mere 14 per cent .This abysmal land ownership stems from the fact that land titles in most Indian states are almost always in the man's name (Shaikh Saaliq, 2018).

Women weakness towards Appreciation:

Psychologically human beings in general would be very happy if someone made a good or positive comments over somebody's good work, physical appearance, knowledge, dress, helping tendency, social activity, debate with others, sincerity, sports activities, good work, talk competition and any other extra-curricular activities. Women are no exemption for this. They too would be very happy if someone appreciate them for something unique they have with them. These positive comments or appreciations over women sometimes land them into slavery and finally exploitation. That is what going on in Indian family system and the social system. This is happening because of lack of exposure to education, income, employment, knowledge, travel, and property rights. To exploit women or make them slaves some families, men knowingly and cleverly appreciate/glorify their wife's works, the food prepared by them, their voices, beauty of their hairs and the dress they wears etc. etc. Husbands appreciate some time even some ordinary things done by women at home. These appreciations have been carried out with two intentions. Just to make them do the same kitchen work regularly without any hesitation and they have to do it with pleasure without understanding the real intentions of men's appreciations. In most of the families the husbands used to glorify even the normal/ usual work done by their wife's such as my wife used to prepare "very good" tea, "very good" briyani, and a "very good" Sampar etc etc. What the women generally think, after listening to their husbands appreciations, that they are very good "cook" and "expert" in tea making, biriyani making and sampar making and always be ready to prepare tea, coffee, biriyani when their husbands are in need of these item. Here the men succeeded in convincing them to be good housewife's and on the other hand women became slavery to their work and continue to do it without raising their voices and concerns as a dedicated person. So men use the term "good, very good and excellent" to control/enslave them within the family. So if men appreciate their wife's works, they keep tea or coffee ready by the time when their husbands entering into their houses. But actually men used to appreciate women "Not for the very good tea she prepared" but actually men appreciate women with intentions of enslaving them within homes itself. . This practice is still continuing in our family structure and that prevents women coming out of family system, and social system. It is better women not to listen the words of appreciation from their husbands.

Men preferred over women in Politics:

Though we used to claim women enjoyed equality or gender justice during the ancient period, in due course they lost the important role they have had in our society that was curtailed systematically by men. It is quite common to see that in most of the temples in India from cities, towns and villages only the Goddesses are the main deities and most of the cities in India are identified by their names only. Srinagar in Kashmir in the northern India to Kanyakumari in Tamil Nadu in southern India are an example for this. They are considered as power of bravery, power of wealth and power of education. We used to celebrate "Sivarathri"-"Night of Siva" for Lord Siva only one day, but we celebrate nine days as "Navarathri"-"Nine Nights" for three Goddesses like Parvathy, Mahalakshmi and Saraswathy. What one can understand from this information is that women Goddesses are so powerful and present everywhere and also equally blessing the devotees.

Another point to be noted here is that in the case of then ruling of various Kingdoms in India are concerned, almost all the then Kings preferred only male child as a successor than female child. India has had very brave queens like Rani Durgavati of Gondwana, Rani Lakshmibai Of Jhansi, Lakshmi Sahgal, Rani Abbakka of Ullal in Mangalore, Rani Of Kittur in Karnataka, Velu Nachiyar of Sivaganga-, Maharani Tarabai of Maratha Empire, Sultan period Razia Sultana, Ahilya Bai Holkar, and Rani Mangammal etc. but most of them were the care takers of the kingdoms until their male child grown up. This historical unequal, exploitative and discriminatory practice is still continuing in this democratic India. Almost all the politicians intended to ensure only their boys enter into politics and become successor in Ward Elections, Panchayat Elections, M. L.A elections, M. P Elections and even at Chief Minister levels. This is the reality. Most of the new generation political leaders at present are successors of ex-political leaders, MLAs, MPs, Central and State Ministers. Sometimes even both father and son are also simultaneously work in the same party. The chance goes to girl child as successor only when there is no male members in their families. For example our former Prime Minister of India Indira Gandhi, the only daughter of Jawaharlal Nehru, first Prime Minster of India. In the case of Rajive Gandhi and Soniya family is concerned Sri. Rahul Gandhi is preferred as a successor over Mrs. Priyanka Gandhi Vadra. Similar is the case with the political party of Yeduguri Sandinti Rajasekhara Reddy, Former Chief Minister of Andhra Pradesh, made his son Yeduguri Sandinti Jaganmohan Reddy as a successor and became the Chief Minister of Andhra Pradesh. In the case of Maharashtra, Sri. Bal Thackeray made his son Sri. Uddhav Bal

Thackeray as a political successor of his party and now he is the Chief Minister of Maharashtra. In Tamil Nadu, Former Chief Minister of Tamil Nadu Dr. Kalaignar M. Karunanithi brought up his son Sri. M. K. Stalin as a political successor and he is the Chief Minister of Tamil Nadu at present. Now Sri. M. K. Stalin brought his son Sri. Udhayanithi Stalin as his successor. Mrs. Kanimozhi though very active in politics has been silenced as far as successor issue is concerned. Sri Lalu Prasad Yadav, former Chief Minister of Bihar brought his son Sri. Tejashwi Prasad Yadav as his successor though he has seven daughters in his home. The Chief Minister of Telangana Sri. Kalvakuntla Chandrashekhar Rao brought his son Sri. K. T. Rama Rao as his successor though he has a daughter Ms. K. Kavitha. Like this one bring a list of leaders with their successors. For that one has to go for a separate research.

In India at present almost 50 per cent of the current male MLAs, MPs, Central as well as State Ministers, Mayor's of 28 States and 8 Union Territories are direct successors of their political fathers. Ms. Mamatha Banerjee is a successful woman politician of her own without her father. Ms. Jayalalitha had a mentor like Dr. M. G. Ramachandran, former Chief Minister of Tamil Nadu. Ms. Mayavathi also has had a mentor like Sri. Kanshi Ram. These are some of the samples for how politicians and political parties inherit the age old system of making the male members as political successors.

According to Mrs. Sumitra Singh, a Nine time MLA and former Speaker, Rajasthan Assembly, "The low representation of women in Lok Sabha elections reflects the bias they suffer in society and giving 33 per cent reservation to females in legislatures will address the gender imbalance in politics. "Due to male dominated society women did not get chance to participate in politics for years. Though participation of women has increased over the years due to growing literacy and awareness about rights, 33 per cent reservation for women is still far from reality,". Though women are coming forward due to awareness and rising literacy level, a lot depends on winnability of candidates that parties consider while distribution of tickets. "The bill for 33 per cent reservation, if passed will be a major breakthrough,". According to Mrs. Kiran Maheshwari, current MLA and former MP from Rajasthan, participation of women has increased in politics, be it local bodies election or state assembly. "However, there should be compulsory 33 per cent quota for women to encourage participation. There is also a need to develop women leadership by the parties," (Factcheck, 2019).

The Women's Reservation Bill or The Constitution (108th Amendment) Bill, 2008, is a pending bill in the Parliament of India which proposes to amend the Constitution of India to reserve 33 per cent of all seats in the Lower house of Parliament of India, the Lok Sabha, all state legislative assemblies, village council leader or Sarpanch, and positions in gram Panchayats exclusively for women. After its reintroduction, the bill was passed by Rajya Sabha on March 9, 2010, but was still left pending in Lok Sabh. Government of India introduced a constitutional amendment Bill known as "Women Reservation Bill" in the year 1993 reserving 33 per cent of seats exclusively for women in village council leader, or Sarpanch, positions in gram Panchayats and later on to Assemblies and Parliament level. The Women's Reservation Bill was initially introduced in the parliament on September 12, 1996. The bill was introduced in Lok Sabha by the United Front government of HD Deve Gowda. The successive Congress and BJP governments did not pass the Women Reservation Bill claiming that they don't have a single majority and getting opposition from Samajwadi Party (SP), Bahujan Samaj Party (BSP), Rastriya Janadha Dal (RJD) who are demanding a separate reservation for SC/ST/OBCs Women, seeking a quota for women from SC/ST and OBCs outside the 33 per cent that has been proposed in the current legislation.. This women's Reservation Bill which has been introduced and failed to pass in 1996, and again in 1998, 1999 and 2002.Political leaders like Ms. Mayavathi demands 50 per cent reservation along with separate reservation for SC/ST/ and OBC communities. SP is also of the opinion that there should be separate reservation for OBC, Dalits and Muslims. One point is clear here if they wanted to pass the bill they can join together and pass the bill. But the Patriarchy political system would not allow for this. Either 33 per cent or 50 per cent reservation is offered, it is against the un-written law enjoyed by male politicians. They don't want to lose their power and submissive to their counter parts. As usual most of the male politicians are of the opinion that that the reservation would mean end of their hierarchy with money, muscle and political power.

Rights of property inheritance:

What is wrong in making ones children as successor? In a democratic country like India children have the right to inherit anything of what their fathers and forefathers created and accumulated in their life times. In India a doctor wanted to make his children as doctors, an engineer wanted to make his children as engineers, an IAS officer or IPS officer wanted to make his children as IAS and IPS officers, and businessmen wanted to see their children as successful business people. Similarly politicians and political parties wanted to see their children also entering into politics and play a crucial role in politics. But there are differences between these two. No doctors discriminate between his male child and girl child. If possible he makes both his children doctors. Same

is the case with Engineers and IAS officers. But in politics, politician prefer only the male members to succeed, not the female children. Here the discrimination starts. Girld children are canvassed, brainwashed,pressurised and compelled to withdraw from competition with her brothers and claiming teh rights over politics successorship. This discrimination is taking place at a lovely and affectionate atmosphere within the family. Girls simply could not do anything even after knowing that they are being discriminated by their parents as well as political leaders. In politics politicians have the power to control economic system, social system, distributive system, and information and communication system. So the men have the prejudice that only male successor could control all these things.

Here the rights of girl children are completely been neglected to the core. Their knowledge, exposure, talents and experiences are not at all recognised by the political parties run by their leader fathers. They have Completely been sidelines and even not given a chance to contest the elections some times. What is the result of this discrimination? Women are being discouraged in India indirectly even if they are from politically enriched families. Then what would be the condition of girls from poor families? How women from poor and middle class families could think of entering into politics. The enriched politicians and political parties use their economic, money, muscle and political power to discourage the poor women folk in India. Finally they will withdraw from entering into active politics and confined themselves at the local level. Their political aspirations to enter into Assembles and Parliament would be dismantled within the boundaries of Panchayat. This is what going on in India as for as women in political empowerment is concerned. This is what politicians wanted in India and to a great extend they succeeded.

In the case of Kerala:

In the case of Kerala, the women MLAs in the Kerala Assembly has never exceeded 10 per cent. In some elections, 1967 and 1977, only one woman had been elected. This poor representation of women in elected positions of power belies the active participation of women in grassroots governance – panchayats and municipalities – where they make up more than half of the elected representatives. Mainstream political parties in Kerala have, however, displayed a patriarchal mindset in marginalising women from political and leadership roles at the state level. Lathika Subhash, Kerala women politician, resigned and publicly tonsured her head on March 14, against her party's failure to give tickets to women candidates in the April election. She claimed "I have three decades of experience in politics," and "I am sad to say that gender parity is a far cry in Kerala politics.". Sobha Surendran of the Bharatiya Janata Party was given a chance to contest the elections after she showed her displeasure in the public. Kerala elected the highest number of women MLAs in 1996, at 13. Since 2001, this percentage has hovered around 5. Although parties in all three coalitions have increased the percentage of tickets given to women since 2001, the number has never exceeded 16 per cent of the total contesting candidates. The Indian Union Muslim League fielded a lone woman, Noorbina Rasheed, a long-term member of the party, after 25 years. Women such as KR Gowri Amma and Susheela Gopalan, both of whom were once strong contenders to become the Chief Minister of the state, played a crucial role in Kerala's politics. However, they were short-changed by their party, in keeping with "the highly patriarchal Kerala society". According to Rekha Raj, School of Gandhian Thought and Development Studies, Mahatma Gandhi University, Kottayam, "Political parties in Kerala cannot accept women who defy the patriarchal norms," "Society cannot accept women who do not satisfy the male gaze or the male ego. That is why we do not often see women who are divorced, single, belong to sexual minority groups etc. as politicians. [The] morality of women in the public sphere is always under scrutiny." Given their poor representation in the legislative Assembly, women's representation in the state cabinets has been worse. Since 1957, only eight women have served as cabinet ministers in Kerala. The present government has included 4 women as minsters. The situation is worse for women from marginalised communities, such as Dalits and Adivasis. Social justice is never a concern for mainstream political parties. That is why we do not have a woman Chief Minister. According to Noorbina Rasheed, the IUML " we have a fair presence of women in local bodies," . "But they are like Bonsai plants – not allowed to grow after a point." "Women get key positions in local bodies solely because of reservation,". "Decisions for Assembly and Lok Sabha elections are taken by men, where women do not even have a say. I belong to a party which made women prime minister, president and party president. But those sentiments are not reflected in the lower ranks." Across party lines, women leaders have for long demanded reservation of at least 33 per cent of the seats in parliament and state legislatures as a way towards gender-parity in electoral politics. "Without reservation, we cannot expect men to share the power they have been enjoying for a long time,". "Parties particularly tend to ignore women who prove their mettle in local bodies (Jisha Surya, 2021).

Government of India and almost all the state governments enacted so many laws, acts and regulations' for the upliftment and empowerment of the women socially and economically. But most of these laws are implemented only on papers. In reality their impact is very much limited and only a marginal improvement is recorded. You

take the case of Panchyat institutions where 50 per cent reservations are given to women. After elections women become pradhans with a lot of powers in implementing many social and welfare schemes. But actually what is going on here is that the Pradhans could not exercise their own powers. In this patriarchal society most of the Pradhans decisions are taken by either the pradhans husbands or the party leaders with whom she is associated. Here the women can note exercise their rights. They are there as Pradhan for the name sake only.

Empowerment of Women at Global level:

According to UN Women's economic empowerment is central to realizing women's rights and gender equality. Women's economic empowerment includes women's ability to participate equally in existing markets; their access to and control over productive resources, access to decent work, control over their own time, lives and bodies; and increased voice, agency and meaningful participation in economic decision-making at all levels from the household to international institutions (UN Women). Only 5% of Fortune 500 CEOs are Women. Women farmers have significantly less access to, control over, and ownership of land and other productive assets compared to their male counterparts. Land is perhaps the most important economic asset; women account for only 12.8 per cent of agricultural landholders in the world. Women and girls are responsible for water collection in 80 per cent of households without access to water on premises. Women are less likely to be entrepreneurs and face more disadvantages starting businesses: In 40% of economies, women's early stage entrepreneurial activity is half or less than half of that of men's. Women are less likely than men to have access to financial institutions or have a bank account. While 65 per cent of men report having an account at a formal financial institution, only 58 per cent of women do worldwide. Women are still less likely to have access to social protection. Gender inequalities in employment and job quality result in gender gaps in access to social protection acquired through employment, such as pensions, unemployment benefits or maternity protection. Globally, an estimated nearly 40 per cent of women in wage employment do not have access to social protection. It is estimated that if women's unpaid work were assigned a monetary value, it would constitute between 10 per cent and 39 per cent of GDP. Globally, women are paid less than men. The gender wage gap is estimated to be 23 per cent. This means that women earn 77 per cent of what men earn, though these figures understate the real extent of gender pay gaps, particularly in developing countries where informal self-employment is prevalent. From the latest available data, the share of women in informal employment in developing countries was 4.6 percentage points higher than that of men, when including agricultural workers, and 7.8 percentage points higher when excluding them. In 2017, global unemployment rates for men and women stood at 5.5 per cent and 6.2 per cent respectively. This is projected to remain relatively unchanged going into 2018 and through 2021. Women remain less likely to participate in the labour market than menaround the world. Labour force participation rate for women aged 25-54 is 63 per cent compared to 94 per cent for men. When including younger (aged 15 years and up) and older women (aged 55 and up) , in 2018 women's global labour force participation rate is event lower at 48.5 per cent, 26.5 percentage points below that of men. Gender differences in laws affect both developing and developed economies, and women in all regions. Globally, over 2.7 billion women are legally restricted from having the same choice of jobs as men. Of 189 economies assessed in 2018, 104 economies still have laws preventing women from working in specific jobs, 59 economies have no laws on sexual harassment in the workplace, and in 18 economies, husbands can legally prevent their wives from working. (UN Women).

India the worlds largest democracy has conducted the rolling elections across four states like Kerala, Assam, Tamil Nadu, West Bengal and Pondicherry Union Territory. Though women constitute almost half of voters, less than 10 per cent of the total candidates who contested in the elections are women. About 9 per cent in Kerala, 7.8 per cent in Assam and 11per cent in Tamil Nadu, Puducherry and West Bengal. Gender equality remains a distant dream. There is no dearth of women workers in India's major political parties, but they are regularly sidelined and denied a party ticket to contest elections. The failing goes beyond politics to community attitudes. A patriarchal mindset is still evident, and derogatory comments about women in politics are rife on social media. India's failure with women's representation in politics isn't always appreciated internationally. India's poor record on women's representation is starkly revealed by the World Economic Forum's Global Gender Gap Index 2021, where it has slipped 28 places, ranking 140 among 156 countries. India is the third-worst performer in South Asia, only ahead of Pakistan and Afghanistan, behind Bangladesh, Nepal, Sri Lanka, the Maldives and Bhutan. The biggest slump is in the political empowerment sub-index, where India ranks 51, dropping from 18 last year. The failing goes beyond politics to community attitudes. A patriarchal mindset is still evident, and derogatory comments about women in politics are rife on social media, for example. An Amnesty International Report published last year showed the shocking scale of abuse female politicians in India face on Twitter. Sexist remarks are regularly directed at women who contest elections, whether about their appearance, clothing or experience. India has made strides in recent times in efforts to clean up the scourge of

dirty money in politics – even if candidates facing charges remain prominent. But the corrupting influence that comes from gender inequality remains a major fight. It will take more than a tonsured head to draw attention to the challenge. The Women's Reservation Bill seeks to amend the constitution to set aside for women one-third of all seats in the Lok Sabha, India's lower house, as well as in all state legislatures. Yet the bill has languished despite passing the Rajya Sabha, India's upper house, in 2010 shows "lack of seriousness among political parties in taking better account of women's increasing electoral participation" (lowyinstitute.org)

SUGGESTIONS

To increase the women participation in Indian politics, women as a whole should adopt various strategies to counter the powerful male dominated political system. Herby some policy measures are suggested for the attention of the women as a whole particularly women who aspire to be in politics, and the governments for consideration.

1. Generally we have an impression/belief that education would create an equal opportunity for women equivalent to that of men. That is true, education would ensure knowledge gaining in the form of taking degrees, going for research, getting a good job, earning very good income, getting a good life partner, taking the family to upper middle class level, increase status in the society with good house, good car, good education for their children. So education can take the poor women from poverty to rich class. At the same time in the case of politics, education alone would not take women to play a major role in politics. Education brings enlightenment among women. Education teaches all the good and bad features of politics. Education teaches what are rights women have in our society?, and how to attain them? Education also teaches the responsibility of women in our society. Once women were educated, employment is guaranteed, income is ensured then automatically the family would flourish with prosperity and finally the country as a whole will see the overall development. That is why people used to make a statement such as, "if a woman is educated it is equivalent to the education of the entire family". If women in every household were educated the entire country will be educated". From this statement one could easily understand the role of women in our family, in our society and for the development of the country. Women should not confined themselves with the development of their family alone. They have to come out openly and play their role in politics with responsibility. They should not withdraw from their responsibilities they owe to the society and for that they have to come out of the family bondage and do good things to the society through politics. Women in Kerala are more educated , with 91.98 per cent literacy rate and 26.9 per cent of the female students pursue higher education, than women in other states but they use their education and knowledge only for the economic development of their families. They are enjoying the economic power at home and not ready to come in large numbers to play any major role in Kerala's male dominated politics. Education taught teaches women boldness, bravery, wisdom, targets, family responsibility and social responsibility. So educated women all over India should come out of family slavery system to play their role and make the life meaningful.

2. Now a day's one could easily understand as well as recorded that Indian women are very much interested to enter into politics and play a major role there. The younger and new generation girls needs "God Fathers" or "Mentors" in politics that male politicians never provide. If they are not from politically established or connected families nobody would mind them. At the same time they have to face a lot of hurdles on their way to establishing their role in politics such as lack of money power and muscle power, rowdyism, opposition from established and well known political leaders and activists, opposition from within the party, open criticism, allegations, negative comments, harassments, criticism and opposition from caste groups, pressure from parents, husbands and relatives, and non recognition etc. Overall character assassination will be there. In politics one should not expect the results immediately after entering into politics. One has to wait. In most of the political parties the youngsters would get chances to contest elections after 15 to 20 years of services rendering to their respective parties as a strong follower and by actively taking part in the party activities . In this circumstances it would be very difficult for young girls wait for such a long period. So instead of directly entering into national level and state level politics in the initial stages of political career young women aspirants can enter into Panchayat level politics first for one or two years. At this grassroots level they can easily establish their names through their services, dedication and sincerity in implementing government programmes and welfare schemes meant for them. Young girls have to establish a friendly atmosphere in the Panchayat in such a way that everyone should feel how important your presence is for the Panchayat. That is the starting point of your political career.

3. Generally it is believed and people also have the confidence that women politicians are less corrupt than men and more sincere and committed to their responsibilities in their respective constituencies and

resolving issues if anything related to common people. For example most of the IAS and IPS women officers are excellent in their dedicated services. Government of India is continuously taking a lot of efforts to bring down the Corruption Rank of India from 86th place out of 180 countries to minimum rank. At current situation it is a challenge. Transparency in administration is possible if more women entering into politics. .

4. In recent years one could see that women Ministers, at Central Government level, are given very significant portfolios such as Finance, Defence and education (HRD) etc.,. As far as states are concerned they are not getting required recognition from their respective political parties for their capability and experiences. They were given only insignificant portfolios such as women, children, families and health. Women are capable of handling any portfolios handled by men. Women are excellent in taking care of their families, children and household requirements. Out of the total number of Ministers at state level not even 1/3rd of the Ministership is given to them though they have rights over 50 per cent of the Minister Assignments. They were given only highly insignificant one or two portfolios and forced to accept whatever is given to them. This attitude is to be changed. The active women organisations should join together and raise their concerns on this type of discrimination.

5. One of the major factors which stands as a block on the way development of women politicians in Indian politics is the prevailing "caste system" . This system will not allow the togetherness of the voiceless women to raise their concerns against the discriminatory practice which is prevailing in politics. Established politicians will use this caste system to divide the women on caste lines so that only male politicians could enjoy the constitutional power. So women always women only even if they are from very rich families, middle class families and poor families, and they all suffer from negligence, discrimination and exploitation in our society. They should join together, stand together and fight together to bring the rightful equal opportunities and rights for them in politics. They should ignore/come out of the caste and class system to be a successful women politicians.

6. Governments, both central and states, have to dismantle all the structural and legal hurdles that prevents implementation of 33 per cent seats reserved for women candidates in politics particularly with respect to MLAs, and MPs elections. Why only 33 per cent of the seats for them when they constitute about 48 per cent of the total population.? What is the logic behind it? Government should draw a policy of ensuring 50 reservation in due course.

7. In politics the competition among the politicians and political parties is very high. Competition within the parties and , competition between parties are inevitable in politics. Only the strong , and powerful person would succeed. In this context the soft cornered Women should prove themselves as a good leader as well as good service provider r for the elected people. People will trust them based on their performance in the Panchayat level bodies. Many audits have brought out that not more than 6 per cent of women have got leadership roles among the political parties. This leadership gap should be filled by the new generation women leaders.

8. Most of the established political parties generally used to identify the future successors/leaders, " mainly boys, not girls" based on caste, money power, vote power , regional and religious power and make them youth-wing leaders, at various levels such as Panchyat level, Taluk level, district level and state level and provide them opportunities to contest in the school level elections, college level elections and university level elections. Politicians train them like an elephant and made them slaves to their parties. With this political patronage they will be ready to do anything for the party. Political parties and leaders make use of these youth leaders to protest against other parties, attack other party workers, and some time they may be forced go to an extent of murdering the workers of opposition parties. In this process girls get only a limited chances of patronage from the political parties and leaders because of the social system. This attitude should be changed. If girls are not getting this type of political patronage, the women leaders should address it to their leaders in the party meetings. Women leader though limited should encourage the young girls to play an active role in politics. They should explain the importance of women's right to participate in politics and their roles in decision-making as well as training and inclusion.

9. Governments should take initiatives to Promote women in leadership, decision-making and implementations roles at all levels such as starting from Ward level to Panchayat level to Mayor level, Assembly level and finally at Parliament level including at peace negotiation tables and in humanitarian emergencies. They should be given freedom to raise funds for the party, manage the funds for the party and take part of expenditure committees and administrative level committees at various levels

10. Women groups should organise themselves and vote for only those parties which promises/reserves 50 per cent of their Assembly seats, Parliament seats, Minister positions, Mayor positions, and administrative level party positions to women in their manifestos.

11. Women should come out of the ideology and attachment of the word, "good mother", "good housewife"," good daughter", "good mother-in-law" and "good grandmother" etc. etc. All these good words are used to make the entire women land into slavery in the hands of men at home and at later stage the same thing is being continued in politics.

12. Once politics was considered as a service for the people. Immediately after independence politicians wanted to service to the people. Now the trend is changed. Now political parties are acting as registered corporates or companies and societies with profit motive. They appoint political consultants like Prasanth Kishore how to come to power through some indirect methods. Women politicians can easily consult people like Prasanth Kishore how to win the elections, how to organise themselves, and how to empower themselves in politics.

13. At present India has millions of highly qualified educated unemployed children. Politics is an option or them to get grow instead of getting a government job. If you are economically sound and immediate job is not needed you can directly start a party of your own or join in any political party of your choice. Once you became established monthly salary is ensured, pension is ensured, extra perks like telephone charge, car with driver, petrol and diesel charges, very good accommodations in hotels and restaurants in all cities, privileges in place of worships, government offices, government servants, etc. etc. are very much available for you young women. All these services and benefits are enjoyed by the male politicians at present in India. You try to get your legal share of this. You consider politics is a job and get it.

CONCLUSION:

Though India's democratic system talks in length about the equality, equity, inclusive development, gender justice and balanced development etc etc, on papers when it comes to majority versus minorities, our democratic system is always in favour of majorities only. In our democratic system the dominant caste group, the dominant religious group, and the dominant regional group will get a chance to enter into politics and will get a chance to win if contested in the elections. Similar is the case with male and female politicians also. The male politicians, being the majority, will get a chance to enter into the politics freely with the support of their male mentors and contest elections and win the elections with majority. Women politicians have no mentors and are helpless and guideless here. Women politicians themselves could not join as a major gender group, to raise against the discrimination practiced by the male politicians, because they are from different caste, community and religious groups. The caste and community divisions will not allow women to join together as a strong powerful group. Caste is the weakness of Indian population. The caste prevents them to join together. The failure of not passing 33 per cent of reservation for women in the parliament is an example for the disunity among the Indian women politicians. The male politicians know very well about this weakness.

That is what the male politicians also wanted. Women should realise their power and strength, unite themselves as a political force, stand on their own in politics, instead of criticising their male counter parts, to enjoy their democratic legal rights in Indian political system. If women were united they will be the winner.

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CHATBOT- A TECHNICAL REVIEW

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ABSTRACT

A CHATBOT (Chatter Robot) is a form of interactive agent that is designed to stimulate an intelligent discussion with one or more users in natural language via an auditory or textual means using computer algorithms. Chatbots are computer programmes that perform without the assistance of a human operator. They mostly communicate via instant messaging or artificially replace human interaction patterns. In this paper, we explore the technical concepts associated with the implementation of chatbots.

Keywords— Chatbot, Natural Language Processing, Human Computer interaction.

I. INTRODUCTION

Messaging has become one of the most popular forms of communication in today's globe. Many people prefer talking to one another over text messages or messenger apps. As a result, businesses are building chatbots that you can message and converse with as if they were real. In fact, you may believe you're speaking with a human when you're actually conversing with a chatbot. Symbolic representation of chatbot is shown in Figure 1.

Figure 1. Chatbot

Chatbots have now become a thorn in the side of industry professionals. The customer usually has a few basic inquiries for you. This particular set of questions has a set of responses that must be provided at all times. As a result, chatbots are displacing human resources because customers may access information at any time. Chatbot development is also less expensive than app development, which is one of the primary benefits of this business, which can be boosted with minimal work. Chatbots are simple to use and allow for more user interaction. AI (Artificial Intelligence) is at the heart of it.

While many companies are adopting chatbots for online customer support to address issues and answer simple queries, only a handful are developing shopping assistants to provide us with recommendations when we are seeking for a certain product. In a nutshell, chatbots are virtual assistants that are trained to respond to user requests automatically. Chatbots are increasingly widespread these days, whether in the banking sector or on any website. Chatbots are useful for processing automated assistance requests. Throughout a variety of call centre scenarios. As a result, it entails much more than simply answering paired questions; it also entails keeping context or retaining contexts from prior parts of the conversation in order to make dialogues meaningful.

A chatbot, also known as a conversational agent, is a computer software capable of taking a natural language input and providing a conversational output in real time [1]. This human-chatbot interaction is typically carried out through a graphical user interface based on human-computer interaction (HCI) principles [2], [3].

Artificial intelligence and complicated algorithms are used to create chatbots. Artificial intelligence refers to computers that have been imbued with human-like intellect in order to execute activities similar to ours. Complex algorithms and mathematical functions are used to create this intelligence.

The core idea behind AI is to create a system that can replicate a human brain. The fundamental three characteristics that make the robot artificially intelligent are generalised learning, reasoning, and problem solving. AI gives machines the ability to reason and come up with solutions. Smart phones, vehicles, social media, video games, financial surveillance, and a variety of other facets of our daily lives all use AI.

II. EXISTING SYSTEMS

The chatbots are widely used in industrial, business,educational and medical sector.

Chatbots in Healthcare domain:

Figure 2. Chatbot in Healthcare

If a patient requires basic information about their health problems, they may ask their questions to chatbots, who will respond. These chatbots, as shown in Figure 2, have the abilityto develop intelligent contact. However, they are unable to diagnose the patient's condition in the same way as a doctor would [4].

Chatbots in Education domain:

Chatbots in educational systems, as shown in Figure 3, providelearners with personalised learning. Learners may gain a deeperunderstanding of their subject of interest [5].

Figure 3. Chatbot in Education

Chatbots in Industries:

The user does not receive high-quality assistance when using traditional chatbots. Chatbots with advanced AI, on the other hand, are capable of interacting with customers in a positive way and may be able to automate the entire business process [6].

Types of Chatbots: There are 3 types of chatbots

1. Menu/Button based chatbots

2. Keyword recognition-based chatbots

3. Contextual chatbots

Menu/Button based chatbots: In this type of chatbot, the user's quality of experience isn't as good, and the technological difficulty is also lower. If you're familiar with programming, you'll notice that you're utilising simple reasoning here. With this type of chatbots communication is through pre-set rules. This kind of chatbots are usually used in banking apps and payment apps.

Keyword recognition-based chatbots: When compared toMenu Button based chatbots, this form of chatbot provides a somewhat better and higher-quality user experience, and the technology difficulty is also higher than the previous form of chatbot. Customizable keywords and AI are used by these chatbots to determine how best to respond to the user. "How can I set up an auto logout transaction on a bank system?" for example. To select which answer to respond with, the boat would most likely employ the phrases "auto", "logout" and "bank".

Contextual chatbots: Contextual chatbots are the most advanced of the three chatbots we've talked about so far. In comparison to prior bots, the user will get extremely high-quality results here. This chatbot can recognise genuine human language and respond in text or audio format in that language. Understanding languages is extremely useful in chatbots, and the mains of NPC (natural processing language) and AI (artificial intelligence) make this feasible. Examples include Google Assistant, Amazon's Alexa, and Apple's Siri.

III. METHODOLOGY

There are three classification models that chatbots adopt to work [7] as shown in Figure 4.

Figure 4. Methodology adopted by chatbot

Pattern Matchers:

Pattern matchers are used by chatbots to collect the messages and it generates a proper response from the users. "ARTIFICIAL INTELLIGENCE MARKUP LANGUAGE

(AIML)" is a standard structure model of these patterns. A simple example of pattern matching is shown below.

<aiml version ="1.0.1"encoding="UTF-8"?>

<category>

<pattern>WHO INVENTED TELEPHONEFOR THE FIRST TIME.

</pattern>

<template>according to google AlexanderGraham Bell invented telephone for the first time.

</template>

<category>

</aiml>

Output of the machine is as follows:

USER: Who invented telephone for the first time?

ROBOT: As per the Google, Alexander Graham Bell inventedthe telephone for the first time.

The chatbot knows the proper answer because his or hername is in the associated pattern.

Algorithms:

A specific pattern is accessible in the database to provide an appropriate response for each type of enquiry. A pattern combination is used to construct an order. Algorithms are usedto minimise the number of classifications and produce a more manageable framework.

Classification of Sample Input Sentence.

Input: "Hi, Good evening". Term: "Hi" (no matches). Term: "Good" (class: greetings)

Term: "evening" (class: greetings)Classification: greetings (Score=2)

Artificial Neural Networks:

Weighted connections, which are computed through multiple iterations during training the data, are used in neural networks to calculate the output from the input. Each step through the training data modifies the weights, resulting in a precise output.Generalised artificial neural network architecture is shown in Figure 5.

Each sentence is broken down into individual words, which are then fed into neural networks as input. The weighted connections are then calculated by thousands of repeats of the training data, each time refining the weights to make it more accurate.
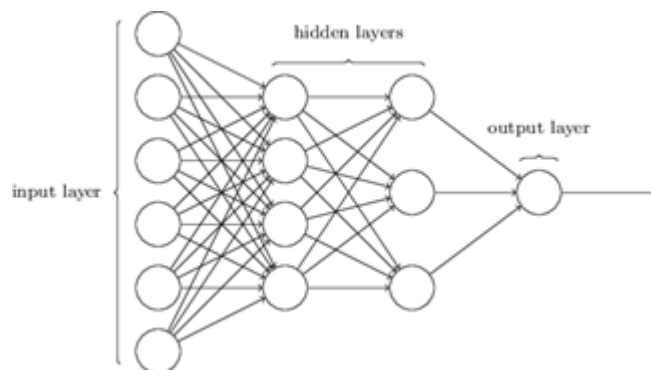
Figure 5. Artificial Neural Network

A neural network's training data is a comparable algorithm with more and less code. A matrix of 20020 is used when there is a comparable small sample, such as when the training sentences comprise 200 different words and 20 classes. However, this matrix size grows n times slower and can result in a large number of errors. Processing speed should be really fast in this situation.

Neural networks, algorithms, and patterns matching code come in a variety of shapes and sizes. Some of the versions may have a higher level of complexity. However, the fundamentals remain the same, and classification is the most important task. Let us take-up, how does NLP (Natural Language Processing) in chatbot works? NLP working is shown in Figure 6.
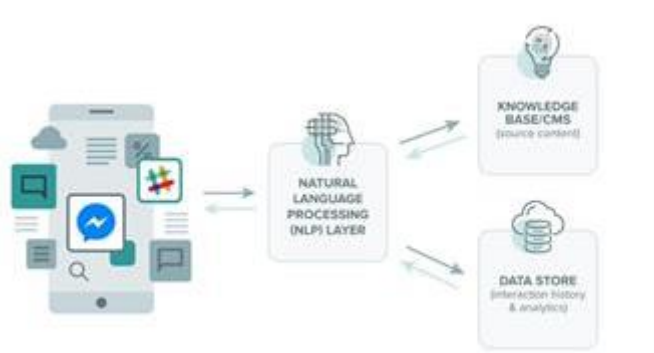
Figure 5. NLP working

NLP contains two processes viz Natural Language Understanding (NLU) and Natural Language Generation (NLG). NLU has the strength of converting messages into data for a machine to understand whereas NLG is opposite to NLU because it transforms data into messages.

Now let's imagine, if user write a message to a chatbot "WHAT IS THE WEATHER IN DAVANGERE TODAY?".

For this, chatbot going to breakdown this sentence into Intents and Entities. An Intent is the necessary information what actually the user wants. Entity is a detail that compliments the intent. It may be colour, location, date etc.

In the above-mentioned sentence, the intent is "Weather" and entities are "Davangere", and "Today".

Some important steps in NLP mechanism are given below:

1. **TOKENIZATION**: Breaking down a sentence into different tokens.

2. **PART OF SPEECH TAGGING**: It indicates which words are verb, noun etc.

3. **STEMMING**: Reducing the word to its basic or local form.

4. **NAMED ENTITY RECOGNITION**: It recognises the Entities in the message that user has been given by the user.

5. **SENTIMENT ANALYSIS**: It is ability of thecomputer to find the user emotions.

Here is a list of 10 ways of how a chatbot impact businessgrowth [8].

1. Better lead generation and nurturing

2. Deliver 24×7 automated customer support

3. Save customer service costs

4. Increased customer engagement

5. Bots save an ample amount of time

6. Easy scalability of support

7. Better team productivity

8. Higher customer satisfaction

9. Chatbot + Live chat = Complete hybrid customerexperience

10. Cut down on human errors

IV. CONCLUSION

The majority of businesses now have an online presence, either through a website or through social media outlets. They shouldtake advantage of this by using tailored chatbots to quickly communicate with their target audience. Thanks to improvements in natural language processing, chatbots cannow converse with customers in the same way that humans do.Businesses save resources, cost, and time by using a chatbot to get more done in less time.

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WOMEN ENTREPRENEURSHIP IN INDIA: CHALLENGES AND OPPORTUNITIES

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ABSTRACT
In today's world, women entrepreneurs are playing very vital role and they have become important part of the global business environment and it's really important for the sustained economic development and social progress. India has always been a land of entrepreneurs and also occupied a strategic position in the Indian economy. Women are generally perceived as home makers with little to do with economy or commerce. The transition from homemaker to sophisticated business woman is not that easy. But this picture is changing. In Modern India, more and more women are taking up entrepreneurial activity especially in micro, small and medium scale enterprises. Entrepreneurship is a tool of economic development. It is an effective mechanism to create employment and empower women and promoting women's entrepreneurship and gender equality helps to empower women in the society. Women across India are showing an interest to be economically independent. Gender equality and economic development go hand in hand. Though the entrepreneurial process is the same for men and women, there are however, in practice, many problems faced by women, which are of different dimensions and magnitudes, which prevent them from realizing their full potential as entrepreneurs. Women entrepreneurship in India faces many challenges and requires radical changes in attitude and mindsets of society. Therefore, programs should be designed to address changes in attitude and mindset of the people. So this paper covers problems faced by women entrepreneurs, opportunities of women entrepreneurs and tells some successful Indian women entrepreneur and also discusses various programs taken by government for women entrepreneurship development.

Keywords: Women entrepreneur, Problems, opportunities, Successful Indian women entrepreneur, government programs.

INTRODUCTION
In present scenario women entrepreneurship is very important for economic growth of our country. It does not only contribute to improve women situation in the society but also helps to improve economic situation of country. Women Entrepreneurs may be define as the women or a group of women who commence and operate a business venture. . Like a male entrepreneurs a women entrepreneur has many functions. They should explore the prospects of starting new enterprise; undertake risks, introduction of new innovations, coordination, administration and control of business and providing effective leadership in all aspects of business. Government of India has described women entrepreneurs as an enterprise/venture owned and controlled by women having at least financial interest of 51% of the capital and giving at least 51% of employment generated in the organization to women.

Women Entrepreneurs are highly increasing in the economies of almost all countries. The hidden business potentials of women have been increasing with the growing sensitivity to the role and economic status in the society. The knowledge, Skill and compliance in business are the core reasons for women to come forward into business ventures. Women entrepreneurs engage in business due to push and pull factors which give confidence to women to have an self-sufficient occupation and stands on their foots. Logic towards independent decision making on their life and career is the motivational factor behind this insists on 'Women Entrepreneur' is a person who accepts challenging role to meet her personal desires and turn out to be economically independent. A strong desire to do enormous positive is an integral quality of entrepreneurial women, who is competent of contributing values in both family and social life.

WOMEN CAN BECOME GREAT ENTREPRENEURS: REASONS
Gone are the days when women were portrayed as caregivers. Today, women entrepreneurs have made their way into the top echelons of corporate firms, conquering tough bastions. Women are scoring high and earning plaudits for their leadership skills. There is no place or position a woman can't scale up to today.

1. Women have Intuition

2. Women have Tolerance

3. Women can Multi-task

4. Women Have Patience

5. Women will Listen

6. Women can Adjust

7. Cool-power Leadership

CHALLENGES & PROBLEMS FACED BY WOMEN ENTREPRENEURS

1. Family restriction: Women are expected to spend more time with their family members. They do not encourage women to travel extensively for exploiting business opportunities.

2. Lack of Finance: Family members do not encourage women entrepreneurs. They hesitate to invest money in the business venture initiated by women entrepreneurs. Bank and other Financial Institutions do not consider Middle Class Women Entrepreneurs as proper applicants for setting up their projects and they are hesitant to provide financial assistance to unmarried women or girls as they are unsure as to who will repay the loan — either their parents or in-laws after their marriage. This humiliates unmarried women and they generally leave the idea of setting up their ventures.

3. Lack of Education: Women are generally denied of higher education, especially in rural areas and under developed countries. Women are not allowed to enrich their knowledge in technical and research areas to introduce new products.

4. Role Conflict: Marriage and family life are given more importance than career and social life in Indian society.

5. Unfavorable Environment: The society is dominated by males. Many business men are not interested to have business relationship with women entrepreneurs. Male generally do not encourage women entrepreneurs.

6. Lack of persistent Nature: Women generally have sympathy for others. They are very emotional. This nature should not allow them to get easily cheated in business.

7. Lack of Mental strength: Business involves risk. Women entrepreneurs get upset very easily when loss arises in business.

8. Lack of Information: Women entrepreneurs are not generally aware of the subsidies and incentives available for them. Lack of knowledge may prevent them from availing the special schemes.

9. Stiff Competition: Women face lot of competition from men. Due to limited mobility they find difficult to compete with men.

10. Mobility: Moving in and around the market, is again a tough job for Middle Class Women Entrepreneurs in Indian Social system.

OPPORTUNITIES OF INDIAN WOMEN ENTREPRENEUR

Women entrepreneurs believe good enough to contribute for the society well being in order to tap the opportunities in entrepreneurship. They have many responsibilities towards society betterment. In recent days women entrepreneurs are performing extremely fantastic.

- Eco-friendly technology

- Bio-technology

- IT enabled enterprises

- Event Management

- Tourism industry

- Telecommunication

- Plastic materials

- Vermiculture

- Mineral water

- Sericulture

- Floriculture

- Herbal & health care

- Food, fruits & vegetable processing

GOVERNMENT SCHEME FOR WOMEN EMPOWERMENT
1. Annapurna Scheme

2. Stree Shakti Package For Women Entrepreneurs

3. Cent Kalyani Scheme

4. Mudra Yojana Scheme

5. Mahila Udyam Nidhi Scheme

6. Dena Shakti Scheme

7. Orient Mahila Vikas Yojana Scheme

8. Bhartiya Mahila Bank Business Loan

TOP 20 SUCCESSFUL WOMEN ENTREPRENEURS IN INDIA
1. Shradha Sharma, YourStory.com.

2. Upasana Taku, MobiKwik.

3. Richa Kar, Zivame.

4. Sabina Chopra, Yatara.com.

5. Aditi Gupta, Menstrupedia.

6. Aditi Balbir, V Resorts.

7. Ashwini Asokan, Mad Street Den.

8. Chitra Gurnani Daga, Thrillophilia.

9. Debadutta Upadhyaya, Timesaverz.com

10. Pranshu Bhandari, CultureAlley

11. Radhika Ghai, ShopClues

12. Basudha Shrivastav, ExpressEarth Digital Services

13. Priyanshi Choubey, InstaCar

14. Akanksha Anshu, Refundme.in

15. Shubhra Chadda, Chumbak

16. Swati Bhargava, CashKaro

17. Suruchi Wagh, Jombay.com

18. Suchi Mukherjee, Limeroad.com

19. Sairee Chahal, Sheroes.in

20. Ankita Gaba, Social Samosa

GREAT TIPS TO EMPOWER WOMEN ENTREPRENEURS
- Do not be afraid to fail.

- Get feedback.

- Keep learning.

- Become an expert.

- Ask for what you need.

- Minimize negative people.

- Network.

- Have BIG plans.

CONCLUSION

"Women have full freedom to work and prosper. From the moment they go out of their homes they are human beings: business woman has the same weight as a business man. Empowering women entrepreneurs is crucial for achieving the goals of sustainable development and the bottlenecks hindering their growth must be reduced to enable full participation in the business. Apart from training programs Newsletters, mentoring, trade fairs and exhibitions also can be a source for entrepreneurial development. As a result, the desired outcomes of the business are quickly achieved and more of remunerative business opportunities are found. Therefore promoting entrepreneurship among Indian women is certainly a short-cut to rapid economic growth and development. Let us try to eradicate all kinds of gender bias and thus allow 'women' to be a great entrepreneur at par with men.

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COMPARATIVE ANALYSIS OF RT-PCR AND RT-LAMP FOR EARLY DETECTION OF COVID-19

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ABSTRACT
COVID-19 has emerged as a serious global public health threat, causing an increasing number of infections and significant morbidity and mortality worldwide. The alarming speed with which SARS-CoV-2 has spread emphasizes the importance of preparedness and long-term diagnostic testing investments. Immediately after its initial characterization, Chinese and American Centers for Disease Control and Prevention (CDCs) rapidly employed molecular assays for detection of COVID-19, mostly employing real-time polymerase chain reaction methods. This presentation review describes two types of diagnostic tests commonly used for Severe Acute Respiratory Syndrome Coronavirus-2 (SARS-CoV-2) infection- Reverse transcription polymerase chain reaction (RT-PCR) and Reverse transcription loop-mediated isothermal amplification (RT-LAMP). This review also elaborates the principle, interpretation of result and comparative analysis of RT-PCR and RT-LAMP tests. Finally, the important considerations that could lead to false negative test reduction are also discussed.

KEYWORDS- Point-of-care, RT-LAMP, RT-PCR, SARS-CoV-2, Turnaround time.

INTRODUCTION
In early December 2019, an outbreak of novel corona virus pneumonia (corona virus disease 2019, COVID-19) in the area Wuhan, Hubei Province, China has rapidly spread throughout China and subsequently worldwide. The World Health Organization (WHO) recognised the new coronavirus disease 2019 (COVID-19) caused by the SARS Coronavirus 2 (SARS-CoV-2) as a global pandemic on March 12, 2020(1). By May 11, 2020, the SARS-CoV-2 virus caused a huge epidemic in China and spread to over 140 countries/territories with 4,006,257 globally confirmed COVID-19 cases and 278,892 deaths (World Health Organization, COVID-19 Situation Report-112)(2). According to the WHO data on 30 May 2021 the highest numbers of new cases were reported from India (1 364 668 new cases), Brazil (420 981 new cases), Argentina (219 910 new cases), the United States of America (153 587 new cases), and Colombia (150 517 new cases)(1)-(3).

Consequently, signs and symptoms of coronavirus disease 2019 (COVID-19) might be mistaken with other respiratory diseases, laboratory testing is necessary to identify asymptomatic patients infected with the virus (SARS-CoV-2). Furthermore, it is predicted that up to 40% of patients infected with SARS-CoV-2 may be asymptomatic (subclinical illness) or presymptomatic, but nonetheless capable of spreading the virus to others(4).

The current COVID-19 pandemic is a serious global health concern because of its possibly fatal disease progression and rapid escalation of new cases(5). Diagnostic studies such as molecular and antigen tests can determine whether or not a person has an active COVID-19 infection(6). The declaration of COVID-19 as a global pandemic has necessitated the emergency need for technologies and to method to be deployed for validating diagnosis of suspected cases(5). Since January 2020, tremendous effort has gone into developing very accurate diagnostic testing for COVID-19. The World Health Organization (WHO) and the Foundation for Innovative New Diagnostics (FIND) are working together to validate tests made by various manufacturers around the world(7). Molecular point-of-care testing uses the same core technology as laboratory-based assays, but automates several stages. As a result, molecular POC testing might be performed in close proximity to patients rather than on a laboratory bench, reducing turnaround time and providing results more quickly(8). Here, a comprehensive review of two very sensitive, and specific COVID-19 diagnostic tests is provided, including their salient features and result interpretation.

The clinical features and treatment of COVID-19 patients remain largely elusive. However, accurate detection is required for SARS-CoV-2 infection diagnosis. The present review article aims to understand the details of the commonly used real-time polymerase chain reaction (rRT-PCR) test and the evolving RT-LAMP test for detection of COVID-19 and to mitigate the risk of transmission.

REVERSE TRANSCRIPTION POLYMERASE CHAIN REACTION (RT-PCR)
Real-time polymerase chain reaction(rRT-PCR) is the most popular approach for detecting genetic material from SARS-CoV-2(9). It is considered as the gold standard and offers high sensitivity and specificity(10)(7). The Indian Council of Medical Research (ICMR) recommended use of rRT-PCR-based tests approved by the US FDA EUA/CE-IVD approved kits. The FDA EUA/CE-IVD approved RT-PCR kits are highly specific and

detects the presence or absence of SARS-CoV-2 viral nucleic acid and thus directly confirms viral infection in biological specimen(11). All current EUA-approved SARS-CoV-2 RT-PCR assays are labelled only for qualitative detection of virus-specific gene targets and are not approved for quantitative determination of viral concentration in the sample(4).To limit cross-contamination and the number of stages that require human intervention, seven businesses have created enclosed detection cartridges that include RNA extraction, purification, amplification, and detection. This improves detection repeatability and lowers the chance of technician infection(12) like Convergys POC RT-PCR COVID-19 Detecting Kit, ViroKey™ SARS-CoV-2 RT-PCR Test.

In March 2020, Convergent Technologies GmbH & Co. KG introduced Convergys® POC RT-PCR Covid-19 Detection Kit for use with the Convergys® POC RT-PCR Nucleic Acid Detection System, which is a cartridge-based standalone system(13). The kit combines WHO approved RT-PCR techniques with a simple and user-friendly design. The pre-filled, single-use cartridges handle the entire patient sample processing process in 90 minutes, including RNA extraction, purification, and RT-PCR amplification(14).

Vela Diagnostics, based in Singapore, has reported the development of a novel COVID-19 diagnostic test, the ViroKeyTM SARS-CoV-2 RT-PCR Test(13).The kit is used to detect nucleic acid from SARS-CoV-2 in upper respiratory specimens such as nasal, mid-turbinate, nasopharyngeal, oropharyngeal swabs, and nasopharyngeal wash/aspirate or nasal aspirate specimens.

Principle of RT-PCR test

After sample collection, RNA is isolated and purified of proteins, fats and other molecules leaving a mixture of a person's genetic material as well as any viral RNA that might be present(15). In this procedure, reverse transcriptase simultaneously transcribes two or more target RNA regions into complementary DNA (cDNA), followed by amplification of some cDNA regions(9). These cDNAs serve as the extension template. During the extension phase, the 5'→30 exonuclease action of the Taq polymerase cleaves the annealed probe, freeing the reporter dye from the 30 quenching dye, giving in a fluorescence signal increase proportionate to the amount of amplified product(12). The intensity of the fluorescence is recorded at each PCR cycle. The most frequently used method is the real-time RT-PCR, which employs fluorescence to detect the amount of amplified DNA in real time. TaqMan hydrolysis is a commonly used example of this(4). Probes is DNA/RNA marked sequences to identify the genetic target in the material and primers is DNA/RNA sequences that promote replication of the genetic material found in the sample that were created after the SARS-CoV-2 genome was sequenced have been discussed elsewhere(9).

Interpretation of RT-PCR result

The amount of gene target present in a sample usually judges the number of PCR cycles (known as the cycle threshold [CT] value) needed before SARS-CoV-2 is detected in real-time RT-PCR. The CT value of an RT-PCR reaction, according to the ICMR recommendation, is the number of cycles at which fluorescence of the PCR product is discernible over and above the background signal(16) Multiple serial amplification cycles are done to identify the targets: higher the number of cycles, lesser is viral load of the sample under analysis. According to the ICMR, the worldwide approved CT value cut-off for Covid-19 ranges from 35 to 40, depending on the instructions provided by individual manufacturers. All patients with a CT value of 35 or less are deemed positive, while those with a CT value of 35 or more are declared negative. All samples with a CT value of 35 or below, which indicates a weak sigmoidal curve, should be retested(17).

A negative PCR result could indicate that the person is not presently infected with the virus, perhaps the virus is not present at the location where the sample was obtained, the specimen was of low quality, or it is too early or too late to detect the replicating virus. In order to limit the risk of missing an infected person, negative test findings necessitate the re-test patient samples a few days later (15).

REVERSE TRANSCRIPTION LOOP-MEDIATED ISOTHERMAL AMPLIFICATION (RT-LAMP)

LAMP (loop mediated isothermal amplification) is a new nucleic acid amplification technique. Several hospitals, organisations, and institutes are interested in using isothermal nucleic acid amplification technology for the SARS-CoV-2 point-of-care test (POCT), which eliminates the need for a costly thermal cycler. LAMP may be the most promising alternative to PCR as it benefit in terms of specificity, sensitivity, reaction efficiency, and product yield(12). Most importantly, POC testing will aid in the appropriate use of quarantine resources, infection control measures, and patient recruitment into therapeutic clinical trials.

In November 2020, the FDA granted an EUA, the Lucira COVID-19 All-in-One Test Kit from Lucira Health for at-home use, for detection of the virus in nasal swab, by prescription. This test is permitted for self-collected

nasal swab samples in people aged 14 and above who have been diagnosed with COVID-19 by a specialist. This test is also approved for use at the Point of Care (POC) in people aged 14 and up, as well as in those aged 13 and under, where the specimen is collected by a healthcare provider. The test works by swirling the collected sample swab in a vial that is then loaded in the test unit. In 30 minutes or less, the finding can be directly viewed in test unit's light-up display that shows whether a person is positive or negative for the SARS-CoV-2 virus(18).

In March 2021, FDA approved the Cue COVID-19 Test manufactured by Cue Health. It is the first Over The Counter (OTC), non-prescription molecular COVID-19 test to be authorised by the FDA(4). The product is an automated assay that utilizes LAMP technology for the qualitative detection of SARS-CoV-2 viral nucleic acids. The authorized test kit includes a single-use Cue COVID-19 Test Cartridge, the single-use Cue Sample Wand nasal swab, the Cue Cartridge Reader, and the Cue Health Mobile Application (App) that is downloaded onto a smartphone(19). The test starts automatically when the user inserts the Cue Sample Wand with anterior nasal specimen into the CueCOVID-19 Test Cartridge connected to the Cue Health Monitoring System (Cue Cartridge Reader). Heating, mixing, amplification, and detection take place within the cartridge. The flow of electricity across the electrodes is translated into a positive or negative result (based on a pre-determined cut-off).

LAMP utilises 6 different target sequences simultaneously identified by separate distinct primers in the same reaction. A typical LAMP test primer set consists of two inner and two outer primers. The F2 region and a complementary sequence of the F1 (F1c) region make up the forward inner primer (FIP), while the B2 region and a complementary sequence of the B1 (B1c) region make up the backward inner primer (BIP). The sequences of the forward outer primer (F3) and backward outer primer (B3) complement the sequences of the F3c and B3c regions, respectively. F3 and B3 can detect six different regions inside the target DNA. A number of factors must be considered when designing primers for any LAMP assay, including nucleotide base pair concentration and positions, distance between DNA regions, primer thermodynamics, and so on, and more information can be found elsewhere (20)

Principle of RT-LAMP assay

At roughly 65 °C, the FIP complexes with the target DNA at its F2 region to generate double-stranded DNA with the help of DNA polymerase. The DNA polymerase with strand displacement activity simultaneously displaces a single strand of DNA, if any. The F3 primer subsequently binds to its complementary F3c region and displaces the FIP-complementary strand after this initiation step. The FIP strand can self-anneal and form a loop structure at one end of the DNA because of the F1c sequence in the FIP. This strand then serves as the target strand for BIP-initiated DNA synthesis and subsequent strand displacement from B3-primed DNA synthesis. This permits the other end of single standard DNA to create a loop structure, resulting in a dumbbell-shaped DNA structure. It serves as a template for future amplification(20).This loop structure formation excludes the denaturing step, which is otherwise required in PCR to obtain single-stranded DNA, as well as establishing a cyclic reaction between the dumbbell-like structure and its complementary product, resulting in elongated products containing multiple copies of the target sequence.

A combination of LAMP with reverse transcription (RT-LAMP) allows the direct detection of SARS-CoV-2 RNA(10). The RT-LAMP is performed isothermally in one step at 63°C, and the results are obtained within 15–40 min (Fig 1), by targeting the ORF1ab, spike (S), envelope (E) or/and N gene of SARS CoV-2. The RT-LAMP result can be evaluated using real-time turbidimeter, electrophoresis or fluorescence, which is faster and more convenient for clinical diagnosis of SARS-CoV-2(21).
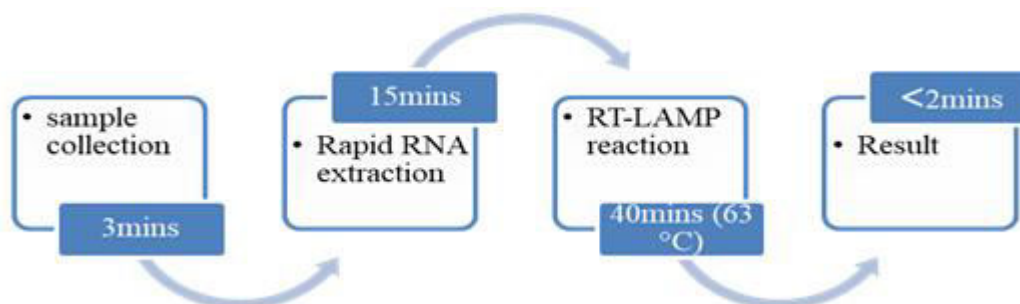
Figure. 1: The workflow of COVID-19 RT-LAMP (~1h). RT-LAMP reaction (primers, reverse-transcriptase, Bst DNA polymerase, and a pH indicator dye are mixed with extracted sample RNA). As the DNA is amplified, the pH decreases, causing a colorimetric change that is visualized by eye.

Recent studies showed that an RT-LAMP targeting the N gene of SARS-CoV-2 can specifically detect viral RNAs of SARS CoV-2 but has no cross-reactivity with related coronaviruses, such as HCoV-229E, HCoV-NL63, HCoV-OC43 and MERS-CoV, as well as human infectious influenza viruses (type B, H1N1pdm, H3N2, H5N1, H5N6, H5N8 and H7N9), and other respiratory disease-causing viruses (21).

Interpretation of colorimetric readout in RT-LAMP

The read out of RT-LAMP tests is frequently colorimetric. Measuring pH or magnesium ions are two commonly used procedures. As a result of the amplification reaction, pH lowers and Mg2+ levels fall. This can be observed by Indicators such as phenol red and hydroxynaphthol blue (HNB) . Phenol red which can detect pH shift. HNB can detect the change in magnesium ion concentration. Another option is to use a DNA intercalating coloring agent like SYBR Green I(22). The benefit of employing LAMP over rRT-PCR is that the amount of DNA produced is substantially higher, and a positive test result may be seen visually without the need for a machine to read the data(8).

COMPARATIVE ANALYSIS OF SALIENT FEATURES OF RRT-PCR AND RT-LAMP TESTS IN DIAGNOSIS OF SARS COV-2

When compared to rRT-PCR, two studies found that RT-LAMP approaches have a sensitivity of more than 97 percent when targeting the ORF1ab gene. RT-LAMP and rRT-PCR both have the same sensitivity and can detect a 20-fold diluted sample, according to Yang et al.. Most importantly, studies have shown that RT-LAMP analysis is extremely specific because it uses six to eight primers to identify eight different regions on the target DNA. However, unlike rRT-PCR, LAMP technology does not have such a large background of literature behind it. Thus, tests using LAMP technology for COVID-19 are still being evaluated in clinical settings(8). Both RT-PCR and LAMP tests cannot detect if a person has had the virus and then cleared it after the end of the COVID-19 disease, i.e. whether a person had the disease, as it only detects when active virus is present (15). Other salient features of RT-LAMP in comparison with RT-PCR are depicted in Table 1.

Table 1. Comparison of salient features of RT-PCR and RT-LAMP tests for detection of SARS-CoV-2 (10) (8).

Characteristics	RT-PCR	RT-LAMP
Trained personnel	Required	Not required
Laboratory or point of care (POC)	Laboratory-based	POC
Laboratory requirement	Requires sophisticated laboratory facilities	Minimum to no laboratory requirement
Equipment	Expensive equipment	Less expensive
Temperature	Variable	Isothermal
Turnaround time (mins)	190	45-60

FACTORS AFFECTING OUTCOMES OF DIAGNOSTIC TESTS IN DETECTION OF SARS-COV-2

False-positive and false-negative findings not only endanger the individual's health, but they can also jeopardise the effectiveness of emergency preparations, public health programmes, and pandemic-prevention measures. A false-positive test result not only result in unnecessary treatment, but may cause societal problems as it may erode the workforce available for combating this pandemic if attributed to people working in public facilities. On the other hand, a false-negative test result may lead to further spread of the SARS-CoV-2 virus within the community. Thus, accurate and precise diagnostics method plays important role in managing the current SARS-CoV-2 outbreak.The following factors may affect the accuracy of results of diagnostic tests used in detection of the novel corona virus.

1. **Genetic diversity:** Different research have discovered genetic diversity and rapid evolution of the novel coronavirues. Mutations in the primer and probe target areas of the SARS-CoV-2 genome can give false negative results(23). Therefore, simultaneous targeting of multiple conserved regions of viral genome should be considered.

2. **Sampling error:** Errors can occur during sample collection, transportation, and handing of RNA (eg, a swab accidentally   touches a contaminated glove or surface)(24). Sample collection is sometimes insufficient, or healthcare workers do not insert nose swabs deep enough into the nostril to get a sample with an adequate virus load. Sample collection should be done by an experienced laboratory technologist to increase testing accuracy.

3. **Sample types:** Finding the best sample type in the best time during infection can lead to the result with minimum false negatives. In a study of 205 patients with confirmed COVID-19 infection, RT-PCR was highest in bronchoalveolar lavage specimen (93%),followed by sputum (72%), nasal swab(63%) and pharyngeal swab(32%) (25). A study found that sputum is appropriate for diagnosis, preceded by nasal swab. Other study suggested to use sputum, nasal swab and throat swab in early stages. In other investigation, low or no replication was seen in stool samples. This topic is a developing topic; the best sample type will become clearer with more information of COVID-19 (26).

4. **Viral load:** According to the natural history of the COVID-19 and viral load kinetics in various anatomic sites of the patients, sampling procedures plays a significant role in false-negative results. The highest viral load appears within the first week of infection with the onset of the symptoms. This also indicates that the risk of infection from SARS-CoV-2 is highest in the early days and proper measures need to be taken to curb the growth of the virus(8). It is important to know when an infected individual has an optimal viral load.

5. **Optimal time:** Correct time of sampling is a major factor that reduces false negative results.

CONCLUSION

The laboratory diagnosis for human coronavirus infections have developed significantly, with the introduction of novel assays as well as the accessibility of updated tests for emerging virus. Scientists have been able to plug-and-play in the creation of SARS-CoV-2 novel diagnostic test, because the availability of pre-existing diagnostic technologies like RT-PCR that could detect novel coronavirus. Newer laboratory procedures (RT-LAMP) are quick, sensitive, and specific, and are progressively replacing RT-PCR as the gold standard. RT-LAMP can be more readily used in developing countries that do not have access to high tech laboratories. Furthermore, the significance of rapid development of combined, point-of-care, random-access molecular instrument for the accurate diagnosis of SARS-CoV-2 infections cannot be overemphasized. In conclusion, the short-turnaround-time (STAT) tests will be very important for real-time patient management and infection control decisions, especially when other less infectious forms of pneumonia are present and respiratory isolate resources are scarce. To effectively fight present and future pandemics, there must be worldwide solidarity on test availability, and infection control and diagnostic measures must be strongly intertwined.

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DOCTOR'S VIEWS AND PRACTICES FOR IMPROVING MEDICATION ADHERENCE AMONG CARDIO-VASCULAR PATIENTS

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ABSTRACT

Background-Globally, the burden of diseases has changed the attitude of majority of population towards their health and quality of life .Current COVID-19 pandemic had already created havoc in the functioning of existing healthcare system across globe. According to World Health Organization (2018), about 71% population of world (41 million people) dies due to chronic diseases and cardiovascular diseases reported for majority of deaths (17.9 million) followed by cancer (9 million), respiratory disease (3.9 million) and diabetes (1.6 million) every year. The poor adherence level towards medications and treatment is one of the common causes found for high mortality rate among chronic diseases such as cardiovascular diseases, diabetes and hyperlipidemia. Thus, chronic disease management requires proper adherence of medications and it is more difficult tasks for patients due to various factors such as lifestyle factors, healthcare related factors and patient related factors.

Objective- The present study was conducted to assess theadherence level of medications of cardio-vascular patients and to understand the doctor's views and practices towards this crucial phase of treatment, especially in COVID era.

Methodology- A non-experimental and qualitative study was done on 25 doctors treating cardiovascularpatients through interview schedule from Arya Hospital, Bareilly, Uttar Pradesh, India. Content analysis was conductedon the data collected through doctor's interview schedule.

Results- The content analysis on doctor's data had resulted into four categories, i.e. Monetary aspect of treatment, Patient adherence effect, Doctor involvement and Medication adherence level with their sub-categories. It indicates the effective role of doctors and carries the possibility of minimizing medical complications through better medical adherence.

Conclusion-Numerous reasons were identified for poor medication adherence of patients such as poor lifestyle, forgetfulness, irregular adherence pattern, patient's anxiety towards their health outcome, intensity of illiteracy towards disease, doctordirectiveness and patient partnership status. Therefore, doctors need to work for better patient adherence regime by regular counseling of the patients, providing satisfactory treatments, conducting continuous health education sessions and avoiding complicated prescription writing and also doctors should be well-equipped with m-health apps, so that interaction with patients should continue in spite of challenging pandemic era. More resilient, productive and concerned outlook of the doctors will be the best intervention for improvising cardiovascular patient adherence towards their medication regime.

Keywords- Patient adherence, Cardiovascular diseases, Quality of life, Healthcare cost.

INTRODUCTION-

The Covid-19 pandemic has a significant impact on the patients suffering from chronic diseases worldwide. It has been reported that patients with cardiovascular diseases (CVDs) and diabetes are highly being affected and higher mortality rate has been resulted with CVDs, chronic respiratory disease, chronic kidney disease and diabetes [1, 2]. It has been found that almost 10.5% cases in CVD patients had high mortality rate due to COVID-19 [3].Another study reported that mortality rate among cardio-vascular patients increased from five to ten times in the COVID-19 era [4]. Therefore, patientsare required to have continuous support from the doctors in pandemic times [5]. The poor economic status and present COVID-19 situation had a remarkable blow on the healthcare system, demanding for competent management system and parallel wise impacting impartiality and access to latest treatment and therapies.

The CVDs is still the burden on population worldwide from many decades and is the major cause of mortality rate and rise in healthcare cost. The cardiovascular diseases are the biggest killers and more than 17.5 million people claimed to death all over the world [6]. The poor adherence level towards medications and treatment is the common cause with chronic diseases. Thus, it is important to manage the chronic diseases in order to deliver effective health services and fulfil the expectations of the patients. According to World Health Organization (2003), adherence is defined as "the extent to which the patients follow medical instructions". It is very essential

for the patients to take their medications with proper regimen including lifestyle changes and agreeing the recommendations of healthcare providers [7]. In one of the study, it has been reported that around 50% of patients suffering from cardiovascular diseases show poor adherence level towards prescribed regimen [8]. The CVDs also affected the productive life of Europeans at higher rate [9]. It has been proven that 52% of Indian population suffers from CVD before the age of 70 years as compared to western population with 23% population [10].

There is need to manage the medication adherence of patients which is difficult due to various factors such as lifestyle factors, healthcare related factors and patient related factors. The medication adherence can be amplified by better doctor-patient interaction. Many researchers have shown good communication between doctors and patients affects the health experience of patients [11] in positive manner as this creates bond of trust [12], enhances self-management skills of patients [13, 14] and impinges perception and attitude of patients towards treatment [15]. Hence, a sensible orientation and implementation is required among the patients and doctors to avail the good quality of life for the patients suffering from cardiovascular disease.

OBJECTIVE-
The current study has following objectives-

1. To assess the adherence level of medications of cardiovascular patients.

2. To understand the doctor's views and practices towards this crucial phase of treatment, especially in COVID era.

DESIGN-
This study used content analysis method to understand the doctor's views and practices towards the adherence level of medications of cardio-vascular patients especially in COVID era. Study was done on the data collected from doctors of Arya Hospital, Bareilly (January 2020 to July 2020) with the help of interview schedule. Snow ball technique was used in conducting interview of doctors for 10-15 minutes. Content analysis was conducted by coding of the text into code, categoriesandsub-categorieswerederived from the rawdataandtheoreticalframework [18]

Socio-demographic data of doctors such as age, gender, years of registration, years of practice, practicing in type of hospital, etc are mentioned in table.1. In order to understand doctor's view and practice, they were asked to disclose for number of patients treating daily, time taken for interaction with patients, number of medications prescribed daily and cost of medications.Opinion of doctors was documented meticulously and content analysis was done to analyse doctor's view and practices towards treatment process, especially in COVID-19 era.

Variable	Category	Number of doctors	% of sample
Age	20-30 years	2	8
	31-40 years	10	40
	41-50 years	7	28
	51-60 years	5	20
	> 60 years	1	4
Gender	Male	19	76
	Female	6	24
Years of registration	Less than 1 year	1	4
	1-5 years	5	20
	6-10 years	8	32
	11-15 years	6	24
	>15 years	5	20
Years of practice	Less than 1 year	1	4
	1-5 years	5	20
	6-10 years	8	32
	11-15 years	6	24
	>15 years	5	20
Type of hospitals	Government hospital	5	20
	Speciality hospital	8	32
	Super-speciality	3	12

	hospital		
	Semi-government hospital	3	12
	Semi-private hospital	1	4
Number of patients investigating daily	10-20	1	4
	20-30	10	40
	30-40	10	40
	40-50	2	8
	>50	2	8
Time taken for interaction with patients	Upto 5 min	1	4
	5-10 min	8	32
	10-20 min	12	48
	20-30 min	3	12
	30-40 min	1	4
Number of medications prescribed daily	1-2	2	8
	2-4	11	44
	4-6	9	36
	>6	3	12
Cost of medications is a barrier for patients or not	Yes	19	76
	No	06	24

Table 1 *Socio-demographic profile of doctors treating cardiovascular disease patients*

Four categories and their sub-categories were derived from content analysis (Figure 1) are mentioned below-

1. **Monetary aspect of treatment-** Money is the most critical aspect for patient adherence towards medication and treatment. It is a fact that people across globes belong to different culture, social and economic category, but patients are not sticking to their treatment regime as required. In order to understand this anomalous behaviour of patients, six sub-categories were identified from content analysis and they are as follows-

1.1 **Cost of medical advice:** From the data, almost 56% of the doctors suggested cost of medical advice is a key feature for adherence rate of patients. This has been proved by one of the statementgiven by the doctor interviewed and stated, *"The patients these days are more concerned for the fees of medical advice such as consultation and cost of medicines that actually bothers a patient to maintain the adherence rate for the prescribed medications"*. The study conducted on patients suffering from hypertension reported negative impact of treatment cost on the adherence level of patients [17]. On the contrary study it was observed that in spite of high cost of medications for diabetic patients, it resulted in optimum adherence for the medications prescribed by their doctors [18].Thus, it can be seen that cost of medical advice is really important element for adequate patientadherence level for their medications.
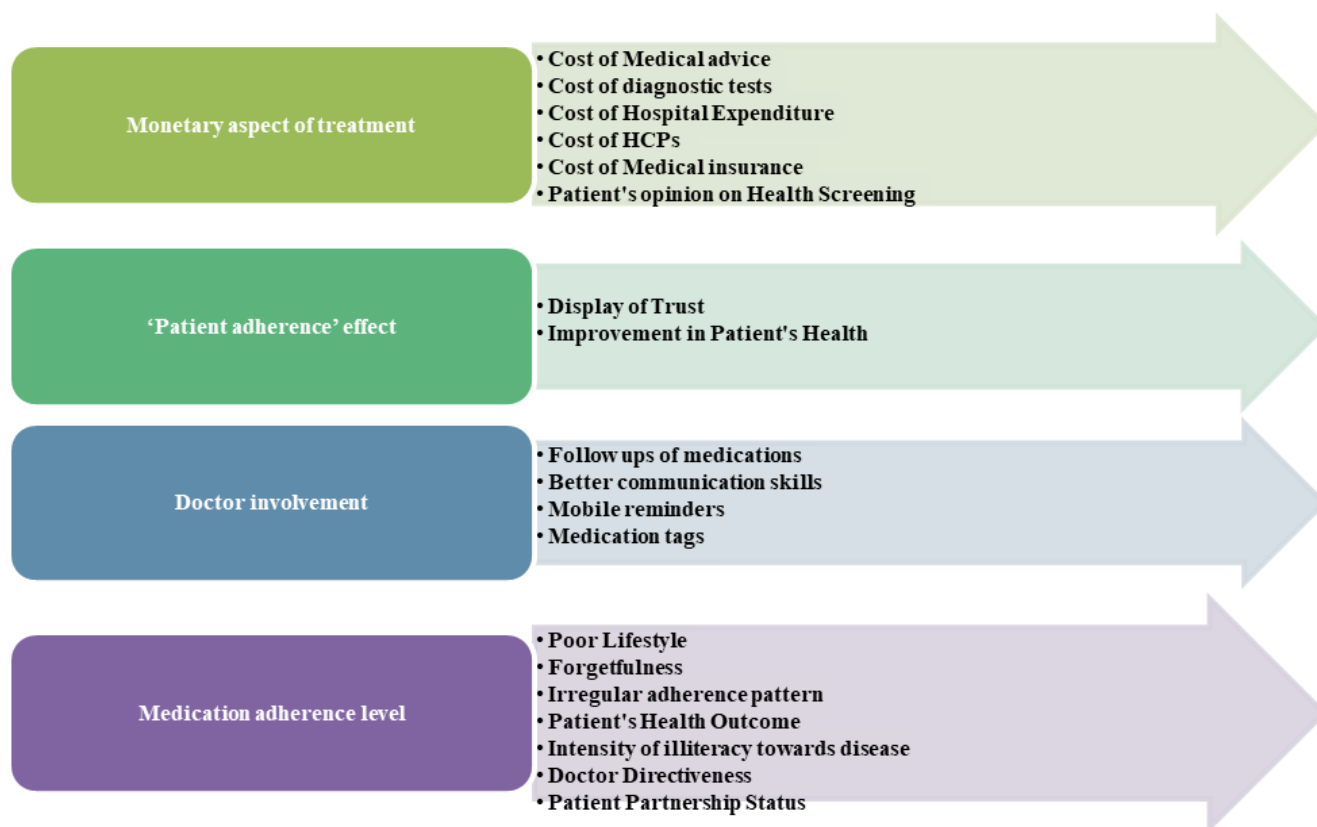
Figure 1 Categories and sub-categories identified through content analysis

1.2 Cost of diagnostic tests: In this regard, 52% of doctors interviewed proposed that cost of tests involved in the diagnosis of disease is the major concern for the patients in their treatment process. One of the doctors stated that, *"If we ask for these expensive diagnostic tests, patients seem to be puzzled"*. The study conducted on 4 major chronic diseases i.e. diabetes, hypertension, hypercholesterolemia, and congestive heart failure and found that as the treatment cost increases the rate of adherence among patient decreases [19].Thus, it can be inferred that optimum cost of diagnostic test is helpful in the adherence rate of patients for the betterment of health among cardiovascular patients in today's pandemic era.

1.3 Cost of hospital expenditures: The total cost of hospital expenditure affects the patient's treatment process and this has been seen by the opinion of doctors (52%)interviewed. Doctors highlighted the importance of high cost of hospital expenditures and one of the doctors stated that, *"If we will increase the cost of hospital expenditure then it may cause a negative impact on the image of hospitals and can reduce the adherence level of patients towards their treatment process.*Almost 50% patients put their life at risk for poor adherence of medications and this decreases the effectiveness of treatment [20]. Thus, it can be understood that cost of hospital expenditures is crucial link for better patient adherence and proper health care eco system.

1.4 Cost of HCPs: Majority of the doctors (60%) agreed with this essential cost element of treatment. One of the doctors interviewed and stated that, *"Increase in the cost of services of hospital staff like nurses and pharmacists causes negative impact on the long term treatment process"*.Cost of HCPs is also becoming huge barrier in the treatment of COVID-19 patients with cardio-vascular disease.Study indicated that cost can be reduced if doctors judiciously analyse the appropriateness of hospital admission and relevance of diagnostic test [21]. Therefore, it can be inferred that the optimum cost of HCPs for the cardio-vascular patientsmight display high level of medical adherence.

1.5 Cost of medical insurance: 44% of the interviewed doctors suggested that high expenses of healthcare services can be met by taking adequate medical insurance policies. It will certainly improve adherence level. *"Patients are aware about the medical insurance policies and they plan for themselves and their families for better future health aspects"*stated by one of the doctor in the interview. Similarly, another doctor had also reported in his interview that, *"My few patients are aware about medical insurance policies but they are not adhering for their medications"*. The patients who were suffering from stroke and did not have medical insurance were non adherent for the medications and treatment as compared to the

patients who were having medical insurance plans [22]. Now-a days, insurance companies had also started covering COVID-19 ailment. Thus, it can be inferred that patients shouldbe aware about the medical insurance plans for themselves and their families so that they don't have to undergo financial stress and can have better adherence rate.

1.6 Patient's opinion on health screening: 28% doctors suggested health screening process as a major factor and majority of the doctors (60%) suggested with different opinion. One doctor stated in his interview that, *"Only few patients go for full body screening for the time being and go for adherence of medications and treatment accordingly"*. In one of the study it was found that health screening is helpful for the patients to provide treatments on time and in increasing better health outcomes [23]. RT-PCR and CT Scans are the most widely used test for detection COVID. Hence, from this study it is understood that health screening on regular basis can have tremendous impact on the rate of adherence among the patients.

2. 'Patient adherence' effect: The adherence level of the patients for their medications and treatment is considered to be the important aspect for good quality life and for this two sub-categories have been extracted to understand the medication adherence effect among the patients suffering from cardiovascular diseases.

2.1 Display of trust: Majority of the doctors (60%) had agreed on the level of trust as the major factor for patient adherence effect. The doctor in his interview stated, *"Obviously, the trust of patient is very important for us because it helps to treat patients appropriately"*. Another doctor said, *"If patient trust me then it is easy for him to adhere the medications regime that I used to prescribe"*. It has been demonstrated in one study that trust is the indispensable part in maintaining the healthy relationship of doctors and patients and it accelerates the treatment process [24]. Even during tele–consultation (in today's COVID era), doctors can build trust among cardiovascular patients for better medication adherence.

2.2 Improvement in patient's health: From the interview of 25 doctors, 48% were carrying different opinion and 36% doctors agreed by stating that *"After 6 months of continuous medications and treatment process, the patient was satisfied with the positive health results"*. With regular scheduled visits and educational sessions in the clinics increased the satisfaction level of the patients that helps in mounting adherence level [25]. Similar outcome was noticed in Jordan study too [26].It is imperative to understand that if doctors practice more session for persuading patients for better quality of life by adhering to prescribed medication regime.

3. Doctor Involvement: Involvement of doctors is always very crucial phenomenon in the management of chronic disease, but COVID-19 crisis had increased it manifold. Doctors are able to connect with their patients through m health apps and patients are able to cope with this new technology. Content analysis had sub-divided this category into four sub-categories that are mentioned below:

3.1 Follow ups of medications: 40% doctors in an interview revealed that they engage better with their patients through regular follow ups.One of the doctor in his interview stated that *"On regular basis, I used to ask my patients for any medications left that were prescribed in previous visit"*. Recent study found that patients receiving acute stroke assessment through telemedicine do not perceived less empathy of doctors as compared to physical consultation [27]. Thus, regular follow ups from doctor shows better patients adherence rate for their respective treatment.

3.2 Better communication skills: With reference to 52% of doctors agreed with importance of communication with patients and involved them in improving the adherence level of the patients suffering from cardiovascular diseases. This has been proved by the statement of one doctor, who said, *"It is very necessary for the patients and doctors to have good communication that helps to understand each other. Also, it is easy for us to educate the patient about their disease and positive effects of adherence rate in more explanatory manner"*. It is stated in one of the study that effective communication between doctor and patient is the central function in building the strong doctor patient interaction in the field of medical practice [28]. Therefore,it can be strongly inferred that powerful communications skills of doctorcanincrease adherence level of patientsfor their medications and treatment in the cardiovascular diseases.

3.3 Mobile reminders: Majority of the doctors (68%) carries the opinion that their patients have better medication adherencethrough mobile reminders. The doctor in his interview reported that, *"I used to recommend my patients for mobile alarms who live alone or who have the problem of forgetting the medicines on time that help them to stick on medications properly"*. Especially, in today's pandemic era,

m-health had emerged as reliable potential solutions through electronic pillboxes and text reminders [29]. Thus, mobile reminders ensurebetter adherence rate.

3.4 Medication tags: 64% doctors had different opinion for medication tags while 28% doctors involved themselves to provide medication tags to their patients for improving adherence rate. One of the doctor stated in his interview that, *"I give my patients medication tags by which they can get complete information of disease and related medications and this actually worked for few of my patients to pursue the medications properly"*. Similar results were found in the study conducted in 2006 [30]. Thus, it can be inferred that if doctors provide medications tags or labels then adherence rate for medications can be improvised.

4. Medication adherence level: Medication adherence level represents the patient's regular intake towards their prescribed medicines. The doctors were asked for any one of their patient's history with medication adherence level and seven sub-categories denotes its significance.

4.1 Poor Lifestyle: 64% of doctors inferred poor lifestyle of patients highly affects the adherence level of patients at higher rate. This has been proved by one of the history of patient reported by the doctor and he stated that,*"One of my patients is manager in Tourism Company and due to his busy and cumbersome schedules of travelling; he always faces problems in taking medications on time"*. The poor and cumbersome lifestyle of the patients involves in the skipping of dosage that results in inappropriate adherence level [31]. Therefore, it is importantto ensure that lifestyle should not be the hindrance in adhering to prescribed medication regime.

4.2 Forgetfulness: 52% of doctors in the interview reported forgetfulness as the major problem for their patients. The doctor in his interview stated that, *"My patient who is more than 60 years old has the problem of forgetting to take medications and this result in poor adherence rate for my prescribed medications"*. Another doctor reported in his interview that, *"One patient who is the housewife has the habit of forgetting to take medications on time due to busy schedule and it results in poor health"*. Forgetfulness is the key barrier for poor adherence rate among various patients suffering from heart [32]. Thus, it can be seen that if patients follow their prescribed medications on time definitely they can have better quality of life.

4.3 Irregular adherence pattern: 56% of the doctors narrated irregular adherence pattern of their patients due todisease complications, inconsistent routine, addiction towards alcohol and nicotine and bitter taste of medicines.Various studies have proved heavy drinkers are associated with the risk of low adherence [33, 34]. Treatment adherence is considered to be most significant in the long-term management of CVDs [29]. Thus, it can be understood that doctors should persuade patientsfor following the regular schedule of their medications, so that harmful effects on their body can be avoided.

4.4 Patient's Health Outcome: About 60% of doctor does not consider this category but only 40% acknowledge its importance.From the interview of all doctors, one of the doctors commented that, *"One of my patients is regular towards my prescribed medications and is happy with the treatment and getting better health status"*. A study on patient and doctor experience with telemedicine proves that better follow-up and more convenience can be ensured than off line interaction [35]. Thus, it can be stated that positive health outcome can be achieved by adapting regular medication schedule.

4.5 Intensity of illiteracy towards disease: Almost 60% of doctors suggested knowledge about disease as a key feature for good health and in this regard one of the doctors in his interview reported that, *"The patient is post graduated and has good knowledge about diseases but he was not aware properly towards the disease he was suffering"*. It was found in one of the study that the patients who had poor knowledge of disease pattern and their condition will have negative impact on health [36]. Thus, if patients do not know severity about their disease, then they will not be adhering to their medication regime.

4.6 Doctor Directiveness: 64% of doctors suggested that clear instructions by them enhance the adherence level of medications. One of the doctor reported in his interview that, *"My patient is satisfied and happy with the clear instructions I used to give him on the regular basis towards the treatment and medications intake"*.The similar outcome was inferred in the old study where doctor's directiveness and emotional attitude of doctors was considered to be the essential characteristic of doctor-patient interaction [37]. Hence, it can be seen that clear and proper instructions by the doctors can augment the adherence rate of cardio-vascular patients towards medications and treatment process. It is very much required in today's COVID-19 era.

4.7 Patient Partnership Status: Almost 52% of the doctors suggested that long term relationship with the patients in cardiovascular diseases is beneficial for both partners. This has been proved by one of the doctor in an interview where he stated, *"My patient is getting treated from last 5 years and also his father is in touch with me from last 15 years and I am now their family doctor"*.Recent study in paediatric cardiology indicated that positive impact can be obtained through referral patterns and time management without the increased intervention of echocardiography [38].So, it can be inferred that patient partnership with their doctors amplifies the health results with good medication adherence rate.

CONCLUSION-

In COVID-19 pandemic era, healthcare ecosystem is already undergoing multi-faceted challenges across globe. Hence, doctor's views and practices becomes most significant aspect for the management of chronic illness such as CVDs, diabetes and many more. The poor medication adherence level is one of the complex phenomenon responsible for poor management of chronic diseases. Large number of reasons had been reported for poor medication adherence such aspoor lifestyle, forgetfulness, irregular adherence pattern, ppatient's anxiety towards their health outcome, intensity of illiteracy towards disease, ddoctor's directiveness and patient partnership status. The doctors are therefore need to earn the trust of patient in order to enhance the patient's medication adherence and this can be done by many ways like frequent follow ups of medications, better communication skills, mobile reminders and medication tags. In this pandemic era of COVID-19, doctors are required to think for improvising their communication, involvement and frequent follow up through m- health, then only patients of cardio-vascular disease will be able to cope withbetter medication adherence.

MANAGERIAL IMPLICATIONS-

This study had come out with strategic interventions for better medication adherence among cardio-vascular patients. COVID-19 pandemic accelerated the adoption of technology in healthcare eco system. Doctor's views and practices can certainly bring better results. Their interaction with patients through text messages [39] will not only improve medication adherence but also will prevent further medical complications [40]. This rapid adoption of technological intervention across countries will enhance continued medical care in the era of social distancing. [41].

LIMITATIONS-

First and foremost, limitation of the study is that sample size is only from 25 doctors and data had been only collected through single hospital. Future studies could be conducted in more hospitals from different geographical area and also more intervention strategies for better medication adherence can be explored.

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ROLE OF EIA/EMP FOR MINING & ALLIED INDUSTRIAL AREAS

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ABSTRACT

Mining activities are an important issue for the development of any country. The mining operation transforms the sustainable development of the mine environment through proper guidelines and plans. Environment impact assessment (EIA) is a useful and predictive analysis for the assessment of environmental capability under the project consideration. The necessary systematic stepwise plans are prepared for mine environment management using the environmental guidelines of impact analysis and evaluation. The directives are identified for the handling impacts of environmental protection, conservation and their preservation. In the mine environment, several components of this management plan are implemented on the basis of these directives. In this work, a brief details or descriptions are presented for the environmental management plan (EMP) in the mining and allied industry. This study describes the comprehensive study for preparation of EIA/EMP of any environmental and mining related projects. In this study, effective and major issues are focused for the environmental impact analysis and evaluation and also provide the stepwise process for preparation of EIA/EMP of various projects in the mine environment.

Keywords: Mining industry; EIA; EMP; environment impact analysis & evaluation; environment management; environment conservation & protection;

1. INTRODUCTION

In India, the ministry of environment and forest is only fully governed body which prepares the guidelines for environmental appraisal of several projects. These guidelines help the project proponents for in-house project evaluation and monitoring from the environmental angles and provide the specific information on the environmental aspects, guidelines and suggestive questionnaires for the project in many domains or sectors. This detailed contents or information of the environmental impact statements is termed as environmental management plan (EMP). The ministry constitutes environmental appraisal committee for review and analysis the information that are furnished by many mining industry. For reasons of environment protection and in the interest of the scientific mining, the mining operations have to be in conformity with the mining plan approved by the central government. In addition, the central government has the full power to reserve certain areas which are not already held under any prospecting license or mining lease for reasons of conservation of minerals. The national mineral (NM) policy recognizes the environmental concerns and lays down that mining operations shall not be ordinarily taken up identified ecologically fragile and biologically rich areas. The strip mining in the forest permitted only which accompanied with comprehensive time bound for reclamation programme. The government of India implemented environmental statement and impact assessment under ministry of environment and forest for the systematic analysis and periodic evaluation of environmental status in the respective mining and allied industry. An environmental statement is a management tool to proper analysis and evaluation of the effect of policies, operations and activities on the mine environment, especially conservation of water and energy sources, and then reuse and recycling of waste materials. The concept of EIA is not new [1]. An analysis of EIA law necessarily steps out from the polemical comprehensions of its theoretical and conceptual framework [10]. **Fig.1** shows the framework of mining legislation in India.
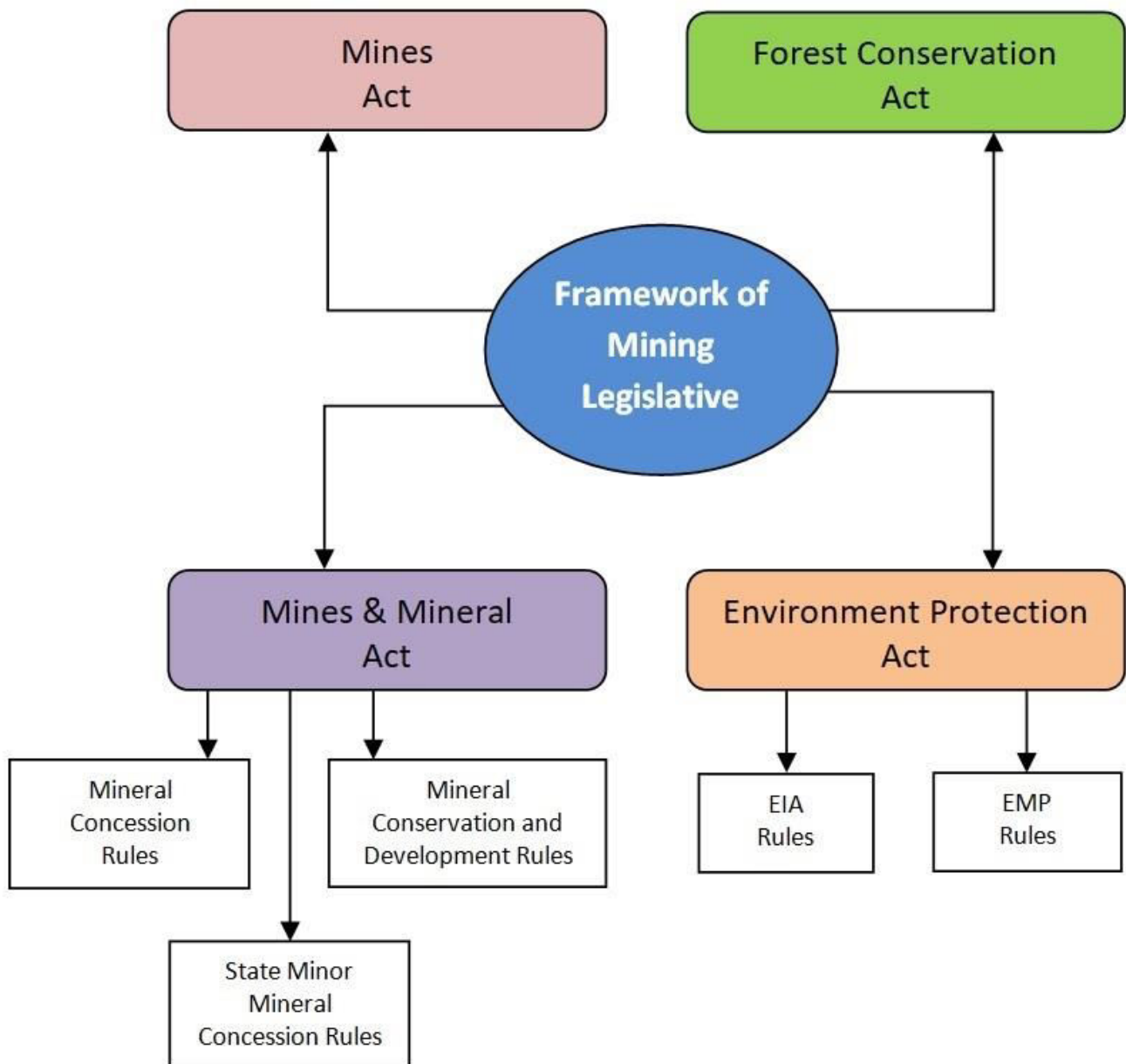
Fig.1: Framework of mining legislation in India

The mineral concession rules under the mines & mineral act has amended the salient features of the rules is that mining plan shall incorporate the plan of the areas showing the nature and extent of the mineral body or spot where the excavation based on the prospecting data gathered by the applicant or any other person, a tentative scheme of the mining plan for the first 5-year period of the lease purpose. It incorporates the complete details of lithology and geology of the area including mineral reserved areas. It facilitates the extent of manual mining using machinery equipments and mechanical devices or components. The plan of the area showing natural water, density of trees, limits of reserved and other forest areas etc, if any assessment of impact of mining activity on the forest, land surface and environmental pollution (air and water) details of the scheme of restoration of the area by afforestation, reclamation of land surface, use of pollution tracking and control devices and other measures as may be directed by the central or state government from time to time. It incorporates an annual programme jund year wise plan for the excavation through five years period.

2. OBJECTIVES OF EIA/EMP
Environmental management plan (EMP) is a blue print of 5-years which is used for systematic implementation of analysis, methodology process, mitigation, evaluation, protection and conservation measures recommended in the environmental impact studies. The EMP shows the complete details of these measures should be

operated, requirement and rescheduling for implementation by the resource. Ideally EMP should covers all phases of project development i.e. Preconstruction, Operation of mine and Decommissioning of the mine [8]. This will ensure proper implementation of mitigation measures proposed and also to effect mid-course corrections, if required monitoring is required during construction (pre-mining), operation (mining) and restoration (post-mining) phases [9]. The EMP formulates the devising of the mining standards to be followed in respect of suitable mining methods which can be done with minimum degradation. It facilitates the finding strategies for the suitability of the area in the mining reference and to delineate areas where mining operations should not be done. The EMP will capable for establishment and generation of database for the present environmental scenarios. The possible impacts of mining in the surrounding environment can be anticipated and assessed by environmental management plan. It strongly recommends the preventive measures to be taken to minimize the adverse effects and situations of environmental degradation. The main objective of this plan is to design a 5-years action plan for the implementation of mitigative measures and subsequent monitoring to evaluate the effectiveness of mitigation measures. It also employed the decision making and development of feasible alternatives with terms and conditions.

3. METHODOLOGY FOR PREPARING EIA/EMP

An important tasks of EIA/EMP report are baseline data generation; impact analysis, prediction and evaluation; and mitigation of impacts by formulation of plan. **Table-1** shows the methodology of baseline data collection for the preparation of EIA/EMP report.

Table-1: Data collection for the preparation of EIA/EMP

Environment	Data collection for the study				
Air	SPM	SO_2	NO_2	CO	Micro-meteorology
Water	Surface-water	Groundwater	Hydrology	Watersheds	Aquifer
Land	LULC pattern	Crop pattern	Blasting	Vibration	Erosion
Noise	Blasting	Vibration	-	-	-
Socio-economic	Demographic	Education	Employment	Health care	Communication

The analysis and identification of impact is linked with impact prediction and assessment entity in EIA. Whereas, the management plan establish an interconnected relation with alternative scenario and their mitigatives measures and evaluation. Thus, each sub-module of EIA and EMP are integrated to each other and put together into an EIA/EMP module. The joint relationship of EIA and EMP with the integration of each entity for the sustainable mining and environmental practices are shown in **Fig.2**.
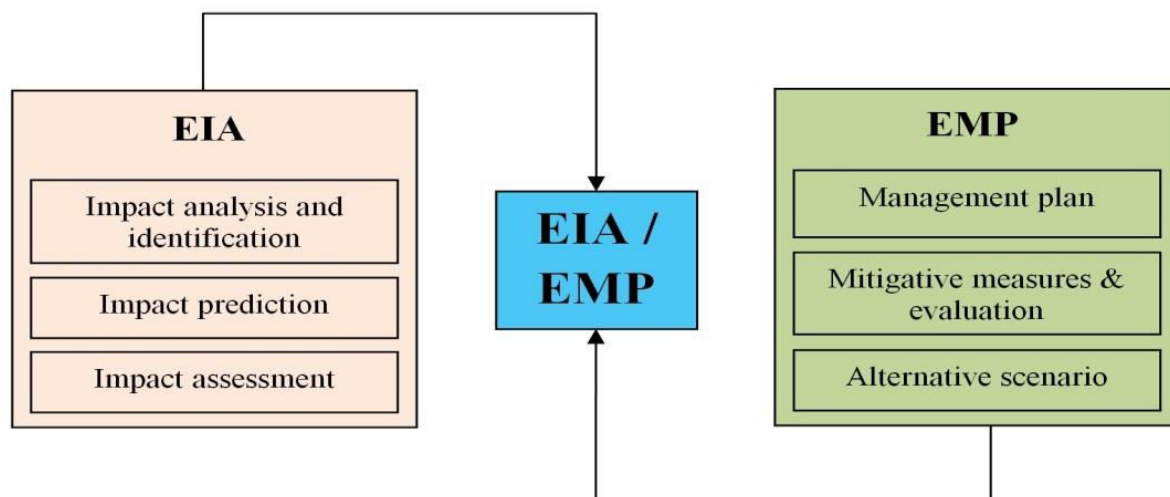
Fig.2: Joint relationship of EIA and EMP

3.1. Baseline data creation

This section includes the study present environment and ecology system for generating data and storing into database for the flora, fauna, avifauna, climate, land use & land cover, socio-economic conditions in the study area. These data are to be collected with brief descriptions of the existing environmental, geological patterns and proposed excavation along with mining and allied industrial activities.

3.2. Environmental impact assessment (EIA)

Environmental impact assessment (EIA) is a description of the existing environment and estimation of the potential effect due to mining activities. Environmental Impact Assessment (EIA) is a concept that evolved in search for ways to render development and protection of the environment [7]. Impact identification is the procedure for bringing out the human activities on environmental system [2]. Identification is made for inter-comparison of the development options and screening of alternate sites for locating the project [1]. For identification of impacts it is useful to draw a list of parameters, relevant to the type of projects under consideration [3]. Among the available methodologies, it is obvious that no one system of environmental assessment is applicable to all types of projects through out the country [4,5]. No given system has overall flexibility and comprehensiveness to cover every eventuality. A detailed survey of the factor is performed on the various mining and environmental parameters for the expected impact prediction of various mining activities or operations. The identification of portable impacts is furnished by this impact prediction approach. These approaches are varying with different types of parameters. Numbers of models are developed to predict the environmental quality assessment.

3.3. Environmental impact evaluation (EIE)

Environmental impact evaluation (EIE) incorporates with many methods such as adhoc, checklists, matrix determination, mathematical matrices, integrated network approach, computer-aided EIA, etc. Adhoc is crude and oldest method of EIE which can only bring out broad impacts on demographic, forest and also secondary data impacts are to be rarely addressed under impact evaluation. Whereas, a checklists is a lists of environmental parameters that are beneficial and adverse effects and without any effect with marking the time slice. They are usually very large and subjective and are of little use in decision making for environmental quality assessment and impact evaluation. Environmental quality assessment and mapping has become an important research area and requires a systematic approach using multi-criteria analysis [6] and decision-making system. The impact analysis and evaluation of data are controlled and monitored in the account of environmental database. Environmental management information systems for mining areas and surrounding environmental pollution [6] are entirely covered with impact evaluation strategies in EIA/EMP documentary.

A matrix method provides a matrix format for relating the project's actions of systematic flow of processing with environmental parameters. The column of the matrix consists of 'N' projects as per number of project requirement. The row consists of 'P' parameters or components, which could be altered according to the project requirement. If the environmental components are affected by any specific activity of the project, then appropriate score is to be assigned depending on the magnitude and rank of impacts. The impacts are initiated by I+ and I- for beneficial and harmful impact. Total of rows of the matrix reflects the cumulative impact of all project actions on one environmental component while the total of columns reflects the impact of project activity on all environmental components. The entire matrix (rows x columns) gives the total environmental impacts.

The mathematical matrices such as Peterson's matrix and Component interaction matrix are developed for evaluation of effects using mathematical matrix method. The Peterson's matrix is constructed for evaluation of effects on various environmental action and components with a scale of ± 3. whereas, the Component interaction matrix is constructed for design a integrated matrix framework for evaluation of effects and impacted physical components on human environment matrices with a multiplication of third matrix which brings out the effect of the mining and environmental project activities or actions. The new produced matrix is then operated by a set of vector of relative weight of human impacts to yield a merged weighted vector of human impacts. The sum of these weighted vectors comes at the total value of the impact of the project. In the component interaction matrix, design of matrix with environmental components on each and identifying first order dependencies. This matrix is powered to determine all higher order dependencies. Finally, a disruption matrix is designed to score the impacts of each project alternatives on the primary dependencies.

Network approach provides an integrated links between projects and its ultimate impacts. It also provides a dynamic action for mining and environmental system with specific parameters which are capable of causing a series of impacts on a number of other parameters. This network approach incorporates a set of possible networks for easily identification of tracing appropriate actions and impacts of the projects by user or clients. The impact score of the branch i is obtained as follows:

$$\text{Impact Score } (i) = \sum (\text{mag}_x * \text{rat}_x)$$

where, mag_x and rat_x are magnitude of impacts x and importance rating of the impact x on the branches of tree. The mathematical equation of the environmental impact for all branches of projects is given as

$$\text{Environmental Impact (EI)} = \sum_{i=1}^{n} \text{prob}_{imp}(i)$$

where, n and prob_{imp} are branches in the impact tree and probability of impacts on at the occurrence of *i*.

It provides the subjective quantification for measuring higher order impacts using above mathematical method of environmental impact findings. Another one of the most important technique is to be used for environmental impact evaluation. The Battle environmental evaluation technique involves the transformation of parametric estimates into an environmental quality range. These ranges are denoted for very good quality and extremely load quality with 1 and 0 formats. The mapping function is used for plotting the curves for quality estimation. The non-associated and associated parameter importance values are multiplied and then obtain impact units for each environmental parameter. The environmental impact (EI) for finding the composite score is calculated as:

$$\text{Environmental Impact (EI)} = \sum_{i=1}^{m} [(P_{assoc\_val} * R_w) - (P_{nonassoc\_val} * R_w)]$$

where, *m* is total number of parameters, R_w is relative weight of parameter *i*, P_{assoc_val} and $P_{nonassoc\_val}$ are associated and non-associated parameters.

Computer-aided system is also used for impact evaluation and assessment with high risk analysis and control measures. In the environmental evaluation method, an appropriate weight in the form of value function for each parameter is assigned. These weights are mandatory for the judgement of finding values of those surveyed. In the entire procedure, we assigned weights for each environmental parameter for evaluation measures. And, also each parameters are categorized in sub-group with their weights.

4. ENVIRONMENTAL STATEMENT

Environmental statement is a management tool comprising a systematic, documented, periodic and objective evaluation of how management systems and equipments are performing with the aims of waste minimization and prevention, compliance with regulatory equipments and placing environmental information, particularly conservation of water and energy, and reuse of waste by recycling process. It is mandatory to provide the annual report of the environmental audit of their operations or activities per year by the each organization or industry. The environmental statement consists of complete site plan and flow diagram of system processing. It describes the process of input and output with stepwise processing and material balance through proper environmental plan. **Fig.3** shows an approach for preparing the environmental statement framework for environmental auditing benefit.
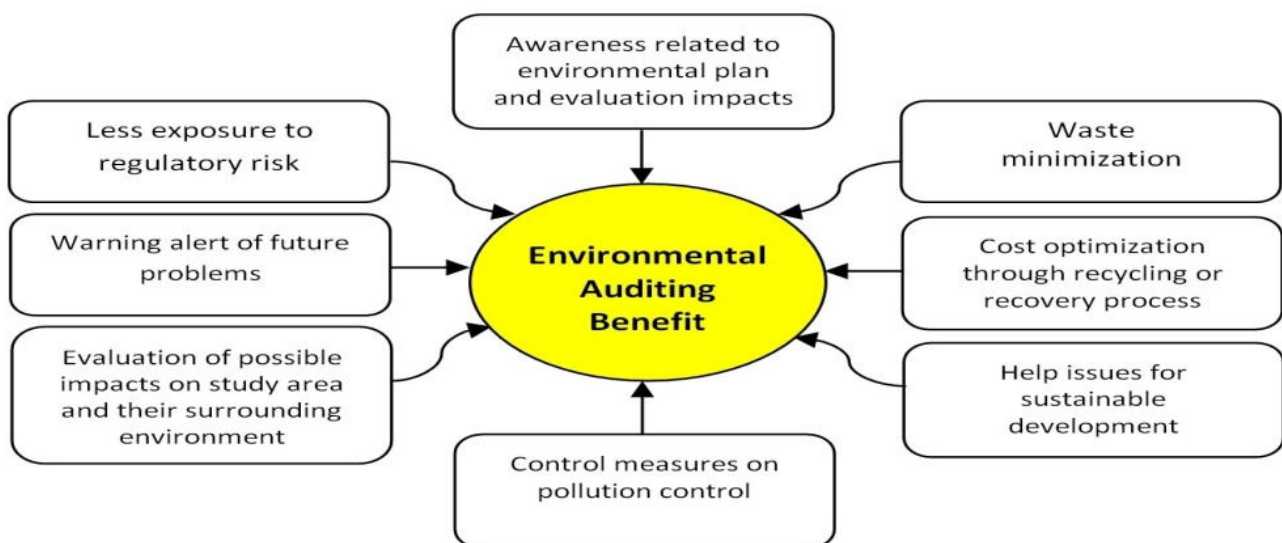
Fig.3: Environmental auditing benefit framework

The wastes materials are considered to be hazardous or for which regulation which are exists. It accumulates the cost mechanism for highly disposal of wastes and list out each unit operation for the recording and keeping track of water usage. In this statement, it is clearly mentioned how to perform recycling or reusability of wastes at many levels. According to the wastewater, an effluent discharge point and wastewater generated from each

unit operation. The consent form is to be fill with parameters are taken at different levels of operations to find characteristics of wastewater. Also, the actual and potential gaseous emissions associated with each unit by the gaseous emission accounting operation. This statement keeping the sincere view for accounting of offsite wastes also. Another important factor of waste reduction measures are performed in environmental statement that describes about area of priority activities which looked promising from the prevention point of view in terms of technology changes, good housekeeping, alternative uses of materials, etc. The environmental and economic evaluations of waste reduction are performed with proper analysis of cost benefit and preventive measures. The impact of energy, water conservation and substitution of chemicals are also focused with long term waste reduction plan. This statement is especially recommended for preparation of development plan and then implements it on the site. It provides an action plan for reduction of wastes and increases the efficiency of production ratio with sequence steps of waste reduction process.

5. DISCUSSIONS

Mineral and mining sectors has different problems in their surrounding environment where pollutants are varying on local nature, remotely sites, nature of terrain places and mining activities. EIA/EMP provides standard methodology of mining and environmental conservation in the mining industry. Mining EIA in present form doesn't include the issues of resource conservation, waste minimization & utilization, recovery of improvement of products and equipments with efficient utilization. EIA should be undertaken at the policy and planning stages as a environmental consequences. EIA doesn't provide a generalized consideration for the particular parameters with the significant potentials on the different environmental situations of various mining industries. It provides a regional views rather than individual project. EIA facilitates a highly subjective mechanism in environment by assigning ranks with weights and impact scores on the various parameters. EMP is prepared for the project plans which are not implemented in the real strength. The expert committee of the regulatory body should be constituted to review and implement the EMP. An adequate budget for funding is to be marked and points out the mitigative measures of environmental hazards at the planning stage of the project. Education and training should be imparted to the project's personnel to achieve the maximum benefits and also disseminate the technical issues and knowledge by the related organizations or industry. To avoiding misunderstanding and improving cooperation by the public awareness and participation which are needed as a real sense. It is likely to observe that field visitors or an investigator in the field survey doesn't access the EMP for surveying of information as they remain in project office. The policy has to be changed time-to-time for useful need to be rewarded through sustainable development and management plan.

6. CONCLUSIONS

As a result of increased concern over the impact of human activities on the environment, a number of countries have adopted legislation framework according to their governance rules requiring that the optimal and potential efforts of certain projects should be assessed. The proponents required for the submission of information and statements of the environmental and mining related projects, which is considered during the permit decision making analysis. The EIA/EMP has been considered as the most important blueprint documents of the project which can be utilized by the environmental experts, mining scientists, mine planners and engineers through environmental management and development plans. It concludes that EIA/EMP is an important document for achieving sustainable development of acceptable environmental conservation in the mine environment.

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PHOTOCATALYSIS - AN EFFECTIVE TREATMENT FOR TEXTILE WASTEWATER

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ABSTRACT
Textile industry is one of the highly polluting industries. The wastewaters discharged from these industries are concentrated highly with COD, BOD and colour which are considered to be toxic to aquatic bodies. To overcome this problem, necessary actions should be taken to minimise the problem on water bodies. One such measures is to treat wastewater before discharging to water bodies. It's been very challenging to treat wastewater in achieving high efficiency through conventional treatment methods. Hence an attempt was made in this research work to use semiconducting photocatalysis process in presence of TiO_2 and ZnO to treat textile dyeing and printing wastewater. In the research work, the optimum conditions of pH 8, catalytic dosage of 4g/L of TiO_2 and 5g/L of ZnO and contact period of 5 hours were obtained. For optimum conditions, COD removal efficiency of 82.5% and 70%, colour removal efficiency of 72% and 78% for TiO_2 and ZnO respectively was achieved. Hence, semiconductor photocatalysis process proved to be an effective treatment for textile dyeing and printing wastewater.

Keywords: Textile wastewater, COD, Semiconducting photocatalysis, TiO_2, ZnO

INTRODUCTION
Textile industry is one of the highly polluting industry. Effluent discharged from textile dyeing and printing industry contains high concentration of organic, inorganic compounds and colour. The pollution potential of textile dyeing pollution is high than pollution released by printing industry. As most of the textile industries are located on the banks of rivers, the release of effluents from these industries pollute water bodies in turn which affects the aquatic ecosystem. Thus there is demand for effective treatment of wastewater released from textile industries which should be even economic.

Conventional treatment processes used extensively to treat textile wastewater for colour removal are adsorption, absorption, coagulation-flocculation, oxidation, electrochemical methods, etc., These methods are expensive and have few operational problems. Hence an effective treatment is required to remove toxic organic compounds and colour from textile wastewater. Treatments like advanced oxidation processes (AOPs) such as Fenton's oxidation, photocatalytic oxidation, ozonation, UV radiation, solar light etc. These methods are cost effective, easy in operation, possible to work in wide range of temperature and also help in degradation of organic pollutants, including dyes.

Decomposition of organic compounds present in wastewater by means of semiconductor TiO_2 or ZnO in presence of light is known as Semiconductor photocatalysis. In this process, 50-60% of insoluble organic matter (COD) is converted to soluble organic compound under oxidation and eventually converted to CO_2 and water with no emission of NO_2, SO_2 etc.,. This indicates that semiconductors degrade organic pollutant present in wastewater to less harmful materials.

Textile industrial wastewater comprise of colour along with organic matter, which is important to remove from effluent before discharged to water bodies. Due to aesthetic and environmental concerns, it is very important to decolour the effluent from textile industry. The photocatalytic properties of TiO_2 and ZnO are promising substrate in the photodegradation of wastewater pollution under light source. Hence this method is suitable for the treatment of textile industry. Keeping the above facts in mind an attempt was made in this research work to know the suitability of semiconducting photocatalysis in presence of TiO_2 and ZnO to treat textile wastewater.

MATERIALS AND METHODOLOGY
The wastewater sample was collected from Zenith Textiles, Nanjangud, Mysore. The sampling program was conducted during the month of February. The samples were collected in sterilized polythene cans after rinsing the cans with the wastewater being sampled. The volume of samples were collected was about 5L. The samples were taken at the inlet of the treatment plants. These samples were brought to the college laboratory and analysed for four parameters like pH, Colour, COD and BOD.

Figure 1: Tin chamber (Experimental set up)

Figure 2:`Effluent from Zenith Textiles, Nanjangud

Wastewater samples were collected from Zenith textile industry, Nanjungud. Initial physico-chemical characteristics of the wastewater sample ware analysed as per Standard methods. To obtain optimum conditions, parameters like pH, contact time and catalytic dosage were varied. TiO_2 and ZnO were used as catalysts in the study. To carry out the process, photocatalytic reactor was fabricated which was made up of tin, which also includes reflector (tin), 400 watt Mercury lamp and glass container. The experimental studies were performed to study the effect of pH, catalyst dosage on semiconductor photocatalysis. Initially the wastewater sample was blended with catalyst (TiO2 or ZnO) taken in glass container and kept inside the reactor under mercury lamp (400watt) for 30 minutes and finally COD was measured. The samples were analysed at regular interval of one hour during the course of semiconductor photocatalysis.

RESULTS AND DISCUSSIONS

The wastewater samples collected from Zenith textile industry and were analyzed for color, pH, COD and BOD. The initial values are shown in the Table 1. Based on the threshold values the concentration of the parameters analyzed exceeded the limits. Hence in this study an attempt is made to determine the Photocatalysis degradation effects on COD and colour of the textile wastewater.

Table 1: Initial Concentration of Textile Wastewater		Table 2: Final concentration of wastewater after Photo-catalysis		
Parameter	**Concentration**	**Parameter**	**Concentration**	**Removal Efficiency (%)**
pH	8			
COD	3200 mg/L	Color (TiO_2 as catalyst)	5.1 Hazen units	72

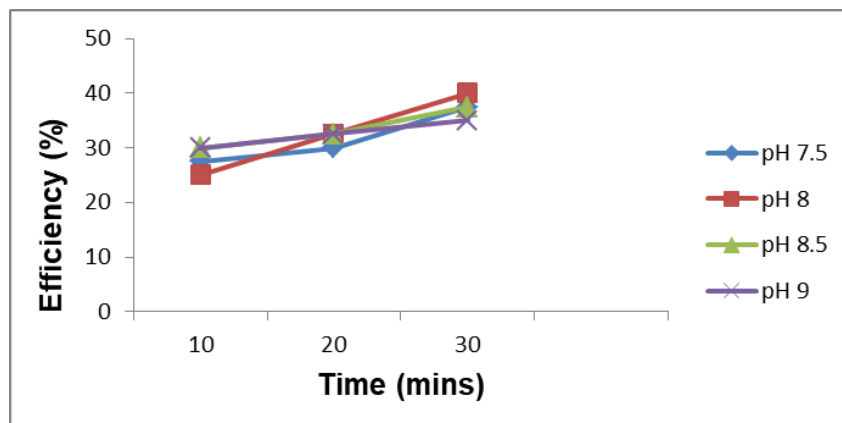| BOD	520 mg/L	Color (ZnO as catalyst)	4 Hazen units	78
Color	18 Hazen units	COD (TiO$_2$ as catalyst)	400 mg/L	87.5
		COD (ZnO as catalyst)	705 mg/L	80

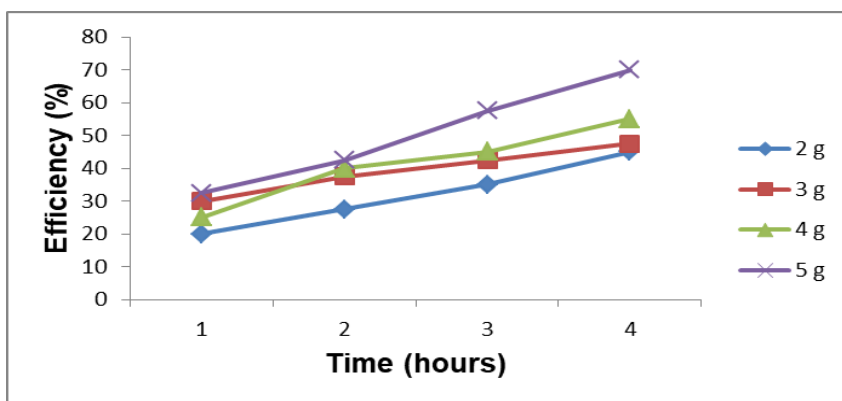**Figure 1: COD removal efficiency for varying pH**

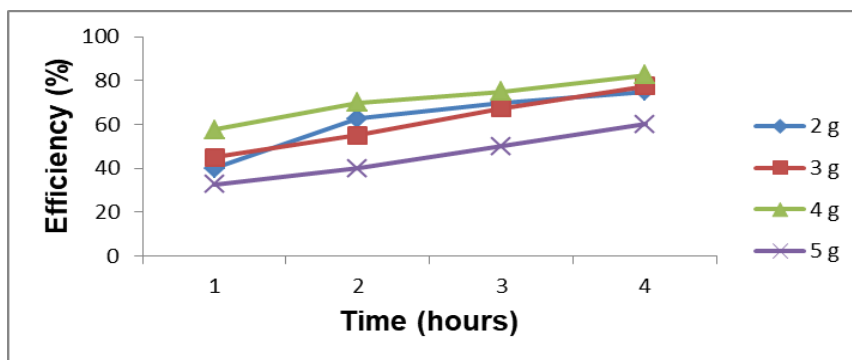**Figure 2: COD removal efficiency for varying ZnO dosages**

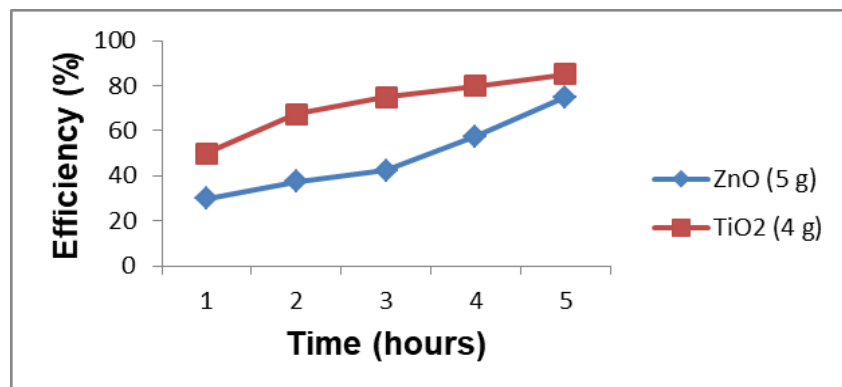**Figure 3: COD removal efficiency for varying TiO$_2$ dosages**

Figure 4: Removal Efficiency of COD and Colour for optimum conditions

Initially to check the treatability of coloured wastewater, the experiment was carried without using catalyst.

Effect of pH

The study was conducted to know the importance of catalyst in the photocatalytic degradation of wastewater. To know the effect of pH, the study was carried for varying pH 7.5, 8, 8.5and 9 without using catalysts. The wastewater sample was kept in the reactor by varying pH and the samples were drawn periodically for COD analysis. From the Figure 1, it was observed that the maximum COD removal efficiency is 25% at pH 8 for 3 hours. Hence pH 8 is considered as optimum pH throughout the study. This confirms need of catalyst for treating the coloured wastewater sample by Semiconductor Photocatalysis. This indicates that under acidic condition the photo degradation is less due to high concentration of protons and in alkaline condition, OH ions neutralise the end products which are acidic in nature.

Effect of catalyst dosage

The study on pH variation without using catalyst showed the importance of catalyst in photocatalytic degradation. TiO_2 and ZnO were used as catalyst to increase the degradation rate separately. The study was carried to know the optimum dosage of catalyst by varying the catalytic dosage from 1g/L to 5g/L. Figure 5.2 and 5.3 shows the photocatalytic degradation of COD due to variation of catalytic dosage. The samples during degradation process were taken at regular intervals and analysed for COD. Maximum COD removal of 82.5% and 70% was observed for catalyst TiO_2 and ZnO respectively. Hence it was declared that the optimum dosage of 4g/L for TiO_2 and 5gm/L for ZnO. The dosage of catalysts of about 5g/L showed reduction in COD removed. This is because excess catalyst will block the light from penetrating into the wastewater sample.

Effect of contact time

To study the effect of contact time, the study was carried out keeping the optimum condition of pH 8, 4g/L for TiO_2 and 5gm/L for ZnO. The samples were kept under mercury light source for 6 hours and concentration of COD was analysed for regular intervals of every one hour. Table 4 shows the removal efficiency of COD for each 1 hour of total duration 6 hour. From the Table 4 it can be observed that, maximum removal efficiency of COD of 87.5% and 80% for 6 hours for TiO_2 and ZnO respectively. This shows importance of catalyst and contact time in the rapid degradation under photocatalysis.

Effect of Photocatalytic Degradation on Colour

The study also was concentrated of understanding the effect of photocatalytic degradation of colour. The initial concentration of wastewater was observed to be 18 Hazen units. For the optimum condition of pH 8, catalytic dosage 4g/L for both TiO_2 and ZnO for the contact period of 5 hour, the wastewater kept for photocatalytic degradation was analysed for colour removal. The result showed the concentration reduced from initial concentration of 18 Hazen units to 5.1 Hazen units for TiO_2 and 4 Hazen units for ZnO. This shows that, photocatalytic process using either TiO_2 or ZnO as catalyst is one of the best methods in removal of colour caused by dyes in textile industries.

CONCLUSIONS

Based on the study, following conclusions were drawn.

➢ Removal efficiency of COD gradually increased for varying pH as time proceeds and pH 8 was found to be optimum and the results confirms need of catalyst for degradation

➢ The maximum COD removal achieved for 4g/L is 82.5% for TiO_2 and 70% for ZnO and hence 4g/L was found to be optimum dosage on degradation of textile wastewater

➢ The results obtained for optimum pH 8 and optimum dosage 4g/L for contact time of 6 hours, COD removal was found to be 87.5% and 78% for TiO_2 and ZnO respectively

➢ TiO_2 is found to be more effective in degradation of textile wastewater compared to ZnO with operating parameter

➢ Photocatalysis process could be used as alternative techniques for the degradation of textile wastewater

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STUDY OF ANIMAL DERIVED PERFUMES AND AROMATIC MEDICINAL INGREDIENTS

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ABSTRACT

Animal essences have been prized throughout history. They have been used as powerful base notes, enhancers, fixatives and also medicinal agents. In the pure form, these have an obnoxious smell, nauseating to most people. However, proper dilution and mixing with other essences reveal their beauty. Behind these alluring perfumes, lies a background of hunting down and killing animals, pain and torture. The four most important animals which have been employed in the manufacture of perfumes through time are musk deer (Moschus chrysogaster), sperm whale (Physeter macrocephalus), civet cat (Viverra civetta) and the beaver (Castor). From these, musk, ambergris, civet and castoreum respectively, are extracted and added to perfumes. Most of these aromatic substances carry medicinal properties and have thus been used in traditional medicines. Earlier, procuring animal essences was easier for the manufacturer. However, with malpractices and over exploitation of these animals, they have been pushed to extinction, leading to a steep gap between the demand and supply. The enforcement of new laws rendering protection to the animals and also the high costs of obtaining the scents, has given perfume manufacture a new dimension, namely the synthetic essences. While a few deluxe perfume brands still prefer using the natural essences, a bigger fraction of companies now employ the synthetic ones. The objective of this paper is to study in detail about the animal essences, their source, methods of extraction, extent of application in today's market and their effective synthetic alternatives.

Keywords: Ambergris, Animal essences, Castoreum, Civet, Musk.

INTRODUCTION

The English word "perfume" comes from the Latin word "per fume," meaning "through smoke." This word is synonymous to 'Fragrance', which represents indulgence; pleasure; luxury. For centuries mankind is having a very special relationship with scent.

The art of perfumery began in ancient Egypt, which later spread to other parts of the world (1). Since then, the aromatic products of both plants and animals have been employed in the manufacturing of perfumes. While the plant extracts offered a wide range of sweet-smelling fragrances, the animal essences brought with them an earthy and animalistic smell. Through history, till date both the essences have been used - however it's the latter that has always gone unnoticed. While spraying one's favourite perfume every morning, one may not know that the main essence in it has been derived from an animal.

Exotic, complex and fabulously expensive, these animal essences when diluted reveal an incredible beauty. These scents, which are secretions or the excreta of animals (terrestrial and marine), add a remarkable effect to the perfume, much like the wonders a pinch of salt can do to a dish.

In the present review article, four substances of animal origin have been studied that are widely used in perfumery, namely musk, ambergris, civet and castoreum. Of these, civet and castoreum find a much wider application in the drugs, food and perfume industry. Musk and ambergris being very expensive, are consequently only used in deluxe perfumes.

MUSK: SOURCE AND ECONOMIC STATUS

'Musk' is one of the most valuable scented animal products, produced as a glandular secretion from the musk gland located beneath the skin of the abdomen, between the reproductive organ and umbilicus of male musk deer, (*Moschus moschiferus* and three other species of *Moschus)* liberated as musk (which appear in urine), most likely to attract mates. Phylogenetically, somewhere in between the deer and antelope, the musk deer is hornless. The musk deer is found from Afghanistan to Pakistan, India Nepal, Bhutan and Burma. With over exploitation, it is now on the verge of extinction, hence various measures have been developed, such as setting up musk deer farms or extracting the product from the live deer (without killing them) etc were implemented, all done in view of conserving the species. In 1973, the deer's plight was recognized by the Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES). The CITES agreements limits trapping of deer and also restricts trade in natural musk (2,3).

A product more expensive than gold, musk finds its way through the birch forests resting on the lap of the Himalayas, into the base notes of one's favourite bottle of perfume. End-consumers in the perfume industry of

Europe or on the trading markets in Japan face retail prices of about US$30-50/g. China is the major legal exporter. The demand of musk is so high, that it is sold in international market at the rate of up to rupees 60,000 per 12 grams. Not only has musk been used in perfumes all over the world , but also in traditional medicine in the oriental countries (3).

Musk extraction and farming

Musk production is probably regulated by androgens, because castrated males produce negligible amount of musk. The preputial follicle or musk pod is the size of a walnut, from which the main essence is extracted which is in the form of grains. During the musk deer's breeding season, the musk produced in the musk glands of males is a dark brown powder with a strong smell. In the months before the breeding season, however the musk is pasty, white and only smells slightly. Each pod holds, 1 oz of grains. The odoriferous compound is called muscone, which forms about 2% of the whole seed. Therefore, a male musk deer produces musk, at the rate of about 25 g of musk, per animal, per year.

Musk is removed from a live male deer, without killing it. The extraction technique takes about 15 minutes and involves the following steps-

- The deer is restrained by three persons, with the umbilical region exposed

- A sterilized scoop, with a rotating movement and lubricated with an antibiotic is inserted.

- The musk is collected by rotating and then the scoop is removed (2,3).

Alternatives to musk

Natural musk extraction led to over exploitation of the musk deer, pushing them to the brink of extinction. Thus, in today's perfumes, the use of natural musk is strictly prohibited. Synthetic alternatives such as Musk Ambrette, Musk Baur and Musk Ketone were initially developed, making the perfumes purely vegan. But these three have been discarded over safety issues.

Musk Geranium, also called Musk Storksbill, Musked Cranesbill etc. is a seaside herb, *Erodium moschatum,* grown in Britain. The whole plant after drying, has a fine musky odour (1).

Commercial musk-based perfumes

Maison Francis Kurkdijan's Petit Matin Eau de Parfum ; Hnery Rose Jake's House Eau de Parfum ; Narcisp Rodriguez for Her Music Noir Eau de parfum ; Issey Miyake a Drop d'Issey Eau de Parfum ; Ellis Brooklyn Myth Eau de Parfum (4,5).

AMBERGRIS

Ambergris is another animal-derived perfume ingredient which not only is extremely valuable, but also is a legendary one. It was discovered by the early voyagers, floating in the sea as oily grey lumps. Later it was established that the substance was excreted by the sperm whale, *Physeter macrocephalus* after it had been feeding on cuttle fish.

Ambergris is mentioned differently in Indian and other languages. Latin Ambergris is known as '*ambra grisea'*. The name 'ambergris' is derived from the French, '*ambre gris'* (gray amber) to distinguish it from fossilized resin or gum brown amber (6).

History

Ambergris holds a very unique place in the history of perfumery. It was a prized commodity for trade. References to ambara as perfume are found in Sanskrit literature. It was used as Sugandhadravya or Sugandhaka. (Around 900AD- 1676 AD). It was the Arabs who first noticed the importance of ambergris and then later held monopoly over the trade of this substance. Ambergris has been reported in several travel memoirs such as:

- A series of Arabian traveller's accounts give us information up till the 14th century. The most important of these was that of a Moorish traveller, Ibn Batuta. He mentioned in his 'Travels' , his journey to the Coromandel coast and his escape from a shipwreck, "The sailors tied ropes to the raft and swam with their aid. I sent along with them all things that I valued and the jewels and ambergris and they reached the shores in safety before the wind".

- One of the greatest contributions was made by Marco Polo, a Venetian traveller in the 13th century. In his 'The Travels of Marco Polo', he mentioned, "Traders resorting to the 'Island of males and Females' with the principal object to purchase ambergris of which a quantity is collected here". He also mentioned that

Ambergris, found on the coasts were "voided from the entrails of whales". He observed whales on the island of Socotra in the Indian Ocean and attributed ambergris to sperm whales.

- The Chinese merchants visited India in the first quarter of 15th century. Their accounts record that large amount of ambergris was collected from North West Sumatra.

- Towards the second quarter of the 16th century, Garcia da Orta, a Portuguese physician and botanist, came to Goa, India. In one of his works, he made a special mention of ambergris as one of the drugs- containing beaks of birds.

- In the 'Memoirs' of the Mughal Emperor Jahangir (1643), it was stated that ambergris was directly mixed with other aromatic ingredients to perfume the throne.

- In 1783, botanist Joseph Banks presented a paper by Dr. Franz Xavier Schwediawer, a German physician, before the Royal Society, stating that ambergris was a production of sick sperm whales. This cleared all confusions over ambergris and its origin (7).

Formation of ambergris

Ambergris in reality is not a normal substance, instead a pathological substance released in a disease state. It is a waxy secretion formed in the intestines of sick whales. The diseased state is caused by the indigestible horny beaks of the cephalopods like squids, molluscs and cuttlefish, on which the whales feed. In the ill whales, a substance called 'calculus' is formed, which is either excreted or which may remain inside the whale eventually causing its death. The remains of the whale are eaten by other animals and the ambergris is released. It is said that ambergris which has been exposed to the sun for several years is of the finest quality (1,7).

Composition

Ambergris is a soft fatty substance, resembling beeswax. Fresh ambergris, extracted by whalers or expelled by the whales is soft, comparable to the consistency of tar and has a disagreeable odour.The lumps of ambergris are usually found embedded in the lower part of intestine, with the hard, parrot like beaks of squids and cuttlefish. Long exposure of the substance to air, sun and sea water, transforms it- the black colour fades to a lighter grey and it develops a subtle pleasing earthy fragrance.

Ambergris is obtained in various grades: a. finest quality: it is white in colour and has been exposed to the sun and sea water for the longest span. It is used in preparation of the tincture; b. fine quality: it is silver-gray or pale golden in colour, and lastly c. poor quality: the black coloured ones are the least valuable ones. It is mostly mixed with blood and faecal matter, which gives it a strong disagreeable odour (1).

Chemical composition
Table 1. Chemical constituents of ambergris

Ether- Insoluble	10-16%
Cholesterol	0.1%
Pristane	2-4%
Ketones (of which more than 50% are of coprostane- 3-one)	6-8%
Ambrein	25-45%
epiCoprosterol, free and esterified	30-40%
Free Acids	5%
Coprosterol	1-5%
Esterified acids	5-8%

Composition of ambergris is given in Table 1. The main chemical constituents of ambergris are ambrein, epicoprosterol and coprostanone. Researchers state that odorous products of ambergris are the oxidation of products of ambrein and that the long-lasting smell of ambergris is due to the constant oxidation of ambrein (7).

Uses

In the olden days it was used as a perfume and drug in the East. In the modern times it is used in the East as a spice and in preparation of wines. In perfumery, ambergris is used as a fixative and also for its fragrance.

Synthetic alternatives

For centuries, ambergris has been employed by perfumers as a fixative. However, with its growing scarcity and costliness, its use has declined. Many countries have banned its trade as a apart of a more general edict against the hunting and exploitation of whales. However, since ambergris is a waste product it is not covered by the Convention on the International Trade in Endangered Species (CITES). Today, perfumers and chemists have come up with synthetic and natural alternatives. They are usually labandum terpenes. Labdanum is the oleo resinous secretion from the leaves of *Cistus ladanifer L.,* genus of rockrose family.

Poucher stated in his works that artificial ambergris which is now placed in the market, consists principally of the methyl ether of mono-nitro-dibromo-butyl-m-cresol. Another substitute is furon, commercially known as Fixateur 404. Scientists have also discovered that balsam gene can be used to manufacture cheaper and sustainable substitutes (1,7).

Commercial ambergris-based perfumes

Creed Green Irish Tweed Eau De Parfum; Yves Saint Laurent L'Homme Parfum Intense; Paco Rabanne Black XS Eau De Toilette; Burberry MR Burberry Element Eau De Toilette; Roja Dove Danger Parfum Cologne (8).

CIVET

Civet cat, *Viverra civetta* is small carnivorous, marten like mammal native to Ethiopia and found across Asia and Africa. It is one of the four vertebrate mammals producing an aromatic medicinal product. Under normal circumstances, the civet cat manages to attract very little attention. These animals have created a furore because a fat is extracted from their perianal region that is employed in the perfume industry. The word 'civet' refers to both the animal as well as the secretion.

The African Civet uses musk to mark its territory and announce its presence both in mates and adversaries. From the earlier days civet cat farming was practised and even today it is an important export commodity.

Civet, is a soft paste like glandular secretion (from perineal glands), yellow and butter like when fresh, but turns brown on exposure to the air. In general, it has a very obnoxious smell carrying a faecal odour. However, in the hands of a perfumer, it is diluted to the extent that this obnoxious smelling substance becomes truly mesmerising, animalistic musty, that adds warmth and radiance to fragrances (9,10).

Collection of civet musk

A foul-smelling paste like secretion, the civet musk is produced by both female and male civet cats. However, the latter produces larger quantities and better-quality musk. The civet musk is collected using a spoon made of cow horn every 11-12 days during the rainy seasons and 9-10 days during dry season. Therefore, it can produce a total yield of 300-400gms musk a year. Ethiopia has a monopoly over the civet musk production and exports about 2000 Kg of musk worth US$ 900,000. The civet is also exported to Europe and United States for perfumery (11).

Synthetic alternatives of civet musk

The existing export of musk only covers 22% of the total international demand. Even though civet cat farming is considered a potential investment opportunity, fifty percent of the farmers are giving up the musk production for fluctuating demand and price. Nowadays, 'civetone', the main odorous constituent of civet musk is synthesized, and many perfumers use this in their perfumes (1,11).

Commercial civet-based perfumes

Obsession by Calvin Klein; Noir by Tom Ford; Shalimar by Guerlain (9).

CASTOREUM

Castoreum, also called Beaver Oil or Beaver Musk, is a secretion from the preputial follicles of both males and female castor beavers, found in Canada and USSR (1).

Beaver

Beavers are amphibious rodents native to North America, Europe and Asia. These animals have a pair of castor sacs lying in between the pelvis and base of tail. Since the sacs lie in conjunction with the anal glands, they secrete the musk along with urine. The gland producing castoreum is a small ovoid sac about 5 to 17 cm long and 2.5-5 cm wide. The secretion marks the beaver's territory and is used as a warning to its adversaries.

Castoreum is a yellowish liquid secretion which comes with a disagreeable odour until considerably diluted. A resinoid extract, castoreum is largely used for its animalistic note. Its scent is wild and bodily, lustful and passionate, bestowing on one an aura of sensuality. It has a typical warmth and a leather like scent (12).

Extraction of castoreum

Beavers have been hunted since the ancient times for their fur and castoreum. Castoreum is mainly extracted in Canada, trappers are hired and paid by the government to extract castoreum from the beavers. The animal is killed to extract the castoreum. It is important to remember that castoreum has not been banned by the FDA or stated to produce ill effects (13).

Synthetic alternatives

Ammoniacum is sometimes used a substitute (1).

Uses

Castoreum is used as an excellent fixative and imparts a spicy or oriental note to perfumes. It is often used for anxiety, insomnia and menstrual cramps. However, it should be noted that there is no good scientific evidence to support this. In foods and beverages, it is used as a flavouring agent. Most vanilla and raspberry products use castoreum for its sweet smell, note that FDA approves this as a "Natural Ingredient"

Below are some of the perfumes in which it has been added

1. Emeraude- The citrusy perfume uses castoreum to enhance its fragrance.

2. Coco Chanel's - Cuir de Russie

3. Magie Noire

4. Lancôme Caractère- Alain Verjus is behind this perfume, which is a leather fragrance for men.

5. Givenchy III, launched by the famous Givenchy. The base of the perfume consists of mandarin, peach, bergamot, gardenia and galbanum (12).

CONCLUSION

Perfumers have used animal essences through history. However, excessive use of these scents down the ages have led to the over exploitation of the sources, pushing the animals to the brink of extinction. Thus, owing to the increasing demand of perfumes and the high costs of the animal derived ones, perfumers and chemists have come up with promising synthetic alternatives which successfully create the same aura like the natural ones. Nevertheless, the top perfumes brands still prefer using the naturally derived animal essences.

Animal scents have always fascinated mankind. The animal scents create a magic of their own when they mingle with the human skin, owing to the fact that every animal has their own distinctive smell which enhances the perfume. The idea that each of us exists inside our own idiosyncratic "olfactory envelope" asserts that every perfume responds differently, depending on an individual's biochemistry.

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THE EFFECT OF SURVEY DESIGN ON REGRESSION ANALYSIS AN EMPIRICAL INVESTIGATION

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ABSTRACT

An empirical investigation is carried out to study the effect of survey design on regression analysis. Under three different situations A, B and C, six different sample designs have been consider for the study. Under situation A, the complete population has been taken into consideration with X_1 as dependent, X_2 as independent variable and X_3 as design variable. In situation B and C, two phase sampling has been adopted; X_3 and X_1 have been used as design variable respectively. The bias of OLS estimator and mean square error of other estimators have been compared under different sampling design for the three situations.

Key Words: OLS estimator, Double sampling, Design variable, Regression analysis.

INTRODUCTION:

In the complex survey design, the design, the data is often analyzed using regression techniques without further regard to the sample design Nathan and Holt [4], Holt et al. [2]. The algebraic comparison of different estimators proposed by Nathan and Holt [4] in case of most of the sampling designs is difficult to put in practice. So, an empirical investigation is adopted for this comparison. For this purpose, data of a pilot sample survey for estimator of inland fishery resources and catch in a region of West Bengal, India is used.

DESCRIPTION OF THE INVESTIGATION:

The data from 1350 ponds obtained from a study conducted in India for developing sampling methodology for estimating the extent of area under ponds and catch of fish from them has been considered as the complete population Kathuria et al [3]. For each pond, the observations on fish catch in Kg. (X_1), total quality of fish seed used in Kg. (X_2) and the area of the pond in acres (X_3) have been taken from the survey. Variable X_3 is treated as the design variable.

The population of 1350 ponds has been divided into 5 strata, on the basis of the values of X_3 with stratum sizes 119, 516, 482, 153 and 80.

The following six survey designs have been considered:

(a) Simple random sampling.

(b) Stratified sampling with proportional allocation.

(c) Stratified sampling with equal sample sizes.

(d) Stratified sampling with sample sizes in U-shape.

(e) Stratified sampling with sample sizes in increasing or decreasing order.

(f) Probability proportional to size and with replacement.

These survey designs have been used under three different situations:

(A) The population of 1350 ponds is considered as the complete population and X_3 is used as the design variable.

(B) A large sample of size 800 has been selected from the population of 1350 ponds. This has been done to see whether double sampling as a method of design could be adopted for estimating regression coefficients when the design could be adopted for estimating regression coefficients when the design variable X_3 is already available from the survey or can be measured cheaply.

(C) A special situation is when X_1 is measured at the first phase and so the dependent variable is used as the design variable Nathan and Holt [4]. For this situation also, a random sample of size 800 has been drawn for X_1 at the first phase.

From the population of 1350 ponds, the following parameter values have been obtained:

$$\rho_{12} = 0.32592 \quad \rho_{13} = 0.13233$$

$$\rho_{23} = 0.38352 \qquad \rho_{13.2} = 0.00839$$

$$B_{12} = 2.84782 \qquad \sigma_1 = 114.29210$$

$$\sigma_3 = 0.42250 \qquad \sigma_2 = 13.08020$$

These values of the parameters have been calculated from the complete population and have been assumed to be known for three different situations. For any particular design, 100 repeated samples have been drawn and the design dependent parameters are estimated. Finally the estimates of the population parameters and the design dependent parameters have been combined to estimate the moments of the various estimators. In this way the mean square error of ordinary least squares estimator and variance of unbiased estimators under three different situations using various survey designs defined earlier have been calculated.

Situation A:

$N = 1350$, $n = 140$, X_3 is design variable

	Strata (On the basis of X variable)	
Sr. No.	Interval (in acres)	Size
1	0.00 - 0.25	119
2	0.25 - 0.50	516
3	0.50 - 1.00	482
4	1.00 - 1.50	153
5	1.50 - 3.25	80
		1350

Conversion: one acre = 0.405 ha

Survey Design

(a) Simple random Sampling.

(b) Stratified sampling with proportional allocation i.e. with sample sizes (12, 53, 49, 15, 11).

(c) Stratified sampling with equal sample sizes (28, 28, 28, 28, 28).

(d) Stratified sampling with sample size in U-shape (40, 25, 10, 25, 40).

(e) Stratified sampling with sample sizes (70, 35, 20, 10, 5).

(f) Probability proportional to size.

Situation B:

Double sampling, X_3 is design variable. Sample size for X_3 variable at first phase $n' = 800$ and $n = 83$.

	Strata (On the basis of X variable)	
Sr. No.	Interval (in acres)	Size
1	0.00 - 0.25	75
2	0.25 - 0.50	314
3	0.50 - 1.00	253
4	1.00 - 1.50	107
5	1.50 - 3.25	51
		800

Survey Design:

(a) Simple random sampling.

(b) Stratified sampling with proportional allocation i.e. with sample sizes (8, 32, 26, 11, 6).

(c) Stratified sampling with equal sample size (16, 16, 17, 17, 17).

(d) Stratified sampling with sample size (8, 20, 27, 20, 8).

(e) Stratified sampling with sample size (8, 13, 17, 20, 25).

(f) Probability proportional size.

Situation C:

Double sampling, X_1 is used as the design variable. Sample size for X_1 variable at first phase n' = 800 and n = 83.

Strata (On the basis of X_3 variable)		
Sr. No.	Interval (in kg)	Size
1	0 – 50	170
2	50 – 100	256
3	100 – 200	190
4	200 – 300	124
5	300 – 400	60
		800

Survey Design

(a) Simple random sampling.

(b) Stratified sampling with proportional allocation i.e. with sample sizes (17, 25, 20, 13, 8).

(c) Stratified sampling with equal sample size (16, 16, 17, 17, 17).

(d) Stratified sampling with sample size (8, 20, 27, 20, 8).

(e) Stratified sampling with sample size (8, 13, 17, 20, 25).

(f) Probability proportional size.

METHODOLOGY AND FORMULATE USED:

We consider the simple situation described by Nathan and Holt (1980). Suppose. "Design" variable X_3 is known at the design stage for each member of the finite population. After sampling, observations are made on X_1, the depend variable, and on X_2 the independent variable in the regression analysis.

Consider the regression model,

$E(X_1 \mid X_2) = \mu_1 + \beta_{12}(X_2 - \mu_2)$

In the above model, X_3 variable is used at the design stage but not explicity in the regression model. In other words, this model has been considered under the situation where the design variable X_3 is not a cause of the dependent variable.

We consider a finite population of size N selected from a super population such that the observed values of X_3 are independently and identically distributed with mean μ_3 and variance σ_3^2. The assumption of the survey design is that X_3 is related in some way to X_1 or X_2. The following are the assumptions for the model considered:

$X_{1\alpha} = \mu_1 + \beta_{13}(X_{3\alpha} - \mu_3) + e_{1\alpha}$

$X_{2\alpha} = \mu_2 + \beta_{23}(X_{3\alpha} - \mu_3) + e_{2\alpha}$

$e_{1\alpha} = \beta_{12.3} e_{2\alpha} + \eta_{1\alpha}$

where, $E(e_{2\alpha} \mid X_{3\alpha}) = E(\eta_{1\alpha} \mid X_{3\alpha}) = E(e_{2\alpha} \eta_{1\alpha} \mid X_{3\alpha}) = 0$

and $E(e_{2\alpha}^2 \mid X_{3\alpha}) = \sigma_{2.3}^2$, $E(\eta_{1\alpha}^2 \mid X_{3\alpha}) = \sigma_{1.23}^2$

These conditions are equivalent to the conditional expectations of X_1 and X_2 given X_3 being liner in X_3 and the conditional covariance matrix of X_1 and X_2 given X_3, not depending on X_3.

In addition, we assume conditional independence for different units i.e. $(\eta_{1\alpha}, e_{2\alpha})$ $(\eta_{1\beta}, e_{2\beta})$ are conditionally independent given $X_3' = (X_{13}, X_{32}, \ldots, X_{3N})$. A sample 'S' is selected from the finite population by any sample design (including purposive designs) of fixed size n. The design may be based on the known population values of X_3. The parameter of interest is the super population regression coefficient β_{12} of X_1 on X_2 which can be defined as $\beta_{12} = \rho_{12} \sigma_1/\sigma_2$

We further define the following statistics based on the entire finite population:

$\hat{\mu}_3 = (\sum_{\alpha=1}^{N} X_{3\alpha})/N$

$$\delta_3^2 = \sum_{\alpha=1}^{N}(X_{3\alpha} - \widehat{\mu_3})^2/(N-1)$$

The sample statistics $\bar{x}_i$, s_i^2, s_{ij}, $s_{ij.k}$ (i, j, k = 1, 2, 3) etc. are defined in the usual way, analogous to the corresponding distribution parameters, μ_i, σ_i^2, σ_{ij}, $\sigma_{ij.k}$ which appear in the assumptions defined earlier.

We have used Ordinary Least-Square (OLS) estimator (b_{12}) and an alternative estimator ($\widetilde{\beta_{12}}$) defined by Nathan and Holt (1980).

$$b_{12} = S_{12}/S_2^2$$

$$\hat{\beta}_{12} = \frac{S_{12} + (S_{13}\,S_{23}\,/\,S_3^2)\,(\hat{\sigma}_3^2)/S_3^2 - 1)}{S_2^2 + (S_{23}^2/S_3^2)\,(\hat{\sigma}_3^2/S_3^2 - 1)}$$

The maximum likelihood estimator $\hat{\beta}_{12}$, under a trinormal distribution for (X_1, X_2, X_3) was originally due to Pearson [5] and is proposed by Demets and halperin [1] to provide an asymptotically unbiased estimator of β_{12} to $O(n^{-1})$.

The weighted estimators of b_{12} and β_{12} where the weights are the inverse of the sample inclusion probabilities π_α, have also been utilized for comparison purposes. The weighted estimators can be written as –

$$b_{12}^* = S_{12}^*/S_2^{*2}$$

and
$$\hat{\beta}_{12}^* = \frac{S_{12}^* + (S_{13}^*\,S_{23}^*\,/\,S_3^{*2})\,(\hat{\sigma}_3^2)/S_3^{*2} - 1)}{S_2^{*2} + (S_{23}^{*2}/S_3^{*2})\,(\hat{\sigma}_3^2/S_3^{*2} - 1)}$$

where, $\bar{X}_i = \sum_{\alpha\in S} Xi_{i\alpha}/N\pi_\alpha (i=1, 2, 3)$

$$S_{ij}^* = \sum_{\alpha\in S}\frac{X_{i\alpha}\,X_{j\alpha}}{N\,\pi_\alpha} - \frac{\bar{X}_i\,\bar{X}_j}{\sum_{\alpha\in s}1/N\pi_\alpha}$$

$S_i^{**} - S_{ij}^*$ (i, j = 1, 2, 3)

and $\pi_\alpha = \text{prob.}(\alpha \in S|X_3) > 0$; ($\alpha = 1, 2, \dots. N$)

The variance and mean square error of these four estimators have been compared under different survey designs survey designs considered. Science the variance expressions of b_{12} and β_{12} depends upon Q where $Q = \frac{E(S_3^2)}{\sigma_3^2}$, this term has also been calculated for comparisons purposes.

RESULTS AND DISCUSSIONS:

Table 1. Bias and Mean square error of OLS estimator and variance of unbiased estimators						
Survey Design	$E(b_{12})-\beta_{12}$	$MSE(b_{12})$	$V(\hat{\beta}_{12})$	$V(b_{12}^*)$	$V(\hat{\beta}_{12}^*)$	Q
Situation A						
a	0.000000	0.487550	0.487566	0.487538	0.487488	1.0
b	0.003132	0.475688	0.477120	0.464144	0.464138	1.2
c	0.020419	0.413333	0.448060	0.464144	0.464138	2.2
d	0.029660	0.381396	0.440560	0.464144	0.464138	2.9
e	-0.003505	0.500815	0.503366	0.464144	0.464138	0.8
f	0.016279	0.427990	0.452709	0.479300	0.479991	2.0
Situation B						
a	0.000000	0.822420	0.822395	0.822210	0.824335	1.0
b	0.001505	0.815863	0.813436	0.787738	0.787728	1.1
c	0.002520	0.703793	0.760084	0.787738	0.787728	2.2
d	0.005150	0.789950	0.798320	0.787738	0.787728	1.3
e	0.021200	0.977696	0.756826	0.787738	0.787728	2.3
f	0.014240	0.734180	0.770284	0.813036	0.813036	1.8
Situation C						
a	0.025499	3.725208	3.247814	3.575660	3.045829	1.0
b	0.067700	4.294350	3.224890	3.113929	2.866590	1.1

c	0.584720	6.129308	3.047474	3.113929	2.866590	1.7
d	0.559320	3.750010	3.196117	3.113929	2.866590	1.2
e	0.953180	8.209517	2.980360	3.113929	2.866590	2.2
f	0.067700	4.113730	3.224860	3.423690	2.983650	1.1

From the Table 1 it can be seen that under all the three sampling situations A, B and C the bias of OLS estimator is almost zero. Among other sampling designs, sample design (b) which is stratified sampling with proportional allocations is having minimum bias. The variance of $\hat{\beta}_{12}$ is minimum under sample design (d) in which the last stratum which is having large values of design variable X_3 is given a greater allocation. Under sample design (a), $V(\beta_{12})$ is very high in comparison to other sample designs.

Nathan and Holt [4] have shown that if Q = 1, in which case the bias of b_{12} becomes of O (n^{-1}), then $V(b_{12}) \geq (\hat{\beta}_{12})$. This is true under all the three different situations. In situation C, when the dependent variable itself is used as the design variable, $V(\hat{\beta}_{12})$ is less than MSE (b_{12}) in all the three sample designs considered. Science for simple random sampling, sampling inclusion probability $\pi_\alpha = n/N$, the weighted and the unweighted estimators coincide i.e. $b_{12} = b_{12}^*$ and $\hat{\beta}_{12}$ - $\hat{\beta}_{12}^*$, so $V(b_{12})$ and $V(b_{12}^*)$, and $V(\hat{\beta}_{12})$ and $V(\hat{\beta}_{12}^*)$ under all the 3 situations don't differ much from each other. Under the sample design (b) and (e) in which only few values are selected from last stratum, the weighted estimator comes out to be better than unweighted estimator.

Further weighted estimator seems relatively insensitive to the sample design. But since the weighted estimators are model free, they may be more robust to departures from the model upon which the properties of b_{12} and $\hat{\beta}_{12}$ are based. The results which hold for situation A extend to the situation B also, where double sampling has been adopted as a method of design for estimating regression coefficients when the design variable X_3 is already available from the survey or can be measured cheaply. Under the situation C, when X_1 is measured at the first phase and so the dependent variable is used as the design dependent variable itself, the bias for b_{12} is more in comparison to the situation A and B. But in this case also, the results of situation A are applicable.

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SMART HEALTH CARE SYSTEM USING MACHINE LEARNING

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INTRODUCTION
Machine learning algorithms can detect patterns associated with diseases and health conditions by studying thousands of healthcare records and other patient data. Recent developments in machine learning can help increase healthcare access in developing countries and innovate cancer diagnosis and treatment.

The increase of age average led to an increase in the demand of providing and improving the service of healthcare. The advancing of the information and communication technology (ICT) led to the development of smart cities which have a lot of components. One of those components is Smart Health (s-Health), which is used in improving healthcare by providing many services such as patient monitoring, early diagnosis of diseases and so on. In this paper, an IoT-based student healthcare monitoring model is proposed to continuously check student vital signs and detect biological and behavioral changes via smart healthcare technologies. In this model, vital data are collected via IoT devices and data analysis is carried out through the machine learning methods for detecting the probable risks of student's physiological and behavioral changes.

Keywords : Internet of things, health system, smart student care ,SVM, Data mining .

OBJECTIVE
Smart health service means utilizing the integration and collaboration of Internet of Things technology and modern health service technology to realize smart health service featuring ubiquity and personification. In consideration of the requirement and objective of health service and based on the 3S system of Internet of Things, this paper attempts to study and establish a user-centered, health service-driven and software definition-based multi-terminal and multi-network smart health service system, providing solutions for smart health service.

LITERATURE
In the era of "big data", recent developments in the area of information and communication technologies (ICT) are facilitating organizations to innovate and grow. These technological developments and wide adaptation of ubiquitous computing enable numerous opportunities for government and companies to reconsider healthcare prospects. Therefore, big data and smart healthcare systems are independently attracting extensive attention

from both academia and industry. The combination of both big data and smart systems can expedite the prospects of the healthcare industry. However, a thorough study of big data and smart systems together in the healthcare context is still absent from the existing literature. The key contributions of this article include an organized evaluation of various big data and smart system technologies and a critical analysis of the state-of-the-art advanced healthcare systems. We describe the three-dimensional structure of a paradigm shift. We also extract three broad technical branches (3T) contributing to the promotion of healthcare systems. More specifically, we propose a big data enabled smart healthcare system framework (BSHSF) that offers theoretical representations of an intra and inter organizational business model in the healthcare context. We also mention some examples reported in the literature, and then we contribute to pinpointing the potential opportunities and challenges of applying BSHSF to healthcare business environments. We also make five recommendations for effectively applying `BSHSF to the healthcare industry. To the best of our knowledge, this is the first in-depth study about state-of-the-art big data and smart healthcare systems in parallel. The managerial implication of this article is that organizations can use the findings of our critical analysis to reinforce their strategic arrangement of smart systems and big data in the healthcare context, and hence better leverage them for sustainable organizational invention.

These technologies also contributed in development of applications that can transfer health data to provide accurate analytic information for physicians and healthcare centers. This analytical information will be useful in early diagnosis of non-contagious diseases such as cancers and mental illness (Perez et al. 2018; Souri et al. 2019). Medical IoT devices provide remote students' condition monitoring while they are at home, school, in hospital, or being anywhere else. Medical IoT devices attached to the patient transfer continuously vital health data to medical team from anywhere and anytime (Pramanik et al. 2019).The results indicate that the student model mimics the teacher model performance in terms of prediction accuracy without the need to access to the patients' original data records.

PROPOSED SYSTEM :

The proposed model comprises the biomedical sensors and health nursing tools to collect and store students' health data. Then machine learning algorithms are applied on the collected information to monitor the student's general health function status.

The main involvements of this paper are:

• Presenting a machine learning-based healthcare model in IoT environment.

• Monitoring student's health status through continuously tracking two groups of health condition parameters: behavioral and biological changes parameters.

• Classification of student's health function status using support vector machine (SVM) algorithm to achieve optimal prediction.

Smart healthcare is a health service system that uses technology such as wearable devices, IoT, and mobile internet to dynamically access information, connect people, materials and institutions related to healthcare, and then actively manages and responds to medical ecosystem needs in an intelligent manner.

Proposed system explains in this paper for students' health monitoring is presented in detail. The model is constructed from three layers: IoT layer, cloud layer, and student's health monitoring layer. In addition, machine learning algorithms that are used in the proposed model and for evaluating it, decision tree (DT), random forest (RF), SVM, and multilayer perceptron (MLP) are presented briefly. At the end of this section, evaluation criteria are explained. The conceptual model for IoT-based students' intelligent healthcare monitoring system consists of three layers and three consist of three main phases. In the first phase, patient's data are obtained through medical devices and sensors. These devices will send data to the cloud subsystem using an input path or local processing unit (LPU). In the second phase, data mining techniques are performed on patient's data using to make cognitive decisions about students' health. In the third step, parents or caregivers will be given information and warnings about student health if needed. In addition, an alert may be given to the hospital if an emergency situation occurs to call medical emergency services to patient's location. (This is possible if a proper Android app is available.) The focus of this paper is on the cloud layer of healthcare monitoring model which tries to probe students' probable illnesses by exploring student health data using machine learning methods .

PROBLEM

Prolonged life expectancy along with the increasing complexity of medicine and health services raises health costs worldwide dramatically. Whilst the smart health concept has much potential to support the concept of the emerging P4-medicine (preventive, participatory, predictive, and personalized), such high-tech medicine produces large amounts of high-dimensional, weakly-structured data sets and massive amounts of unstructured information. All these technological approaches along with "big data" are turning the medical sciences into a data-intensive science. To keep pace with the growing amounts of complex data, smart hospital approaches are a commandment of the future, necessitating context aware computing along with advanced interaction paradigms in new physical-digital ecosystems. The very successful synergistic combination of methodologies and approaches from Human-Computer Interaction (HCI) and Knowledge Discovery and Data Mining (KDD) offers ideal conditions for the vision to support human intelligence with machine learning. The papers selected for this volume focus on hot topics in smart health; they discuss open problems and future challenges in order to provide a research agenda to stimulate further research and progress.

THE FUTURE SCOPE OF SMART HEALTH CARE SYSTEM

I would hope that "smart" healthcare would prevail over the alternative, which would be dumb healthcare. Any healthcare system where the patient and the doctor are not the primary driving force is dumb. This is especially true of central demand & control schemes run by uninvolved bureaucrats, regardless of their affiliation (government, corporate, non-profits)A monotonous waiting room with long queues desperately waiting to visit the doctor as soon as possible. And on the other hand, gloomy faces of the patients there with their painful cries. Well, this was the situation of hospitals a few years back. Now, things are changing with the speed of technology. Advanced healthcare facilities, healthcare mobile applications, and an all-new concept IoT are turning the whole face of the healthcare domain.

HYPOTHESES :

The knowledge that is produced during the model learning phase should be analyzed in the testing phase. These criteria can be calculated for both the training data set at the learning stage and the test record set at the evaluation stage. We consider the criteria for evaluating the concept of confusion matrix classification algorithms. According to Table 1, this matrix shows how the classification algorithm works with respect to the input dataset. Each of the elements of the matrix is described (Ghanbari-Adivi and Mosleh 2019): • The TN is the number of records which their real class is negative and the classification algorithm correctly classifies them negatively. • The TP is the number of records which their real class belongs to positive and the classification algorithm rightly identifies their class. • The FN is the number of records which their real class is positive and their classification algorithm is detected as negative. • The FP is the number of records which their real class is negative and their classification algorithm is detected as positive. Accuracy is the most popular and common criterion for calculating the efficiency of classification algorithms. The classification accuracy is obtained.

EXPERIMENTAL RESULTS:

At the beginning of this section, we demonstrate the data, environment, and implementation of algorithms. Following that, we execute the proposed approach on student's health data gathered from both student's parent phone as historical data and sensors data as real-time data, and we evaluate and compare the outcomes based on accuracy, precision, recall, and F-score metrics. To this day, the science and research world has published many educational and commercial software packages for data analysis in various fields of data. Each one is focusing on particular algorithms concerning data types that they analyze. Precise and scientific comparison of these tools must be done by considering various and different aspects like input data diversity and format, possible data processing size, implemented algorithms, results from evaluation methods, visualization methods, preprocessing methods, user-friendly interfaces, and compatible platforms for execution, price, and software availability. Among those, we introduce Weka with vast capabilities, comparing different output features, well documentation, capable user interface, and compatibility with other windows application. In addition, it has filters which are the tools that we use for data preprocessing stage.

Evaluation and data analysis to assess prediction results, according to dataset with the features, we evaluate the suggested method with DT, SVM, RF, and MLP classification algorithms. the SVM is far more efficient compared to other three methods. SVM achieved 99.1% accuracy which is better than those of RF, DT, and MLP with accuracies of 92.4%, 95.1%, and 93%, respectively. Precision calculates the random error of a method, which is the scatter in the data. Classification precision is acquired with required formula presented and presented .Recall determines the percentage of total relevant results correctly classified by an algorithm, and F-score implies alert rate according to negative class.

Based on the outcomes of our examinations on student's health dataset in experimental results, it can be understood that SVM is much better choice for our model compared to RF, DT and MLP methods, since it has better results in all accuracy, precision, recall, and F-score results.

4 Applications of Machine Learning (ML) in the Healthcare Industry

Hospitals, clinics and other healthcare organizations all around the world are working with software companies to develop administrative systems that are growingly digitized and automated. More importantly, scientists and researchers are using machine learning (ML) to churn out a number of smart solutions that can ultimately help in diagnosing and treating an illness. Patients are set to benefit the most as the technology can improve their outcome by analyzing the best forms of treatment for them. ML is capable of more accurately detecting a disease at an earlier stage, helping to reduce the number of readmissions in hospitals and clinics.

The technology has also come a long way in discovering and developing new drugs that have great potential in helping patients with complicated conditions. A cornerstone of ML is its ability to gather data and automate the output of smart solutions with robotic process automation (RPA) automation platforms. Intelligent automation company WorkFusion offers an RPA platform called RPA Express that can seamlessly move work between bots and humans and integrate manual inputs with an intelligent user interface.

Here are four applications of ML in the healthcare industry:
1) Disease Identification

One of the key components of a successful healthcare organization is its ability to identify a disease with speed and accuracy. With are hundreds of drugs currently on clinical trial, scientists and computationalists are entering the fray in high-need areas such as cancer identification and treatment. One such solution integrates cognitive computing with genomic tumor sequencing, while another uses ML to develop diagnostics and therapeutic treatments in multiple areas such as oncology. Another example is Deep Mind Health, which is developing technology that can address macular degeneration in aging eyes.

2) Diagnosis in Medical Imaging

Another important element of diagnosing an illness is medical imaging and its ability to show a more complete image of an illness. Deep learning is playing a key role in this regard as it is becoming more accessible thanks to richer data sources that can be used in the diagnostic process. The technology has some limits as it is incapable of explaining how it arrived at its predictions, although these ML applications are correct a lot of the time. Nevertheless, the technology, combined with healthcare professionals, can offer treatment solutions quicker with these advanced diagnosis tools by interpreting a result and deciding whether the machine's treatment suggestions are correct or not.

3) Drug Discovery

ML has the capacity to discover new drugs that offers great economic value for pharmaceuticals, hospitals and new treatment avenues for patients. Some of the major tech players such as IBM and Google have created ML platforms designed to discover new routes of treatment for patients. Precision medicine is a key term in this topic as it consists of identifying mechanisms for multi factorial diseases and finding alternative paths for therapy. Institutions such as the MIT Clinical Machine Learning Group have been using precision medicine research to develop algorithms that can help doctors better understand disease processes and create effective treatments for diseases such as Type 2 diabetes.

4) Robotic Surgical Tools

We will always need human intervention for surgeries due to the high-risk nature of these procedures, but ML has been helping greatly in the robotic surgery space. One of the most popular developments in the field has been the da Vinci robot, which allows surgeons to manipulate robotic limbs in order to perform surgeries with great detail and in tight spaces. These hands are often steadier and more accurate than human hands. There are also tools that use computer vision aided by machine learning to identify the distances of specific body parts in order to adequately perform surgery on them. One example of this is the identification of hair follicles for hair transplantation surgery.

OUTCOME

A smart healthcare system collects data about patient flow over time and uses predictive analytics to staff appropriately or change appointments as necessary. This makes it possible to reduce wait times and results in datasets that can be used to predict the most effective method for serving patients.

In this model, an IoT-based student's health monitoring system is proposed to check vital signs and detect biological and behavioral changes of students via smart student care technologies. According to the conceptual

model and the modular structure of the proposed system, three level shave been considered. These levels include determining the required data for student health monitoring system according to the biological and behavioral indicators, data collection via biomedical sensors and smart IoT devices, and data preprocessing. The proposed model was evaluated with different classification methods. The applied classifiers included SVM, DT, RF, and MLP. The experimental results revealed that the classifying algorithms performed well in terms of the precision, recall, accuracy, and F-score. SVM reached the highest performance for diseases predicting in our scenario with 99.1% accuracy, 97.2% precision, 99.5% recall, and 93.2% F-score. High accuracy of SVM in comparison with other applied classifiers is a significant difference that makes it applicable in real-time health function status monitoring for students. The future work of this study is to suggest an edge-based data.

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DISINTEREST TOWARDS SECONDARY PACKAGING: AN EXPLORATORY STUDY OFFMCG BUYERS

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ABSTRACT
This study aims to understand the apathy towards secondary packaging and impact upon purchase behaviour in the retail market. This research aims to explore the various factorsthat are driving consumer behavior because of secondary packaging. This is the primary research, and the data has been collected through a questionnaire. For analysis purposes, the t-test and One-Way Analysis of Variance (ANOVA) have been used. In this research, the samples of 135 respondents have been collected.

According to the finding of the research, it has been observed that secondary packagingis the first impression which a consumer gets of a particular brand or with the product. It is further concluded that the disinterest in the secondary packaging may get affected by demographic variables such as income group, education, or gender.

Finally, it has been concluded that if a disinterest in secondary packaging is almost same for the demographical variables but age. In future we can work upon the correlation of these two variables and can figure it who would get attracted towards secondary packaging? It is younger consumer or mature customer.

Keywords: Buying Behavior, Secondary Packaging, FMCG, Purchase Intent

INTRODUCTION
Packaging is the synchronized system made up of any materials of any nature, to be used for preparing goods for protection, transportation, containment, handling, distribution, storage, delivery and presentation.

The packaging is the science, art, and technology of enclosing or protecting products for distribution, storage, sale, and use. In today's world, the packaging is universal andessential too. It enhances and protects the goods we buy. From manufacturing to the final consumer, it has its utility and importance. Without packaging, materials handling would be a difficult, inefficient, and costly exercise. In the contemporary marketing scenario importance of packaging is beyond any doubt. Most packaging solutions today are used toprotect a product right from manufacturing, storage, distribution, and retail sales. The packaging's perceived quality depends on the nature, uniqueness, and value of the productbesides the prevailing social practices and legislation.

Despite the importance and critical role which packaging plays, it is often regarded as a necessary evil or an unnecessary cost. Many consumers argue that packaging is somewhatunnecessary and an environmental threat. The Rise of 'Zero-Waste' Grocery Stores or supermarkets can be seen as evidence of the same. In some western markets, a movement against excessive packaging is taking shape and maybe the future trend. Toothpaste without a box is a classic example of the same (Alan, 2018).

There are growing sentiments against secondary packaging. Nevertheless, it plays an essential role as a medium in the marketing mix. The packaging is crucial for promotions and the base for pricing. Consumer behavior and purchase intent often take the cue from the packaging.

It helps define the character of the new product and as an instrument to create a brand identity and have a brand uniqueness of the product. As in every industry, the packagingis used, it is categorized into three types:

1. Primary packaging
2. Secondary packaging
3. Tertiary packaging

Secondary Packaging:
Secondary packaging is outside the primary packaging. It is used to enhance the display of the product. It is essential for offering goods in a safe and secured position to the consumer. Most of the time, it has the same information as printed on the primary packaging. Because of this reason, secondary packaging may perceive as useless by some consumers and activists. It may be seen as an additional cost to the product, which may affect the retail price. At times, secondary packaging is used to ensure the product is unused and genuine. In the case of cosmetic products and some packaged consumer goods such as toothpaste.

It also includes packaging purposely made to display multiple product units for sale. It would speed up restocking from storeroom to shelf. This packaging includes retail-ready packaging (RRP), shelf-ready packaging (SRP), or counter-top display units (CDUs). It isan excellent way to reinforce the brand and enhance product visibility on a crowded shelf.It may also help to differentiate the brands from rivals.

LITERATURE REVIEW
Packaging influences buying for packaged food products (Coulson & N.S., 2000). The package or secondary packaging which the consumer can see which stands out on theshelf affects the consumer decision process. There are many research available, confirming the relationship. However, the packaging design must be so attractive that consumer response is favorable. The challenge is made more complex by several conflicting trends in consumer decision-making. There are some contradictory evidence. Some consumers are paying more attention to label information. This pattern is more visible in health and nutrition category. In Thailand, the rapid growth of modern retailing, where secondary packaging plays a critical role in merchandising and communication, is an important driver of the dynamic competitive environment for fast moving consumer goods (FMCG) (Speece, M. and Luc, & Thi Thu Huong, 2002)

Packaging overall features the uniqueness of the primary product and it reflects on the secondary packaging which replicate the originality of the product. In addition, quality judgments are largely including by the product characteristics reflected by secondary packaging. If the secondary packaging communicates high quality, consumers assume that the product which is in primary packaging is also of high quality. If the secondary packaging symbolizes low quality, then the consumers transfer this as low-quality perception to the product itself. The packaging communicates favorable or unfavorable implied meaning about the product. (Underwood, R.L., Klein & N.M., Burke, R.R. , 2001). The consumers are more likely to spontaneously imagine aspects of how a product looks, feels, tastes, smells, or sounds while they are viewing the secondary packaging of the product.

Consumer decision-making can be defined as a mental orientation characterizing a consumer's approach to making choice (Lysonki, S., Durvasula, S. & Zotos, Y., 1996). This approach deals with cognitive and affective orientations in the process of decision- making. Four main packaging elements potentially affect consumer purchase decisions, which can be separated into two categories: visual which includes color, type of secondary packaging i.e. plastic, box or eco-friendly, size, shape etc., secondly informational elements. The visual elements consist of graphics on the secondary packaging as well as on primary packaging and relate more to the affective side of decision- making. Informational elements relate to information provided and technologiesused in the secondary packaging and are more likely to address the cognitive side of decisions. Packaging color plays an extremely vital role in the communicating withcustomers. (Funk, D. & Ndubisi, N. O. , 2006) the review have stressed that colors can arouse the interest and the disinterest in a product and can motivate and demotivate the customers toward its buying.

Raghubir, P. & Krishna, A. , (1999) confirms that the secondary Packaging are of different size, shape and elongation which affects consumer judgement and decisions, but not always in easily uncovered ways. Consumers appear to use these things as simplifying visual heuristics to make volume judgments, which develops interest or disinterest of the product in the FMCG market. Generally, they perceive more elongated packages to be larger, even when they frequently purchase these products and can experience true volume.

Some reserchers such as Marenghi (1992) attracted our attention towards creating less packaging to reduce packaging waste (source reduction). It is at the top of the Environmental Protection Agency's (EPA) list of waste management solutions. Source reduction slows the depletion of natural resources while prolonging the useful life of landfills and the entire waste. This is one step leading to green consumerism. In Germany A law, effective, 1993, required the collection and recycling of consumer packaging (Havemann, 1992). German consumers can strip off secondary packaging in the store and it must be collected and recycled. The aim is to prompt significantly reduced packaging (Gofton, 1991, As cited in Solaiman, Osman, and Halim, 2015)

To take if forward, the present study is an attempt to understand whether consumer is disinterested in secondary packaging? And if yes, is there any relation amongst these two concepts.

METHODOLOGY
There is not any scale on consumer disinterest. However, there are instance of capturing root cause of not-adopting anything such as e-commerce (Mainardes E, De Souza, Correia R, 2015). The paper aims to understand the consumer disinterest in secondary packaging and purchase intent. With the help of primary data collection, the research is trying to explore the concept and various factors impacting the same.

Sampling

The research was conducted on a sample of 135 respondents using questionnaires. Following is the descriptive information about respondents. The sample structure isshown below:

Characteristics	Share in the Sample	Results
	18-22 Years	19%
Age	23-26 Years	25%
	27-30 Years	31%
	31&above	24%
	ISCED 4 or less[*]	25%
Education	ISCED 5 and 6[*]	41%
	ISCED 7 or More[*]	34%
Gender	Female	48%
	Male	52%
Income[**]	Below 25,000	30%

25,000-50,000	27%
51,000-75,000	21%
76,000-1 Lakh	10%
1 Lakh & Above	12%

[*] *ISCED = International Standard Classification of Education. ISCED 4 or less is roughly equivalent up to post-secondary non-tertiary education. ISCED 5 and 6 are equivalent to short-cycle tertiary education and bachelor or equivalent. ISCED 7 or more represents a master or doctoral.* [**] *Income is in Indian Rupees (₹).*

DATA COLLECTION
The study was conducted through a questionnaire. The responses were collected througha 4 point Likert scale, known as the forced Likert scale. They are using a 4 point Likert scale because there is no safe 'neutral' option available with the respondents. This is done in order to extract a specific response from the respondents.

ANALYSIS
Five statements were drafted for 'disinterest in secondary packaging.' One statement was drafted to identify the purchase intent. All the statements were adopted from various research papers. In this case face validity is not required. For reliability and validity Cronbach alfa and other statistical tools were used.

The researcher has used the t-test as a t-test is a type of inferential statistic used to determine if there is a significant difference between the two groups' means. Here the grouping is as per age, gender, and income. The research is trying to explore whether disinterest in secondary packaging would vary with the demographical factors?

In the case of more than two groups, the analysis of Variance (ANOVA) is used. It is used to analyze the differences among a group of means in the responses. The One-Way Analysis of Variance (ANOVA) is used to determine whether there are any statistically significant differences between the means of dependent and independent groups.

RESULTS AND DISCUSSION
H01: There is a significant difference in disinterest in secondary packaging among malesand females

Ha1: There is no significant difference in disinterest in secondary packaging among malesand females

t-Test: Paired Two Sample forMeans		
	Gender	*Disinterest in S.P.Mean*
Mean	1.518518519	2.338271605
Variance	0.251520177	0.325016891
Observations	135	135
Pearson Correlation	-0.143877295	
Hypothesized Mean Difference	0	
Df	134	
t Stat	-11.73463436	

P(T<=t) one-tail	1.29691E-22	
t Critical one-tail	1.656304542	
P(T<=t) two-tail	2.59382E-22	
t Critical two-tail	1.977825758	

The above table represents the t-test of gender and disinterest in secondary packaging with the mean, variance, t-stat, p-value. The number of observations in each variable is

135. We can see the p-value $<\alpha$ ($\alpha=0.05$, i.e., 5% probability) in the above table. So, the p-value of two-tail 2.59382E-22<0.05. so, we can say that the null hypothesis is rejected.

Inference: The relationship between both the values is t-stat > t-critical. So, we can again say that the null hypothesis can be rejected. It shows the disinterest in the secondary packaging is unbiased to any gender.

H02: There is a significant difference in disinterest in secondary packaging among various age groups

Ha2: There is no significant difference in disinterest in secondary packaging among various age groups

Anova: SingleFactor				
SUMMARY				
Groups	*Count*	*Sum*	*Average*	*Variance*
Disinterest in	135	315.6666	2.338271	0.325016

S.P. Mean		667	605	891		
Age	135	352	2.607407 407	1.120840 243		
ANOVA						
Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	4.889300 412	1	4.889300 412	6.763186 066	0.009822 351	3.876390 694
Within Groups	193.7448 56	268	0.722928 567			
Total	198.6341 564	269				

The above table represents the ANOVA: single factor of age and disinterest in secondary packaging with average, variance, f-crit, p-value. The number of observations in each variable is 135. From the above test we can observe that the p-value= 0.009822351 i.e. p- value$<\alpha$ ($\alpha=0.05$ i.e. 5% probability). So, we do not accept the null hypothesis considering the relationship between p-value and α.

Inference: The relationship between both the values are F > F-crit. So, we again do not accept the null hypothesis. The results show 'disinterest in the secondary packaging' vary with age.

H03: There is a significant difference in disinterest in secondary packaging among various education level

Ha3: There is no significant difference in disinterest in secondary packaging among various education level

Anova: SingleFactor				
SUMMARY				
Groups	*Count*	*Sum*	*Average*	*Variance*
Disinterest in S.P. Mean	135	315.6666 667	2.338271 605	0.325016 891
Education	135	282	2.088888 889	0.589054 726

ANOVA						
Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	4.197942 387	1	4.197942 387	9.185149 845	0.002678 507	3.876390 694

Within Groups	122.4855 967	268	0.457035 809			
Total	126.6835 391	269				

The above table represents the Anova, single factor of age, and disinterest in secondary packaging with average, variance, f-crit, p-value. The number of observations in each variable is 135. From the above test we can observe that the p-value=0.002678507 i.e. p- value<α (α=0.05 i.e. 5% probability). So, we can reject the null hypothesis considering the relationship between p-value and α.

Inference: The relationship between both the values are F>F-crit. So, we can again reject the null hypothesis. The result shows there is no variation of purchase intent as per education.

H04: There is a significant difference in disinterest in secondary packaging amongst various income groups.

Ha4: There is a significant difference in disinterest in secondary packaging amongst various income groups.

Anova: SingleFactor						
SUMMARY						
Groups	*Count*	*Sum*	*Average*	*Variance*		
Disinterest in S.P. Mean	135	315.6666 667	2.338271 605	0.325016 891		
Income	135	335	2.481481 481	1.773908 237		
ANOVA						
Source of	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*

Variation						
Between Groups	1.384362 14	1	1.384362 14	1.319115 315	0.251774 963	3.876390 694
Within Groups	281.2559 671	268	1.049462 564			
Total	282.6403 292	269				

The above table represents the ANOVA: single factor of age and disinterest in secondary packaging with average, variance, f-crit, p-value. The number of observations in each variable is 135. From the above test we can observe that the p-value= 0.251774963 i.e. p- value>α (α=0.05 i.e. 5% probability). So, we can accept the null hypothesis considering the relationship between p-value and α.

Inference: The relationship between both the values are F<F-crit. So, we can againaccept the null hypothesis. It shows that the disinterest in secondary packaging does vary because of income. The higher income group of people and a lower-income group of people have an equal mean.

H05: There is a significant difference in disinterest in secondary packaging for variouslevel of purchase intent

Ha5: There is no significant difference in disinterest in secondary packaging for variouslevel of purchase intent

Anova: SingleFactor						
SUMMARY						
Groups	*Count*	*Sum*	*Average*	*Variance*		
Purchase Intent	135	330	2.444444 444	0.536069 652		
Disinterest in S.P. Mean	135	315.6666 667	2.338271 605	0.325016 891		
ANOVA						
Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	0.760905 35	1	0.760905 35	1.767314 462	0.184845 295	3.876390 694
Within Groups	115.3855	268	0.430543			

	967	271
Total	116.1465 021	269

The above table represents the ANOVA: single factor of age and disinterest in secondary packaging with average, variance, f-crit, p-value. The number of observations in each variable is 135. From the above test we can observe that the p-value= 0.184845295 i.e. p- value>α (α=0.05 i.e. 5% probability). So, we can accept the null hypothesis considering the relationship between p-value and α.

Inference: The relationship between both the values are F<F-crit. So, we can again accept the null hypothesis. The result shows that for both the consumers, the buyer (high intent) and non-buyer (low-intent), the disinterest in secondary packaging is same.

CONCLUSION

The research shows that disinterest in secondary packaging does not depend upon any demographical factor but age and Income. In this research, it has been seen that there is no impact on the income of the people or geographical factors on disinterest in the secondary packaging. Even the purchase intent of the consumer does not vary because of the disinterest in the secondary packaging.

The results are inconclusive and cannot be generalized because of one study. However, the research paves the way to understand the impact of secondary packaging on consumers' purchase intent.

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STUDENT'S PERCEPTION ON COVID-19 – A PARADIGM SHIFT IN TEACHING –LEARNING PROCESS

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ABSTRACT

In today's world of globalization, Indian education system is to be upgraded. While we all understand how crucial education is to shape our lives, it has also been a major problem in our country. There are several issues that the Indian education system is grappled with. We cannot deny the fact that the Indian government and institutions have been working to reform the existing education model. The corona virus pandemic is a humanitarian crisis that continues to affect lives and livelihoods around the world. It has forced regional and national economies to close for weeks and months at a time, causing hardship sometimes of existential gravity— for many populations. As of late July 2020, more than 14 million cases have been confirmed worldwide; the virus has taken the lives of more than 600,000 people. There is much more epidemiological work to do, as the pandemic remains dangerously active. Education sectors in responding to COVID-19 and preparing for more equitable recovery. The COVID-19 pandemic has affected educational systems worldwide, leading to the near-total closures of schools, universities and colleges. Most governments decided to temporarily close educational institutions in an attempt to reduce the spread of COVID-19. Educational institution closures impact not only students, teachers, and families but have far-reaching economic and societal consequences. The intended purpose of this paper to represents the required importance of Online teaching-learning in education during pandemic and student's preference towards paradigm shift in physical education during pandemic. Both the positive and negative impacts of COVID-19 are discussed and some suggestions are pointed to carry out educational activities during the pandemic situation.

Keywords: COVID-19, Education system, Online teaching-learning, Corona virus, Pandemic.

INTRODUCTION

The COVID-19 pandemic is creating a profound shock worldwide, with different implications for people. The impact of pandemic COVID-19 is observed in every sector around the world. The education sectors of India as well as world are badly affected by this. It has enforced the world wide lock down creating very bad effect on the students' life. Around 32 crore learners stopped to move schools/colleges, all educational activities halted in India. The outbreak of COVID-19 has advised us that change is inevitable. It has worked as a stimulant for the educational institutions to grow and opt for platforms and techniques, which have not been used before. The education sector has been fighting to survive the crises with a different approach and digitizing the challenges to wash away the threat of the pandemic. As the COVID-19 pandemic spreads, there has been an increasing move towards teaching online because of closing down of schools, colleges and universities for an indefinite time as the only option left. Therefore, this is the time to deeply rethink and redesign our education system in much demanding need of uncommon current situation. Corona viruses are a large family of viruses that are known to cause illness ranging from the common cold to more severe diseases such as Middle East Respiratory Syndrome (MERS) and Severe Acute Respiratory Syndrome (SARS).A novel corona virus is identified in Wuhan, China by the World Health Organization (WHO) is in charge of the current outbreak of pneumonia that began at the beginning of December 2019. COVID-19 is a pathogenic virus. This is a new corona virus that has not been previously identified in humans. Unfreezing of traditional teaching-learning occurred during unforeseen circumstances out of COVID-19, which brought to the shift into online teaching because of anticipated uncertainties in pursuing the traditional mode. As of today's scene, it is quite impossible to take classes in regular mode amid the COVID-19 outbreak in which to maintain the social distancing is of paramount importance; hence undoubtedly online teaching mode became a necessity that brought an organization and individual both in a unfreeze phase. Online education became a pedagogical shift from traditional method to the modern approach of teaching-learning from classroom to Zoom, from personal to virtual and from seminars to webinars. Previously, e-learning, distance education and correspondence courses were popularly considered as the part of non-formal education, but as of now, it seems that it would gradually replace the formal education system if the circumstances enduringly persist over the time. Some of the most popular online communication platforms that would change the destination and direction of the whole education system across the world in post-COVID-19 circumstances are Zoom. Google meet, Whatsapp, Telegram, YouTube live etc.

LITERATURE REVIEW

Literature review provided the results of previous studies relating to the topic and it helped to select appropriate objectives and methodology for further enhancement on the topic. Review of literature paves way for the clear understanding of the areas research already undertaken and throws a light on the potential areas which are yet to be covered. Keeping this view in mind, an attempt has been made to make a brief survey of the education sectors in this COVID-19 pandemic.Many researchers investigated and reported that E-learning tools have played a crucial role during this pandemic, helping schools and universities facilitate student learning during the closure of universities and schools (Subedi et al., 2020).Online learning also allows physically challenged students with more freedom to participate in learning in the virtual environment, requiring limited movement (Basilaia & Kvavadze, 2020). Many students at home/living space have undergone psychological and emotional distress and have been unable to engage productively. The best practices for online homeschooling are yet to be explored (Petrie, 2020). The level of academic performance of the students is likely to drop for the classes held for both year-end examination and internal examination due to reduced contact hour for learners and lack of consultation with teachers when facing difficulties in learning/understanding (Sintema, 2020). COVID-19 has created many challenges and opportunities for the educational institutes to strengthen their technological knowledge and infrastructure (Pravat, 2020a). Electronic Learning is well-known as well as the earliest application (Azhari and Ming 2015). In today the E-learning is getting very popular worldwide. E-learning is described as the delivery of learning through technology and the internet (Gros et al. 2016; Hong et al. 2017; Aljawarneh 2020). Almost all the universities and colleges have developed the E-learning portal of their students and faculties (Moore et al. 2011). In the 21st century, the E-learning creates a more significant impact on all types of the student, much as the part-time and Full-time or distance learning student in the higher education institution (Azhari and Ming 2015). Nowadays, the majority of the postgraduate students are registered as a part-time student, because they are working in the companies. E-learning helps them a lot because of their time constrain. The advancement in E-learning has been started through Massive Open Online Courses (MOOCs) for students, society, and the industry as well since 2012 (Calisir et al. 2014; Margaryan et al. 2015). MOOCs are recognized as a significant development in higher education million of the peoples and student are taking the benefits and uplifting the existing skill (Gupta and Gupta 2020). Moreover, in recent decades, several Malaysian Universities have adopted the E-learning portals (Hussin et al. 2009; Paechter and Maier 2010). E-Learning is the use of Information and Communication Technology (ICT) to deliver information for education where instructors and learners are separated by distance, time, or both in order to enhance the learner's learning experience and performance (Keller et al., 2007; Tarhini et al., 2016). Horton (2011) defines e-learning as a set of instructions delivered via all electronic media such as the internet, intranets, and extranets. Thus, by eliminating the barriers of time and distance, individuals can now take charge of their own lifelong learning (Almajali et al., 2016; Bouhnik and Marcus, 2006; Fletcher 2005; Obeidat et al., 2015). E-learning environments reduce the cost of provision and therefore increase revenues for academic institutions (Masa'deh et al., 2016; Ho and Dzeng, 2010). The universities must decide during or before the implementation phase on the best approach to deliver education, such as online learning, face to face, or apply blended approach. For the purpose of this study, e-learning with a particular focus on higher education institutions applies to the use of web-based learning systems to support face-to-face education. According to Wagner et al. (2008), this approach is the most successful learning approach compared to solely online and only face to face contact. An analysis of literature on a wide variety of peer-reviewed journal articles was conducted. This analysis focused on the paradigm shift in education during pandemic.

EDUCATION IN COVID-19 AND ONLINE TEACHING-LEARNING PROCESS:

Lockdown and social distancing measures due to the COVID-19 pandemic have led to closures of schools, training institutes and higher education facilities in most countries. There is a paradigm shift in the way educators deliver quality education—through various online platforms. The online learning, distance and continuing education have become a remedy for this unprecedented global pandemic, despite the challenges posed to both educators and the learners. Transitioning from traditional face-to-face learning to online learning can be an entirely different experience for the learners and the educators, which they must adapt to with little or no other alternatives available. The education system and the educators have adopted "Education in Emergency" through various online platforms and are compelled to adopt a system that they are not prepared for. Technology plays a very important role in reforming education from conventional to technology-based learning. Online teaching-learning is a technological tool has been used for teaching and learning. Basically, computer and internet are essential to enable transferring of knowledge and skills. The applications of e-learning include, computer based learning, web- based learning, virtual education opportunities and digital collaboration. Content is provided via internet, audio or video tape , CDROM, and satellite TV.

COVID-19:

COVID-19 started as a health pandemic but has quickly also become a major social and economic crises. COVID-19 is a disease caused by a new strain of corona virus. 'CO' stands for corona, 'VI' for virus, and 'D' for disease. Formerly, this disease was referred to as '2019 novel corona viruses or '2019-nCoV.Corona virus disease (COVID-19) is an infectious disease caused by a newly discovered corona virus. Most people who fall sick with COVID-19 will experience mild to moderate symptoms and recover without special treatment. The virus that causes COVID-19 is mainly transmitted through droplets generated when an infected person coughs, sneezes, or exhales. These droplets are too heavy to hang in the air, and quickly fall on floors or surfaces. You can be infected by breathing in the virus if you are within close proximity of someone who has COVID-19, or by touching a contaminated surface and then your eyes, nose or mouth. Older people, and those with underlying medical problems like cardiovascular disease, diabetes, chronic respiratory disease, and cancer are more likely to develop serious illness. The best way to prevent and slow down transmission is to be well informed about the COVID-19 virus, the disease it causes and how it spreads. Protect yourself and others from infection by washing your hands or using an alcohol based rub frequently and not touching your face.

OBJECTIVES OF THE STUDY:

The objective is also to examine the benefits that Online teaching-learning mode can bring to organizations and individuals and what are the ways to promote e-learning.

I.   To study the impact of Covid-19 on higher education sectors.

II.   To highlight advantages of the paradigm shift from physical to online teaching and learning process.

III.   To throw lights some challenges associated with online learning process.

IV.   To study the student's perception on these paradigm shift.

STATEMENT OF PROBLEM

The Covid-19 pandemic has become a global health issue and has had a major impact on education. Though the concept of online teaching-learning existed even during the pre-pandemic era, the phenomenon has certainly reached an altogether different level and intensity as the Covid-19 pandemic protocol forced the compulsory work and study from home policy. Besides its good side the truth is, for many students, e-learning is only a formality and not a real substitute for regular teaching. Some teachers only share materials without teaching it. Online testing is sometimes based on the principle of "work it out yourself". Students are not acquiring real, long-lasting knowledge. It leads to know the required importance of Online teaching-learning in education during pandemic and student's preference towards paradigm shift in physical education during pandemic. Taking necessary care of the student and education system, we have found that the problem has not been addressed.

SIGNIFICANCE OF THE STUDY

With technological advancement, learners now want quality programs they can access from anywhere at any time. Now a day's people are very conscious about pandemic situation and Covid-19 disease and maintain social distance and it leads it closure of schools, colleges and also universities etc. Because of these demands, online education has become a viable and tempting option to business professionals, stay –at-home parents, academic researchers, students and other populations too. This study emphasized on the emerge of online teaching-learning method and paradigm shift of physical learning method and perceptions of student's on e-learning.

HYPOTHESIS –

1. **H0** – There is no significant difference between shifts in teaching method during Covid-19 pandemic.

H1 – There is significant difference between shifts in teaching method during Covid-19   pandemic.

2. **H0** – There is no significant difference between student's preference towards online and offline learning methods.

H1 – There is significoant difference between student's preference towards online and offline learning methods.

RESEARCH METHODOLOGY:

This study is exploratory in nature and was based on the primary data as well as secondary data from various reports. The data were collected by using primary source, more specifically, from structured questionnaires survey in Google form sent to different students who are pursuing their study in different universities. This is

concerned with both descriptive and analytical types of research design. We are adopting convenient sampling method for data collections. Total respondents are 514 confined to Higher education of Odisha only. All items used a 5point Likert's scale from strongly agree to strongly disagree and to check the hypothesis chi-square is taken as our statistical tools. The main aim of this study is to describe the state of affairs involves surveys and fact finding enquiries of student's preference on paradigm shifts in physical education.

ROLE OF ONLINE TEACHING -LEARNING IN COVID-19 PANDAMIC SITUATION:
While the whole world is fighting the invisible enemy (COVID-19) which has been killing thousands of people around the globe but the teaching and learning process are still carry on by using online teaching-learning and its tools. In India, the government went for lockdown all the cities to reduce the spread of COVID-19. Due to ongoing of COVID-19 a noticed significant has seen in increasing of the number of students who are using the platform and apps of ED-TECH and online companies. Different companies such as Vedantu, Unacademy, and Byju's have offered free access to live classes to the students in order to continue their learning from home.

IMPACTS OF COVID-19 PANDEMIC ON EDUCATION:
I.   **Dislocate and disturb all educational activities:** Due to pandemic hit in world-wide Covid-19 causes the dislocate and disturb of all educational activities by closures of schools and universities. Students can't get proper education facilities. Universities and schools were conducting various educational activities for development of students in the period of Pre-Covid but now it is all about online teaching-learning mode, those students who are unable to attend through online mode they are suffering a lot for lack of education facilities. Classes have been suspended and exams at different levels postponed. Different boards have already postponed the annual examinations and entrance tests. Admission process got delayed. Due to continuity in lockdown, student suffered a loss of the full academic year of 2020-21 and still continuing in the year 2021-22 which is going to further deteriorate the situation of continuity in education and the as students would face much difficulty in resuming schooling again after a huge gap.

II. **Impact on academic research and professional development:** Covid-19 has yielded unprecedented challenges to higher education, and observes have understandably focused on the profound disruption to traditional on-campus housing and face-to-face instructions. Academic research has also faced substantial disruption, with laboratories and universities being shuttered and fieldwork largely suspended. In this landscape review we access pandemic affected on academic research and professional development is negative way. A large number of Indian students who are enrolled in many Universities abroad, especially in worst affected countries are now leaving those countries and if the situation persists, in the long run, a there will be a significant decline in the demand for international higher education.

III. **Severely effected on education development system:** The Indian education system has been badly affected by the entry of disease and also because of social distancing measures that were taken to prevent the spread of the disease. Examinations have either been postponed or cancelled. Cancelling intermediate semesters or class annual exams or Class 10TH, XI board exams will only weaken the foundations of the students. While it is true that online written examinations are no possible for all classes within the existing infrastructures in the country. If higher education exams and viva are conducted through online mode but proper assessment of results can't be predicted.

IV. **Reduce employment opportunity:** Most of the recruitment got postponed due to COVID-19 Placements for students may also be affected with companies delaying the on board of students. Unemployment rate is expected to be increased due to this pandemic. In India, there is no recruitment in Govt. sector and fresh graduates fear withdrawal of their job offers from private sectors because of the current situation. The Centre for Monitoring Indian Economy's estimates on unemployment shot up from 8.4% in mid-March to 23% in early April and the urban unemployment rate to 30.9% (Educationasia.in). When the unemployment increases then the education gradually decreases as people struggle for food rather than education.

V.   **Technologies advancement:** Learning materials are shared among the students easily and the related queries are resolved through e-mail, SMS, phone calls and using different social medias like WhatsApp or Facebook. Educators and learners are getting opportunities to interact with peers from around the world. Learners adapted to an international community.

VI. **Move towards Blended Learning:** COVID-19 has accelerated adoption of digital technologies to deliver education. Educational institutions moved towards blended mode of learning. It encouraged all teachers and students to become more technology savvy. New ways of delivery and assessments of learning opened

immense opportunities for a major transformation in the area of curriculum development and pedagogy. It also gives access to large pools of learners at a time.

ADVANTAGES OF ONLINE TEACHING-LEARNING PROCESS :

I. **Convenient and Flexible:** Online education makes learning convenient and flexible. As online teaching-learning evolves students will have more options as like students are able to plan study time around the rest of their day, instead of the other way around. On the other hand, allows for a much more effective professional development experience.

II. **Cost effective:** Online teaching-learning can also be significantly cost-efficient compared to traditional training tools such as printed manuals or in-person classes as it doesn't require learners to travel to be in the same place which saves a lot of conveyance money and time simultaneously.

III. **Availability of resources:** There are different types of online teaching-learning resources used in online teaching learning mode. These are as follows-

- **Google Meet –** Google Meet is a video-communication service developed by Google. It is one of two apps that constitute the replacement for Google Hangouts, the other being Google Chat.

- **Zoom -** Zoom video communications, Inc.is an American communications technology company headquartered in San Jose, Carlifornia. It provides video telephony and online chat services through a cloud based peer-to-peer software platform is used for tele communicating and distance education also.

- **YouTube Live –** YouTube Live transforms online video into an interactive experience. It is also helpful in online teaching and learning mode.

- **Open and Distance Learning (ODL):** During the pandemic situation most of the students preferred ODL mode as it encourages self-learning providing opportunities to learn from diverse resources and customized learning as per their needs.

IV. **Self-improvement skills:** Students are able to manage their time more efficiently in online education during pandemics. Students become self-motivated, prepared, self-disciplined, good readers, good organizers and have good time management skills.

V. **Feedback:** Feedback is an essential aspect of any online teaching-learning system. Good feedback is what makes sure that the learning process is maximized both at the present and in future. However, the feedback aspect of online teaching-learning is usually neglected or misunderstood.

CHALLENGES OF ONLINE TEACHING-LEARNING PROCESS:

Although E-learning has many benefits for students it also has some challenges and we have to overcome it by taking remedial steps.

I. Access to digital world: As many students have limited or no internet access and many students may not be able to afford computer, laptop or supporting mobile phones in their homes, online teaching-learning may create a digital divide among students. The lockdown has hit the poor students very hard in India as most of them are unable to explore online learning. Thus the online teaching-learning method during pandemic COVID-19 may enhance the gap between rich or poor and urban or rural.

II. Unprepared teachers or students for e-learning: Not all teachers/students are good at it or at least not all of them were ready for this sudden transition from physical learning to online learning mode. Most of the teachers are just conducting lectures on video platforms such as Zoom, Google meet etc. which may not be real online learning without any dedicated online learning platform.

III. Disrupt in global employment opportunity: Some may lose their jobs from other countries and the pass out students may not get their job outside India due to restrictions caused by COVID-19. Many Indians might have returned home after losing their jobs overseas due to COVID-19. Hence, the fresh students who are likely to enter the job shortly may face difficulty in getting suitable employment. Many students who have already got jobs through campus interviews may not be able to join their jobs due to lockdown. The Indians who have been doing their jobs abroad may lose their jobs.

IV. Loss of human contact and programs are too static: The online teaching-learning system will replace a friendly face and remove face to face interaction and the level of interaction is too static. Students themselves can be limitation to online teaching-learning; they must be technically advance, self-motivated. It takes more time and money to develop than expected.

V. Slow evolution: After an online teaching-learning course is developed, it can take an inordinately long time for any needed changes to be worked in. Due to this pandemic hit all works are stuck and it takes a lot of time to be upgraded for better experience.

DATA ANALYSIS:

Do You like the environment of teaching and learning compared to physical education in University/College

509 responses

- Strongly Agree
- Agree
- Neutral
- Strongly Disagree
- Disagree

31.2% 10.6% 13.6% 36.7%
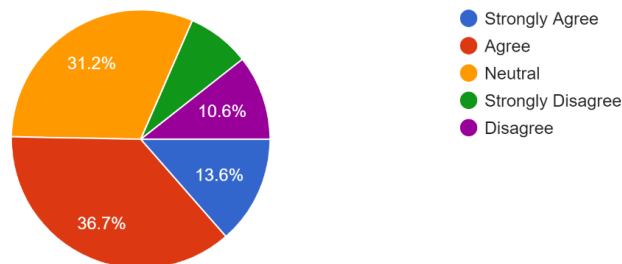
INTERPRETATION:

The evidence from this pie-chart shows that the most students agree with 36.7% out of 514 respondents like e-learning as compared to physical education in university or college. It also depicts some students are strongly agree with 10.6% and some are neutral having 31.2% but it also explains minimum students are categorized under disagree and strongly disagree with 13.6% and 7.9% respectively. Therefore, it shows that most students are like and acquainted with online teaching- learning compared to physical education in university or college.

DATA INSTRUMENTS:

Here, Data are collected from structured questionnaires by using Likert's 5 point scale and convenient sampling method applied for collecting sample. Total 514 students respond. Here, 2 Hypothesis are tested by applying chi-square tools to know the statistical significant relationship between categorical variables or not.

1.

RESPONSES	O	E
Strongly Agree (%)	14%	20%
Agree (%)	37%	20%
Neutral (%)	31%	20%
Disagree (%)	11%	20%
Strongly Disagree (%)	8%	20%
Total	100%	

	O	E	Residual
Agree	50%	34%	16%
Disagree	19%	34%	-16%
Total	69%		
Chi-Square	13.92		

Critical value - 5.89

Level of significance – 0.05

Degree of freedom -2

INTERPRETATION:

Since the chi-square value is 13.92 is greater than the critical value, we are rejecting null hypothesis. Therefore it is inferred that the Covid-19 has a significant effect in shift in teaching methods.

2.

Student's Preference	O	E	O-E	
Agree	251	172.5	78.5	35.72
Disagree	94	172.5	-78.5	35.72

Total	345	0		71.45
			Chi-Square	**71.45**

Chi – square value -7.14 (71%)

Critical value- 5.89

Level of significance- 0.05

Degree of freedom -2

INTERPRETATION:
Since the chi-square value obtained 7.14% is greater than the critical value (5.89), we are rejecting null hypothesis (H0) and accepting alternate one (H1). Therefore it is inferred that the students have significant preference towards online and offline learning methods.

FINDINGS AND DISCUSSIONS:
As far the student's perceptions on online teaching-learning and paradigm shift in education during pandemic considered, chi-square test is used by critical value method to measure the relationship between two variables. With the help of chi-square value and taking into consideration the level of significance as .05, we came to know that there is a positive relationship between two categorical variables. By taking consideration of first hypothesis we found that there is significant difference between shifts in teaching methods during Covid-19. The lockdown has compelled many educational institutions to cancel their classes, examinations, internships etc. and to choose the online modes. Initially, the educators and the students were quite confused and didn't understand how to cope up with the situation of this sudden crisis that compelled closure of the educational activities. But latter on all realized that the lockdown has taught so many lessons to manage with the emergence of such pandemics and it shows pandemic hit severely affected the physical learning process. The pandemic situation induced people to learn and use digital technology and resulted in increasing the digital literacy. In second one, there is also statistical significant difference between preference of students towards online and offline methods of teaching. Though Students are technically advanced and well acquainted with social media having online resources platforms available they also prefer online teaching-learning as like as physical education mode. Still some students face problems while using online teaching-learning mode because as many students have limited or no internet access and many students may not be able to afford computer, laptop or supporting mobile phones in their homes, and having lack of concentration while learning through online. Online teaching-learning may create a digital divide among students.

CONCLUSION:
In conclusion, COVID-19 has affected immensely to the education sector of India. Though it has created many challenges, various opportunities are also developed. India is not fully equipped to make education reach all corners of the nation via digital platforms. The students who aren't privileged like the others will suffer due to the current choice of digital platforms. But universities and the government of India are continuously trying to come up with a solution to resolve this problem. The priority should be to utilize digital technology to create an advantageous position for millions of young students in India. It is need of the hour for the educational institutions to strengthen their knowledge and Information Technology infrastructure to be ready for facing COVID-19 like situations. Even if the COVID-19 crisis stretches longer, there is an urgent need to take efforts on maximum utilization of online platforms so that students not only complete their degree in this academic year but also to get ready for the future digital oriented environment. The concept of "work from home" has greater relevance in such pandemic situation to reduce spread of COVID-19. India should develop creative strategies to ensure that all children must have sustainable access to learning during pandemic COVID-19. Student's perceptions on paradigm shift of physical learning mode is also positive as online practice is benefitting the students immensely, it should be continued after the lockdown.

SCOPE OF FURTHER RESEARCH:
For this study, we are taking convenient sampling approach for collecting samples and prepared a structured questionnaires using Likert's 5 point scale and this study is confined to the Higher education of Odisha only. However, the same procedure can be adopted in a national scale as well. Another scope of this research is that we can consider the technical courses in our survey to assess the impact of online education due to Covid-19 as many of the professional courses also need practical knowledge which may not be possible in case of online education system.

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EMPIRICAL STUDY ON INVESTORS PERCEPTION TOWARDS MUTUAL FUNDS IN BHUBANESWAR CITY OF ODISHA

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ABSTRACT

Investment can be defined as an item of value purchased for income or capital appreciation. Investments are made to achieve a specific objective and savings are made to meet an unforeseen event. The avenue of investment is mutual funds. It is created when investors put their money together. It is therefore a pool of the investor's funds. The most important characteristics of a mutual fund are that the contributors and the beneficiaries of the fund are the same class of people, namely the investors. The term mutual means that investors contribute to the pool, and also benefit from the pool. There are no other claimants to the funds. The pool of funds held mutually by investors is the mutual fund. A mutual fund pools the money of people with similar investment goals. The money in turn is invested in various securities depending on the objectives of the mutual fund scheme, and the profits (or loss) are shared among investors in proportion to their investments.

This report is an attempt to provide an analysis of the perception of an investor towards mutual funds. However, what has been reported is only the tip of iceberg in terms of data that are available. However, my examinations suggest that employees are interested to invest in mutual funds provided sufficiently educated and know-how is provided on its working. Though the self-employed are investing in mutual funds and insurance, they are investing small amounts in them because they do not want to take high risks.

In conclusion, it is important to remember that the main purpose for initiating the project is to analyze the perception of an ordinary investor towards the mutual funds and the aspects that guide him to make investment decisions. The study does not aim to advocate investments in mutual funds.

Key Words- Mutual Fund, Investors Awareness, Perception, Investment Avenue

OBJECTIVES:

- To study the level of awareness of mutual funds

- To analyse the perception of investors towards mutual funds.

- To study the factors considered by the investors and those which ultimately influence him while investing.

- To determine the type of mutual fund investor prefers the most.

Risk and Return Grid:

An investor has mainly three investment objectives.

1. Safety of Principal

2. Return

3. Liquidity

	BANKS	FIXED DEPOSIT	BONDS AND DEBENTURES	EQUITY MARKET	MUTUAL FUND
Returns	Low	Low to Moderate	Low to moderate	Moderate to high	Better
Administrative expenses	High	Moderate to High	Moderate to high	Low to Moderate	Low
Risk	Low	Low to Moderate	Low to moderate	High	Moderate
Investment options	Less	Few	Few	Many	More
Network	High penetration	Low penetration	Low penetration	Low but improving fast	Low but improving
Liquidity	At a cost	Low	Low to moderate	Moderate to High	Better
Quality of Assets	Not transparent	Not transparent	Not transparent	Transparent	Transparent
Guarantee	Maximum Rs 1 lakh				None

PRIMARY DATA FOR THE PROJECT:

For the customized needs of the project, primary data was collected through a survey in the city of Bhubaneswar, state capital, Odisha. Random samples of 100 investors were surveyed. They were all asked to answer a questionnaire true to their knowledge. The feedback obtained from the customer was instrumental, gauging the perception of the investors towards mutual funds. It also throws light on the factors, which influence them to make decisions while investing. Further the interaction with few of the investors goes a long way in understanding the inlaid reasons for their decisions.

SECONDARY DATA

The main sources of secondary data are the web sites of various mutual fund houses like chola mandalam mutual fund, Franklin templeton india, ICICI, BIRLA SUNLIFE, KOTAK and more such houses. Many references were collected from different libraries to gain an insight on mutual funds. Previous studies conducted in this field provided valuable help

Survey Details

Total Sample Size	100
Economic Status Criterion	Tax payers & Non tax payees
Age groups	23 years and above
Marital Status Criterion	Married, Married with children & Unmarried

FACTORS CONSIDERED BY INVESTORS WHILE INVESTING

Every investor considers several factors while investing in any of the products as it deals with the most important need of life "money".

The five main factors that were considered are:

1. Safety & security

2. Tax exemption

3. Liquidity

4. Profitability

5. Return pattern

Factors considered by investors While investing
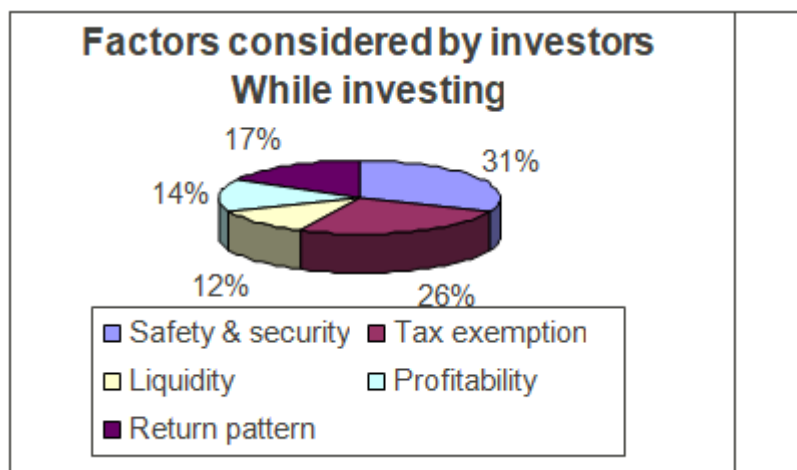
SAMPLE SIZE	100
ECONOMIC STATUS	TAX PAYEES AND NON-TAX PAYEES

The above graph shows that 31% people consider safety & security as the main factor while investing, 26% goes for Tax exemption, 17% considered return pattern in the investment, 14% went with profitability and 12% showed interest in liquidity.

ANALYSIS OF THE ABOVE GRAPH:

In a developing country like India most of the people fall in the lower middle class and middle class sectors. The attitude of the investors is of primary concern. As more and more options that warrant high returns are available in the market, investor tends to be more skeptical. So, while investing in any avenue, their first priority is safety and security. Even the age of the investor plays a major role in the decision-making. For example, if the investor is in the age of 50 and above, he usually looks for low or no risks while investing. Therefore, 31% of investors surveyed preferred safety & security.

Next is the "tax exemption"; as there is tremendous boom in the corporate sector and the remuneration system for a particular sector has changed. This created a change in income levels and thereby affected the expenditure patterns. In the past, it took employee years of time to reach a five-figure salary. But, gradually the system has changed. Even the employee in the lower level or the middle level of the corporate ladder is receiving a handsome emolument. So, they are opting for the exemption of tax. Therefore, the next preference is for tax exemption that is 26% of the total.

Besides investors going for Safety & security, there are investors who opt for return on investments they made. They are mainly in the age group of 23 and 35. Because these investors are likely to think that, at this age they are mentally more stable and feel that they can cope with financial risks. Any profits made would further bolster their financial stability. And so, 17% went with return pattern of their investment. In the same way, 14% of the investors look for profitability, especially those who are already doing business, i.e. those who are already accustomed to taking risks. Out of the total, 12% of investors preferred liquidity. The main reason for this could be that making the invested money liquefied as and when required is important, and this is not possible if the investments are made in any insurance, Bank deposits, etc. Though there are numerous factors that can be attributed to an investor's psyche, by large, we can conclude that maximum number of investors is investing in those sectors where there is safety & security for their principal. The other factors antecede safety.
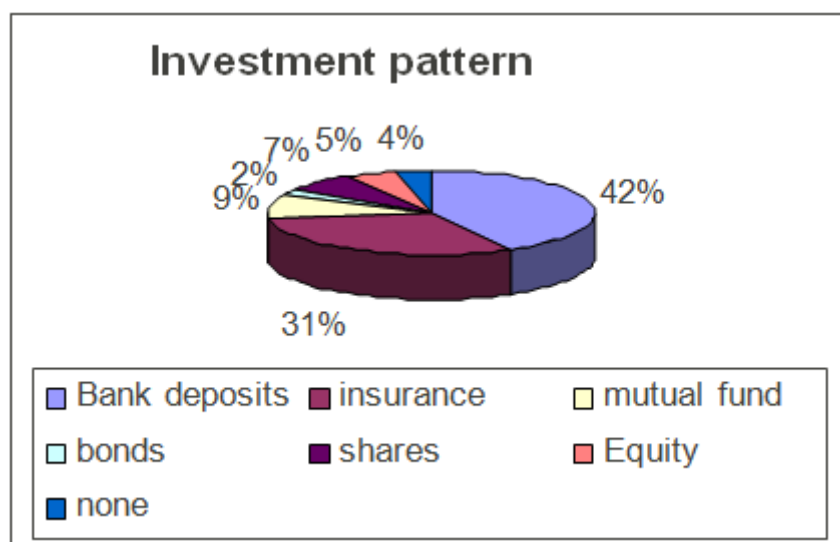
INVESTMENT PATTERN:

Sample size   100

Economic status   Tax payers & non-tax payees

From the above graph, it is clear that 42% opted for an investment in bank deposits, 31% for insurance, 7% for shares, 9% for mutual fund, 2% for bonds, 5% for equity and remaining 4% have invested in some other investments such as real estate's etc.
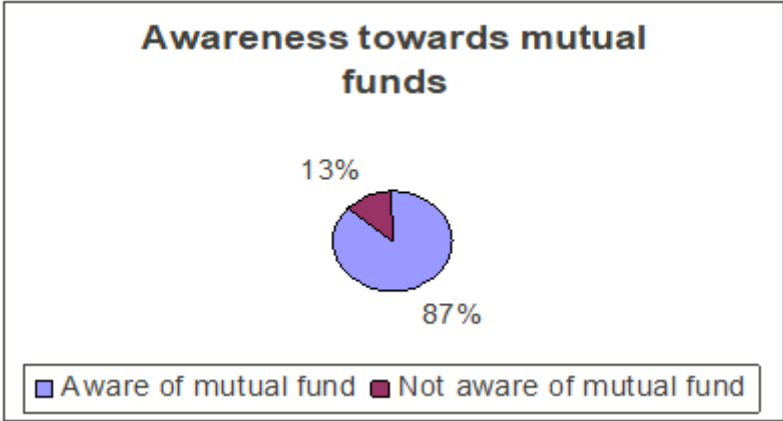
ANALYSIS OF THE ABOVE GRAPH:

The investment pattern of an investor is also very important because this shows the avenues where the people are really interested. Here, 42% have invested in bank deposits as it is very safe and risk free. Out of the sample of 100, it is observed that those who opted for an investment in banks in the form of deposits are found to be in the age group of 40 and above and are in government services.

The next preference, as observed in the pie chart for investment pattern is "Insurance". People generally opt for life insurance because it promotes a sense of safety & security for the dependents on the person and even his belongings. So, the next priority is insurance. 7% of the investors went for an investment in shares as it brings quick returns, although shares are prone to high risks.

As shown in graph 9% of the investors opted for an investment in mutual funds. From this we can infer that the market of mutual fund is picking up slowly. According to the survey, the people who have invested in the mutual funds belong to high-income range and they want an exemption from tax and a mere 2% opted for bonds, 5% for investment in equity and 4% have invested in other investments such as Real estate to make quick returns on their investments.

AWARENESS TOWARDS MUTUAL FUNDS:

In the above pie chart, we can observe that nearly 90% of investors are aware of mutual funds and only 13% people are not aware of it. This shows that most of the investors know about mutual funds in one or the other way.

ANALYSIS OF THE ABOVE GRAPH:

Of the sample surveyed, almost all of the people are aware of mutual funds. They are aware of the term "mutual fund". Though the questionnaire cannot identify the extent of the awareness Through the interaction it is found that they are not actually aware of the advantages in investing mutual funds, various types of mutual funds and different schemes offered in it. It is found that People often have an inhibition that investments in mutual funds can be done only by those who have surplus amount of money with them and want to avail tax redemption.

MUTUAL FUND INVESTMENTS:

Mutual funds are medium risk investments. Though Investing in mutual fund doesn't assure a fixed amount of returns, nevertheless, they are not low. The awareness about mutual funds is the primary criterion.
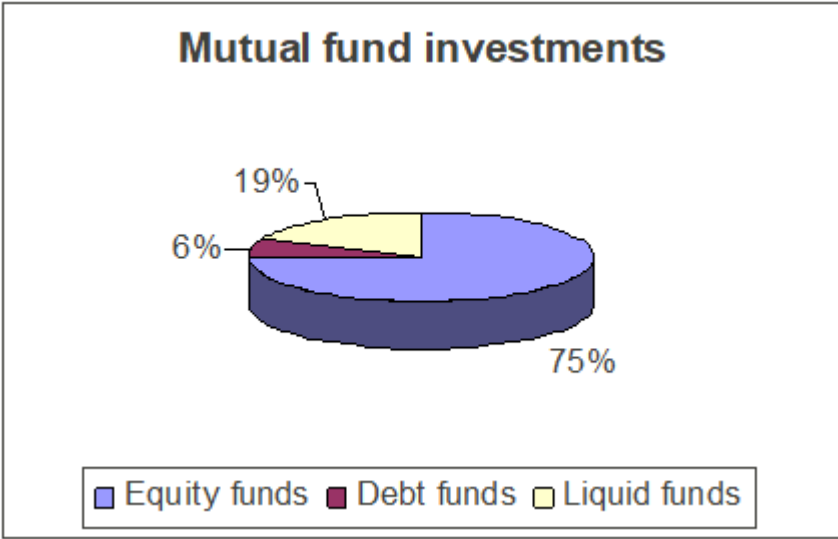
Sample size   16

Criterion   Mutual fund investors in the survey

From the graph, it is clear that only 16 out of 100 invested in mutual funds. From those 16, 12 have invested in Equity funds, 3 in liquid funds and the remaining 1 in debt funds.

ANALYSIS OF THE ABOVE GRAPH:

Only 16 out of 100 invested in mutual funds this can be mainly attributed to the low level of awareness, various inhibitions and a not so clear idea about the mutual funds. It is very important to have a clear perception of mutual funds, how they work and how the money is invested in different portfolios according to the investors' choice.

Investors who opted for equity funds are 12 of 16 percent. Equity funds being the majority preference can be reasoned as they want their investments to be put in various sectors i.e. DIVERSIFIED FUNDS so that they can make profits out of it easily. Even some went for INDEX FUNDS as the investments are made in Bench mark Index Stock like BSE, NSE.

A few (3%of 16%) investors made investments in liquid funds as they want a Short term investments where the investor need not wait for much time for the return. These are also called as Money Markets for short term. Only a single investor went for debt funds where investments are in various debt products like Certificate of Deposits (CD's), Commercial papers and call money as the investor want a secured investment, which he can avail in Debt Funds.

FINDINGS

i. Many of the investors are aware of mutual funds but most of their perception towards them is not positive.

ii. Investors are mainly concerned with the risk factors of mutual funds and are not directing towards them.

iii. The investors who have invested in mutual funds mainly go for it because of the Liquidity matter and Tax exemption.

iv. Most of the people don't know the advantages of mutual funds and the various types of mutual funds.

v. There are nearly 1173 schemes of mutual funds offered by various mutual fund houses, which an ordinary person is not aware.

vi. A common investor basically looks for the Tax exemption and Safety & security while investing.

vii. Investors often feel that those people, who have surplus amount with them and invest to avail Tax exemption, can do investing in mutual funds.

CONCLUSION

Mutual funds are still and would continue to be the unique financial tool in the country. One has to appreciate the fact that every aspect of life as its periods of high and lows. This has been the case with the stock markets. Why not apply the same logic to mutual funds? Mutual funds have not failed in any country where they worked with regulatory frame work. Their future is bright. The poor performance of many mutual funds schemes may be mostly attributed to the quality of personal involved and their matter of fund management.

SUGGESTIONS

Make people aware of mutual funds by:

➢ Arranging free seminars in different organizations about mutual fund investments.

➢ Arranging stalls in Public places is a good publicity.

➢ More advertisements need to come to explain the various advantages of mutual funds and even the various schemes offered by them.

What to expect from a financial advisor

The key for mutual fund investors is to define and recognize the value of professional financial services, and then insist on getting that value. When you pay a sales charge or a fee, what can you expect a professional to do for you? Your advisor should at least:

• Understand investor needs and help him formulate long-term investment goals and objectives. Before making specific recommendations, advisor should try to gain a whole picture of investors past experience, lifestyle and goals, as well as his other investments and current financial situation. When the investor planning to retire, for example? Does the investor have life insurance? Does he own real estate? How secured is his job?

• Help the investor develop realistic expectations by discussing the risks and rewards of each investment. Every investment choice has its strengths and weaknesses, and investor should never feel less than fully informed. When investor ask questions, or have doubts,

- Investor should expect your financial advisor to answer honestly, and help him develop a strategy that is both realistic and comfortable for him.

- Match investor's goals and objectives with appropriate mutual funds. Investor should expect your advisor to make clear and specific recommendations, and explain the reasons behind them in terms he can understand. Of course, the advisor should be confident and well informed about the management and portfolio strategies of any mutual funds recommended.

- Continually monitor investor portfolio and help you interpret performance.

- Your advisor cannot influence or predict a fund's results. However, he or she should discuss results with you and help you judge your progress. You should feel that you can always ask your advisor, "How am I doing?"

- Conduct regular reviews to ensure that your strategy continues to provide optimal results for you.

- One of the most valuable services your advisor can provide is to help you "stay on course" with your investment program. But "staying on course" long term does not necessarily mean staying put. Expect your financial advisor to work with you to adjust your portfolio in response to any significant change in your lifestyle, priorities, assets or responsibilities.

- These are the basic services that investors should expect from their financial advisors. Beyond the basics, many investors could use even more specialized assistance, like advice on retirement plan distribution options, setting up and servicing retirement plans for small businesses and self-employed individuals, developing tax-advantaged strategies for children's college education, insurance, estate, and trust planning; and year-end mutual fund tax advice. If you need specialized services, there are many financial advisors who can help you obtain the help you n

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OVER-THE-TOP (OTT) AS A NEW DIGITAL MARKETING PLATFORMS: IMPACT OF COVID-19 ON THE DIGITAL MEDIA & OPPORTUNITIES FOR ADVERTISERS

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ABSTRACT

As the world is defined with the pre-COVID and post-COVID era the digital marketing and media in the industry which is also affected by time. Due to COVID-19 Pandemic, the people were forced to stay at home. The strict lockdown increases media consumption. It's a time of slowdown where the TV media has almost no content that intent to change from TV to OTT platforms. The drift in the consumers has the new opportunity for advertisers, brands, sponsors, etc. The convenience of the OTT platform like, watch Video on Demand (VOD), Screen options, choice of content, ease of access has gain user engagement compare with the social media platforms. With complete study, it is analysed that OTT was considered as a digital marketing platform. With the analysed data the reports and surveys work on the objective and tried to evaluate the role played by the pandemic evolving OTT as an advertising platform. The study underlying trends around subscription, live streaming on OTT platforms, and the involvement of regional content and languages increase the popularity of the OTT platforms. The study complete with ad revenue of the OTT platforms and find the future trends for advertisers.

Keywords: Over-The-Top (OTT) platforms, COVID-19, Digital Media, Digital Marketing, OTT ads, Video on Demand (VOD), Indian OTT platforms

INTRODUCTION

Content is the king in digital marketing. The Average time spent by Indians on over the top (OTT) platforms in April-May 2020 is 5 hrs 16 minutes. Which is more than the global average time which is 4 hrs 3 minutes. It's an effect of the COVID-19 pandemic to slow down the financial and industrial growth. Whereas an increase in digital-based consumption. The content perceived by the audience is generally the web series. Along with that, they prefer to listen to music, spent time on social media and playing games, etc.

The demand for Advertising Video on demand (AVoD) is increasing and Disney+ Hotstar has become the third-largest ad platform after the social media giant YouTube and Facebook. Other OTT platforms like Voot, MX Player, ZEE 5, Netflix, Sony Liv, Amazon prime, etc. have shown a drastic increase in online ad revenue.

This paper offers the view of OTT as an emerging platform for ads. Although might be the future of digital marketing. In this analytical study, we try to find out whether OTT will replace or way down social media as the ad platform.

The study focuses on the audience behavior, type of content and the relevance of the ads, large to small screen comparison, definite strategies with the TV and Cinema content, and future approach as a digital marketing platform.

LITERATURE REVIEW

Deloitte's (2017) report on "Digital Media: Rise of On-demand Content" stated that the availability of affordable smartphones and better internet 4G connectivity has given rise to the demand for video-on-demand entertainment services. More people are now spending time on digital media compared to the cable or dish network.

Hitesh (2020) the first Indian OTT platform is launched in 2008 by Reliance Entertainment which is BigFlix. OTT gained momentum by launching the 4G network in India. Ditto TV by Zee and Sony Liv was launched in 2013.

Ernst & Young (2016) in the report "Future of Digital Content Consumption in India" stated that an increase in the usage of smartphones in India has stirred a new era of video consumption on personal media devices. The penetration of smartphones in India is projected to grow to 520mn by 2020 and broadband penetration will increase to 40% from 14% in 2020.

Divya (2020) report on "Analysing the impact of Covid-2019 on the over the top platforms in India" stated that The average hours spent on OTT have increased from 0–2 to 2–5 h and the average spending that users are

willing to make on OTT platforms is ₹100–300 (per month). The satisfaction level of customers is directly related to space to watch with family, time to use OTT platforms, the quality of content on OTT platforms, and preference of OTT platform over television. Also, factors such as age group, occupation, city, and income groups determine the usage of the OTT platform.

Dasgupta stated in his report that "OTT advertising is still in a nascent stage, and has a long way to go before developing into a mature area. In all probability, it would be underpinned by some of the fundamental traditional television advertising practices, while incorporating the emerging dimensions of media measurement across discrete multichannel platforms. Relevance, both on the content and advertising fronts, is the true currency that will drive consumer attention in the future. Therefore, OTT operators need to work in tandem with marketers to experiment, iterate, and refine their ad rendering capabilities for better outcomes"

Yi-Ning Katherine Chen (2016) examine how OTT services can serve as a substitute for TV in Taiwan. Finally, as different businesses continue to broaden their offerings to the online video streaming market, net neutrality laws or recommendations about how to regulate the emerging industry are discussed. Therefore, what is evident from the literature available domestically and internationally is the fact the OTT has revolutionised the way audience consumes content and this has impacted not only the media and entertainment industry but the entire eco-system, including content, creativity, formats, regulations, telecommunications, device market including software and hardware and last but not the least, one of the most crucial pegs of the puzzle, the internet providers.

Another study by Sidneyeve Matrix on Netflix observes that viewers, especially youth, are becoming active curators of content than couch potatoes taking in 'whatever producers feed them.' Supporting this paradigm shift in consumers is the need to share, stay connected and discuss the content on social media forums. In the process of these social media transactions, the viewers are setting new standards of expectations from producers thereby becoming an active catalyst in the production process too.

A paper by Paramveer Singh finds that Netflix, Disney+ Hotstar, and Jio are most popular among Indian youth. The youth is skewed towards free trials available on these platforms, are nocturnal viewers, and prefer web series format over films. The respondents affirm that over-the-top applications are changing media consumption patterns in India. The shift can be attributed to the convenience of service, personalized experience, and availability of global content, etc. The study finds the future of OTT in India to be promising due to increasing smartphone penetration, economic convergence of media companies at the national or international level, and quality of reception of digital content. Also instrumental in the competitive internet data plans offered by telecom service providers in India.

OBJECTIVES OF THE STUDY
The available literature suggests that OTT is the new digital platform for advertisement. The other factors like internet connectivity, relevance, regional content, Indian audience behaviour of consumption of the content are the major factor to study to run an effective advertisement on OTT platforms. Keeping all the major factors in mind, this study aims to explore the following observations

- To study the comparison between the social media ads vs OTT ads with the effect of the COVID-19 pandemic.

- To study and evaluate comparative content creators and consumers in both the advertising platforms.

RESEARCH METHODOLOGY
The research design is based on the data collected from the various reports, surveys conducted by the sources. The analytical is used to define the behaviour of the audience during the COVID-19 pandemic. The data were analysed with the comparison between OTT platforms and Social media platforms as advertising platforms. The purpose of collecting the data is to define that, OTT is one of the effective digital marketing platforms.
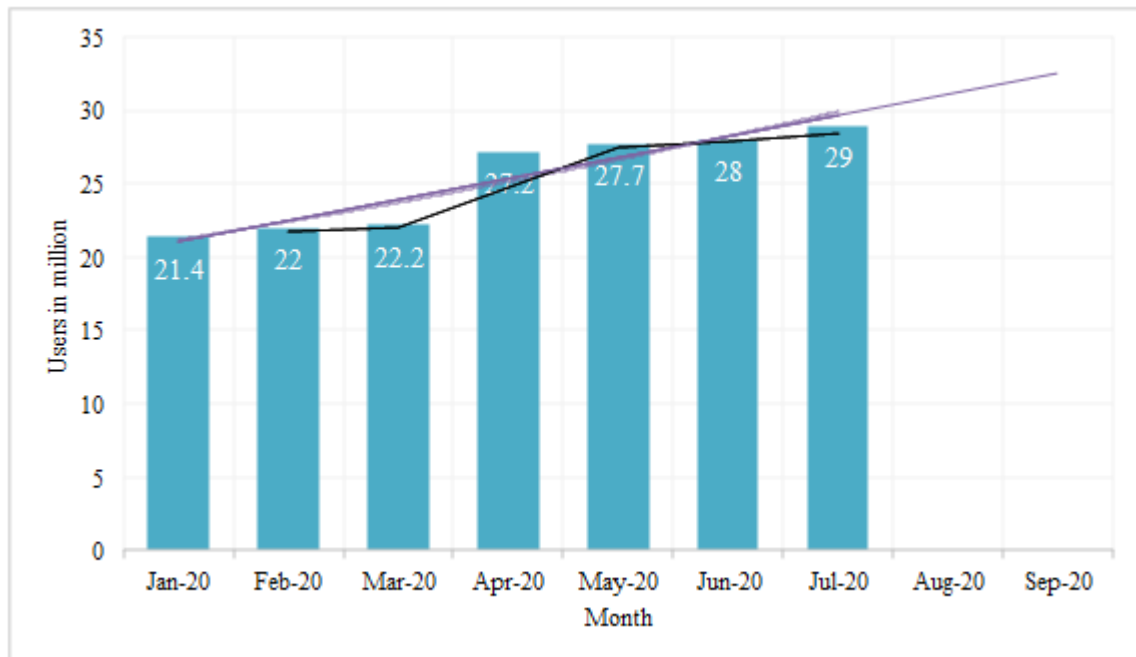
Data Interpretation

The rise in the subscribers of OTT Video during the lockdown:

Fig 1- Subscriptions of OTT video platform from January 2020 to July 2020

(Source: India Brand Equity Foundation)

The above statistical data shows that there is an upshift of the subscription between March 2020 to April 2020. The lockdown was announced on the 21st of March 2020 it means that the people are stayed at home and find ways to entertain themselves. The sudden drift of the subscription In March to April which is 22.2 million to 27.2 million subscriptions which 5 million which is the highest among any other month.

From an advertiser's point of view, they must consider the right platform to run their ads on a digital platform. Also, they must understand that the number of potential audiences they are targeting for. As the increasing number subscription on OTT video platform indicate that, the advertisers must consider OTT as an advertising platform.

In-stream ads on Disney+ Hotstar during Indian Premier League 13 (IPL 13):
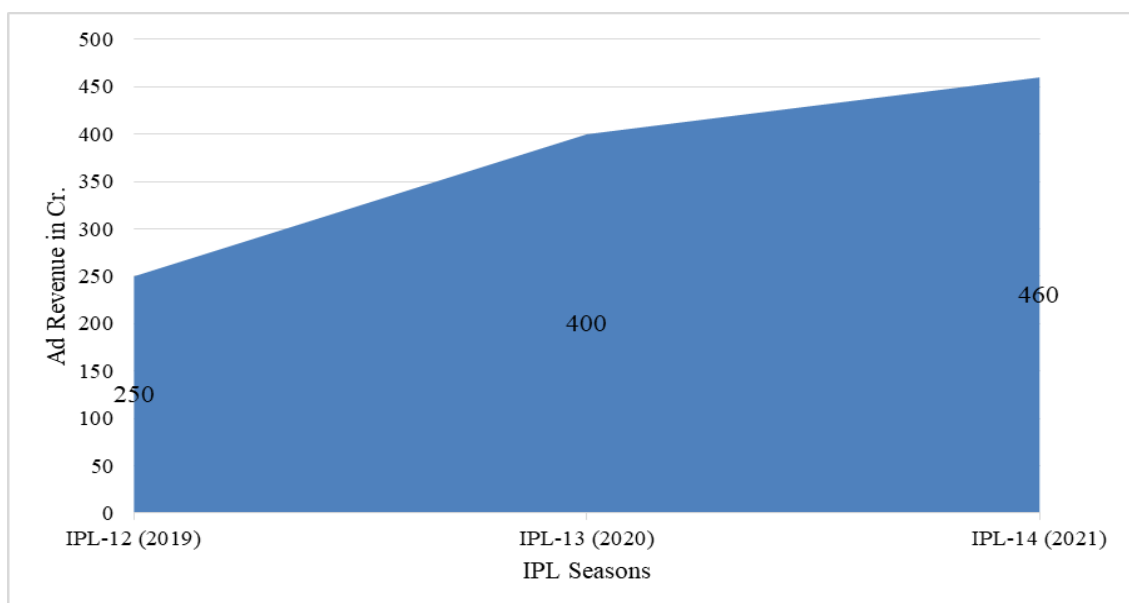
Fig 2- Ad revenue of Disney+ Hotstar during IPL

(Source: Money control)

The above graph explains that the advertisers are finding Disney+ Hotstar as an advertising platform. It is found that the increase in the ad revenue in IPL 13 is 62.5 % as compared with the IPL 12. The report also explains that the ad revenue will be increase by 15% more for the IPL 14.

If we compare social media with the OTT video platform, as of now there is no such live streaming is happening on social media. On social media platforms like YouTube or Facebook, you may run the ads on the posted videos. Whereas on OTT like Disney+ Hotstar during the IPL of 2020 they can show the ads in between the streaming of a cricket match.

As the popularity of cricket in India is highest among any other country Disney+ Hotstar will be the place to showcase the brand.

Increase in the Regional content on OTT platforms and consumption by tear II and Tear III on Metro cities:

The narratives have to change and cause the stereotype assumption that the content on the OTT will be pursued more in metro cities only. In 2019, 60% of You-Tube Consumption happened outside the metros. Whereas 95% of vernacular content access came from tier II and tier III cities.

In the case of Disney+ Hotstar, 40% of traffic came in from regional content, and 63% of total consumption came from non-metro markets.

It creates opportunities for the advertisers to reach their target audience not only for the metro cities but also for the tier II and III cities. Also, local businesses or small businesses consider OTT platforms to reach the target audience.

The content which is in the regional languages has preferred to watch more compared with the original content in English. Some of the web series like Family Man, Rangbaaz, Delhi crime, Special ops, Thinkistan, Criminal Justice, Jamtara, City of Dreams, etc. have top searches outside India. It shows that the content on the OTT platforms has more impact compared with the English language.

Some of the regional shows like Samantar (Marathi), Kaamini (Bengali), Kotha Poradu (Telugu), Kalisapuram (Telugu), Queen (Tamil), etc. The focus is rapidly shifting towards commissioning more and more content in Hindi and other regional languages.

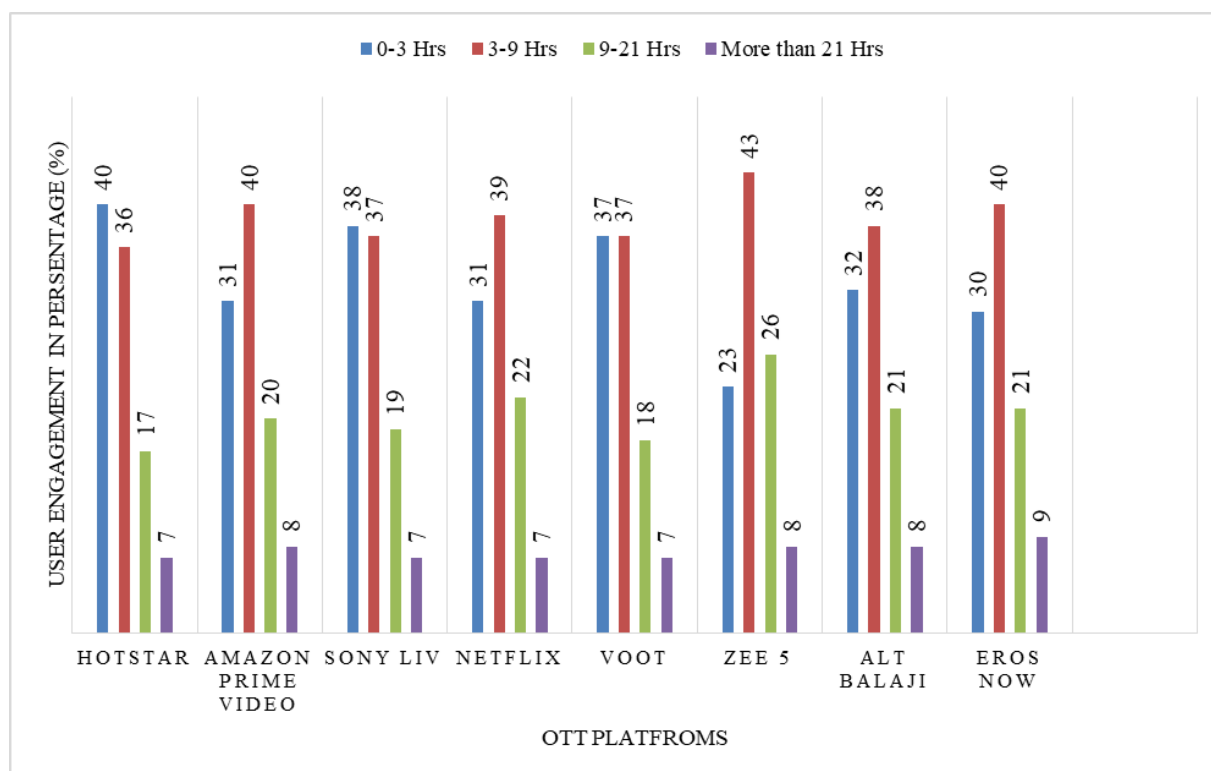**User Engagement on OTT and Social media platforms:**

Fig 3- User Engagement among the OTT platforms

(Source: Counterpoint Technology Market Research)

The content created on social media is by the people which consume it. Whereas in the OTT Video Platforms the creators are the big production houses. So, if we compare the quality of the content it is way better than social media.

The average time spent per day on social media is 3 hr 45 min. But if we analyse the attention span is lesser than 10 minutes. They come to social media for a lesser time. That's the reason the time per session is not more than 10 minutes. Because of the related content on social media, it is an easy way to divert from one video to another.

On the OTT video platform, the average spent time per session is 1 hr 35 min. but the key difference is when a user came to the OTT platform they spent more time at once. The shows on OTT platforms contain series of episodes and the average time per episode is 35 min. So, if a user comes to watch the series they at least 1 hr to spent on the OTT.

From this study, we can analyse that, if the advertiser shows the ads on OTT 5 to 6 times between these episodes because the retention time is more there may be a possibility of lead generation or conversion. It also works psychologically that they must remember the product for a longer time. Whereas on social media, people usually come for a 2-3 break. So, there may be a possibility that they may forget the ad they saw in between the break.

OTT as a Movie Releasing platform during COVID-19 Pandemic
Due to the pandemic cinema halls have been due to this movie are findings the ways the platforms to release their moves. Although, it will be accessible for premium users. Mostly it an advertising-free experience for the users. It will help to OTT platform to increase the reach among the audience. It is not possible on social media platforms to release the movies.

Some of the multi starrer big banner movies which make a big success like Dil Bechara (Disney+ Hotstar), Gulabo Sitabo (Amazon Prime Video), Kagaz (Netflix), Laxmii (Disney+ Hotstar), Soorarai Pottru (Amazon Prime Video), Ludo (Netflix), The Big Bull (Disney+ Hotstar), etc. are the big blockbuster during the pandemic situation.

FINDINGS & CONCLUSION:
1. Due to the COVID-19 Pandemic, there is an increase in the subscription on the OTT video platforms which 5 million. So, if you want to reach your target audience OTT will be the new digital platform.

2. OTT platforms show the instream ads. About 85% of the slots are being booked even before the IPL 2021 started. It shows that Brands choosing OTT as a new digital marketing platform.

3. The regional content and multilingual content are the major factors to be considered by the advertisers. OTT provides detail targeting options so the advertisers can show the ads to the particular language for the particular state.

4. It is observed that one-third of the audience is watching on the freemium plans. So, AVOD will be the best option for reach out to the masses.

5. User engagement is the trump card for the OTT platforms. The average spent time per day is 5 hours 16 minutes. Which can be considered for reacquisition to register the product in the consumer's mind.

6. The annual growth rate of the OTT Platforms from 2021 to 2025 of 14.55%, resulting in the project market volume of ₹424,489 million by 2025. The largest segment is OTT video advertising with a market volume of ₹131,705 million in 2021.

7. Although due to the COVID-19 pandemic the movies were released on the OTT platform. But it couldn't last for long. The user experience is a point of discussion as we compare cinema halls with the OTT platforms.

8. As per the new guidelines of the Government of India (GOI), the content on the OTT platform may come under the censor board. It may affect the content quality on OTT platforms.

9. OTT platforms have to develop the advertising publishing platforms like Google Ads and Facebook Ads.

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EXPLORING THE RELATIONSHIP BETWEEN SHAREHOLDER'S VALUE AND FINANCIAL VARIABLES FOR SELECTED INDIAN AUTOMOBILE COMPANIES

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ABSTRACT

The creation of shareholder value is seen as one of the most important objective of the firms. For many years, the performances of the companies have been measured in terms of profit or earnings per share. However, increasing dissatisfaction with these measures has directed to the development and promotion of whole new array of metrics under the banner of shareholder value. These new measures have shifted the focus away from profits and towards cash flows.

The study is based on secondary data obtained from the annual reports of selected ten (10) automobile companies for the period of 2007-08 to 2016-17. It is found that CVA is the highest contributing variable to shareholder value creation as compared to MVA and EVA. CVA has inverse relationship with value creation defined using accounting measures, which indicates that increase in CVA of selected companies, will lead to decline in value creation.

Key Words: Value Creation, Automobile sector, EVA, MVA, CVA

INTRODUCTION

Value creation is the primary aim of any business entity. Creating value for customers helps sell products and services, while creating value for shareholders, in the form of increases in stock price, insures the future availability of investment capital to fund operations. From a financial perspective, value is said to be created when a business earns revenue (or a return on capital) that exceeds expenses (or the cost of capital). But some analysts insist on a broader definition of "value creation" that can be considered separate from traditional financial measures.

Shareholder value is created by generating future returns for equity investors which exceed the returns that those investors could expect to earn elsewhere. The belief is that these excess returns will be reflected within the share price of the company. The returns are measured in terms of cash flow, and the cost of capital is used to charge for the use of the capital invested. Shareholder value is a business term, which implies that the ultimate measure of a company's success is the extent to which it enriches shareholders. It became popular during the 1980s, and is particularly associated with former CEO of General Electric, Jack Welch. The creation of value for the shareholders of a company has recently become a widely accepted objective of the firm. The economic justification for creating shareholder value (CSV) as the over-riding objective of the firm primarily comes from an assumption embedded in most of the finance literature that all the markets in which the firm operates are perfectly competitive. Value creation can, therefore, be defined as the increase in the financial worth of shareholders, as measured by ratio of market value of shares to the book value of shares, engendered by the performance of an organization. In essence, adding to shareholder value improves the value of shareholders' investment, which is consistent with organisational objective of maximising shareholders' wealth.

India is expected to be the world's third-largest automotive market in terms of volume by 2026. The industry currently manufactures 26 million vehicles including Passenger Vehicles, Commercial Vehicles, Three Wheelers, Two Wheelers and Quadricycles in April-March 2020, of which 4.7 million are exported.

LITERATURE REVIEW

➢ Cyrus Ramezani et.al. (2001) conducted a study on Growth, Corporate Profitability, and Value Creation with the objective to examine the unconditional distribution of several performance metrics across the quartiles of two growth measures with multivariate regression model for each growth measure using a common set of data as conditioning variables. Data were taken from the annual Compustat files for the period 1990 to 2000 (11 years). The result of the study indicate that maximizing growth does not maximize corporate profitability or shareholder value.

➢ Shrikant Krupasindhu Panigrahi et.al. (2014) conducted a study for Comparing Traditional and Economic Performance Measures for Creating Shareholder's Value. The EVA of 28 construction companies from the total 43 construction companies listed in Bursa Malaysia were selected for the study and analysed during the period of 2003 to 2012. It was found that very few of the construction companies were having positive

EVA for the creation of Shareholder's wealth. It was also found that there is a strong relationship between created shareholder's value and economic value added. The article has been concluded that EVA has not been reported by the companies and i not been used by investors for their investment decisions.

➤ Amalendu Bhunia (May 2012) has examined Relationship between shareholder's value and financial variables. He made an attempt to teste whether value-based frameworks are applicable in Indian condition or not. He has collected secondary data from the CMIE prowess database for the period from 1996 to 2010. A sample of 155 top companies has been taken from Indian industries during the period spanning 1996-2010. The data has been analysed using linear regression, factor analysis and multiple discriminant analysis. The results show that effect of shareholder value creation might lead to more information and insight.

➤ M.Rajesh et.al. (2012) conducted an empirical study on EVA and MVA approach to measure the existing financial status and predicting the future performance of the company. The main objective of this study to rank them based on value added measures, EVA and MVA. They have evaluated the performance of selected 10 companies from the identified 60 companies with the assumption that minimum 10 years of historical data (2001 to 2010) as constraint for the study. The study has clearly proved that, in two modern measures (EVA and MVA), ACC Ltd. And Grasim Cements Ltd. is having satisfactory performance with consistent return to shareholders. Two measures (EVA and MVA) are having relative importance to assess the performance of the company.

➤ S. Suresh and A. Sengottaiyan (2015) have undertaken a study on Shareholders Value Creation and Financial Performance of selected Auto Mobile Companies in India. The study has end to find out the significant association between EVACE and its trend value, MVATA and its trend value to analyse the trend and growth of shareholders value in selected automobile companies in India. The data were collected from CMIE-PROWESS of respective companies annul financial statement during from 2003-04 to 2012-13 for 20 firms selected from 124 companies which were listed in BSE in India. The study has used techniques such as Mean, Standard deviation, Percentage analysis, Coefficient of variations, Growth Rates, Trend Indices and Chi Square test. They found that Economic Value Added and Market Value Added of selected companies have recorded positive and a high fluctuation trend.

RESEARCH METHODOLOGY

OBJECTIVE
This study aims to explore the relationship between Shareholder's Value and Financial Variables in Selected Indian Automobile Companies.

Sampling Design
The study uses data of 10 companies from Automobile sector of India for the period from 2007-2008 to 2016-2017. The study is based on secondary data which is collected from annual reports of the selected companies. The list of selected companies is given below:

1. Hero motocorp Ltd.

2. Atul Auto Ltd.

3. Bajaj auto Ltd.

4. TVS Motors Company.

5. Maharashtra Scooters Ltd.

6. Tata Motors Ltd.

7. Bharat Gears Ltd.

8. Scooters India Ltd.

9. Majestic Auto Ltd.

10. Kic Ltd.

Model Specifications:
The Multiple Regression Analysis has been carried out on the following sub-models:

Sub-model-1: Dependent variable: MVA

Independent variable: TSR, CVA, EVA, FCF, CFO

Sub-model-2: Dependent variable: EVA

Independent variable: NOPAT, CVA, RONA, FCF

Sub-model-3: Dependent variable: FGV

Independent variable: CFO, EBIT, NOPAT, EBITDA

Sub-model-4: Dependent variable: TSR

Independent variable: PE RATIO, EPS, ROCE

Sub-model-5: Dependent variable: TSR

Independent variable: EVA, MVA, CVA, FGV

The variables used for this study are as follows:

Table-1 Description of variables

Variable Name	Description
Market Value Added (MVA)	Market Value of Equity – Total Capital
Cash Value Added (CVA)	Cash Flows of Operating Activities – Taxes – (Interest + Dividend).
Economic Value Added (EVA)	NOPAT - (IC_{t-1}*WACC%)
Future Growth Value (FGV)	MVA-COV
Current Operations Value (COV)	COV= NOPAT/ WACC
Free Cash Flow (FCF)	FCF = NSL-OPC-ITX-IEX-FCI-RCI-WCI
Cash Flow from Operations (CFOP)	Cash Flow from Operating Activities
Earnings Before Interest and Taxes (EBIT)	Revenue – Operating Expenses
Earnings Before Interest, Depreciation and Taxes (EBIDT)	EBIT + Depreciation
Net Operating Profit After Tax (NOPAT)	Operating Profit(1-Tax Rate)
RONA	PAT/ Net Assets
ROCE	EBIT/ Total Capital Employed
Earnings Per Share (EPS)	NOPAT/ Number of Equity Shares
P/E RATIO	Market Price per Share / Earning Per Share
Total Shareholder Return (TSR)	$((P_t-P_{t-1}) + \text{Dividend}_t)/ P_{t-1})$ Where, P= Market Price

DATA ANALYSIS AND INTERPRETATION: -

Sub-Model: 1

Dependent variable: MVA

Independent variable: EVA, CVA, FCF, CFO, TSR

Table: 2: Regression Results- sub-model:1

Sub-model 1 Dependent variable: MVA	Co-efficient	p-value
(constant)	1076982.454	0.005
EVA	-0.997	0.468
CVA	301.631	0.257
FCF	-27.525	0.615
CFO	-250.722	0.315
TSR	10294.317*	0.000
R square	0.246	
F change	6.132*	
Sig. F change	0.000	

* Indicates level of significance @5%.

Estimated model:

MVA=1076982.454-0.997EVA+301.631CVA-27.525FCF-250.722CFO+10294.317TSR

Interpretation:-

The result of Sub-model-1 shows that TSR is the highestcontributing variable with significant positive effect followed by CVA. Remaining three FCF, CFO and EVA is having negative impact on MVA. R-square value is 0.246 which indicate that 24.60% in the variation in MVA is explained by all the selected independent variables and hence, the model is the weak. Star signifies the parameter estimates at 5% level. F-test for R-square indicates that R-square is significant.

Sub-Model: 2

Dependent variable: EVA

Independent variable: CVA, FCF, RONA, NOPAT

Table-3: Regression Result-sub-model: 2

Sub-model 2 Dependent variable: EVA	Co-efficient	p-value
(constant)	-19665.385	0.004
CVA	-0.920	0.717
FCF	-0.654	0.631
RONA	-0.665.731	0.793
NOPAT	101.73*	0.000
R square	0.931	
F change	322.037*	
Sig. F change	0.000	

* Indicates level of significance @5%.

Estimated Model:

EVA= -19665.385-0.920CVA-0.654FCF-665.731RONA+101.73NOPAT

Interpretation:-

The result of Sub-model-2 shows that NOPAT is the highest contributing variable to dependent variable EVA. It shows that FCF and CVA as well as RONAhas a negative impact on EVA. R-square value is 0.931 which indicate that 93.10% in the variation in EVA is explained by all the selected independent variables and hence, the model is the Strong.The significant parameter estimates at 5% significance level are indicated by a star against their values. F-test for R-square indicates that R-square is significant.

Sub-model: 3

Dependent Variable: FGV

Independent variable: CFO, EBIT, NOPAT, EBITDA

Table-4: Regression Results-sub- model: 3

Sub-model 3 Dependent variable: FGV	Co-efficient	p-value
(constant)	1419251.464	0.003
CFO	34.013	0.756
EBIT	-37.108	0.936
NOPAT	-224.198	0.301
EBITDA	-35.284	0.935
R square	0.048	
F change	1.201	
Sig. F change	0.316	

* Indicates level of significance @5%.

Estimated model:

FGV=1419251.464+34.013CFO-37.108EBIT-224.198NOPAT-35.284EBITDA

Interpretation: -

The result of Sub-model-3 shows that that NOPAT is the highest contributing variable with negative effect on FGV. It shows that EBIT and EBITDA have insignificant negative impact on future growth value whereas; CFO has insignificant positive impact on FGV. R-square value is 0.048 which indicate 04.80% in the variation in FGV is explained by all the selected independent variables and hence, the model is so weak.

Sub-model: 4

Dependent variable: TSR

Independent variable: PERATIO, EPS, ROCE

Table-5: Regression Results- sub- model: 4

Sub-model 4 Dependent variable: TSR	Co-efficient	p-value
(constant)	37.779	0.008
PERATIO	0.047	0.364
EPS	-0.131	0.673
ROCE	0.335	0.478
R square	0.014	
F change	0.453	
Sig. F change	0.716	

* Indicates level of significance @5%.

Estimated model:

TSR= 37.779+0.047PERATIO-0.131EPS+0.335ROCE

Interpretation:-

The result of Sub-model-4 shows that ROCE is the highest contributing variable followed by P/E RATIO with positive effect on Total Shareholder Return. EPS has negative impact on TSR. The significant parameter estimates at 5% significance level are indicated by a star against their values. R-square value is 0.014 which indicate that 01.40% in the variation in TSR is explained by all the selected independent variables and hence, the model is worst. F-test for R-square indicates that R-square is insignificant.

Sub-model: 5

Dependent variable: TSR

Independent variable: EVA, MVA, CVA, FGV

Table-6: Regression Results-sub- model: 5

Sub-model 5 Dependent variable: TSR	Co-efficient	p-value
(constant)	18.481	0.143
EVA	0.000005769	0.908
MVA	-0.0000007202	0.997
CVA	-0.003	0.459
FGV	0.00002088	0.925
R square	0.210	
F change	6.331	
Sig. F change	0.000	

* Indicates level of significance @5%.

Estimated Model:

TSR= 18.481+0.000005769EVA+0.0000007202MVA-0.003CVA+0.00002088FGV

Interpretation: -

The result of Sub-model-5 shows that CVA has the highest contributing variable which is negative impact on TSR followed by FGV. FGV has insignificant positive impact on TSR. To identify the effect of value based measures on Total Shareholder Return, TSR is considered as a dependent variable on the other variables: EVA, MVA, CVA and FGV which are the dependent variables of the previous Sub-Models I to IV.The value of R-Square for this model was found to be 2.10% which is more than that of Sub-Model –IV. This indicates that the total shareholder return is still explained more significantly by the accounting measures than by the value based measures.

FINDINGS

The major findings of the study are summarised below:

- The results of Regression analysis of Sub-Model-I show that TSR is the highest contributing variable followed by CVA. It shows that TSR is having a significant Positive impact on MVA.

- The results of Regression analysis of Sub-Model-II show that NOPAT is the highest contributing variable with positive significant impact on EVA. It shows that FCF and CVA as well as RONA has a negative impact on EVA.

- The results of Regression analysis of Sub-Model-III show that NOPAT is the highest contributing variable with negative effect on FGV. It shows that EBIT and EBITDA have insignificant negative impact on future growth value whereas; CFO has insignificant positive impact on FGV.

- The result of Regression analysis of Sub-Model-IV shows that ROCE is the highest contributing variable followed by P/E RATIO with positive effect on Total Shareholder Return. EPS has negative impact on TSR

- The result of Regression analysis of Sub-Model-V shows that CVA has the highest contributing variable which is negative impact on TSR followed by FGV which has insignificant positive impact on TSR. The results indicate a weak but significant relationship between these variables. CVA and FGV have emerged to be the most effective variables in explaining Shareholder Returns (SHR). The value of R-Square for this model was found to be 2.8% which is less than that of Sub-Model –IV. This indicates that the total shareholder return is still explained more significantly by the accounting measures than by the value based measures.

CONCLUSION

The analysis of the value based measures indicates that CVA is the highest contributing variable to shareholder value creation as compared to EVA and MVA. CVA has inverse relationship with value creation defined using accounting measures, which indicate that increase in CVA, will lead to decline in value creation. The study concluded that there is better scope of applying value-based measures to generate economic profit rather than accounting profit in order to create higher shareholder value.

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TALENT MANAGEMENT: AN ESCALATING STRATEGIC FOCUS ON BANKS

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ABSTRACT

The aim of this study is to examine the talent management (TM) strategies in a bank. Hence, previous research articles have been reviewed. Some reliable and updated primary and secondary sources for selected Bank's website and other sites of Bank to achieve the aim of the study. The study finds several key practices of TM that includes talent acquisition, talent retention, talent management and employee performance. The limitation of this study is that this study is empirically tasted. More scope of the study focuses on banks. The study recommends that HR managers should actively TM practices of the case bank to effectively manage their workforce. This study is the first study to uphold TM in banks.

Keywords:-Talent management, Talent Development, employee performance, bank.

INTRODUCTION

A Talent Management Strategies in based on the talent acquisition and retention. it should match your organization's process and goals, clearly define need of what type of talent. Talent Organize the talent management model & process based on the TMS. Talent management strategy can move an organization's talent management beyond essential TM activities. TMS can move an organization TM beyond essential TM activities. For an organization TMS start by understanding personal aspirations of its talent, rather than adjusting to templates that are not current, and aligning these to the overall business strategies.

What it was

Talent management in the organization itself could attract the most talented employees, and many of the organization talent were used to identify 9 grid systems. This 9 grid system was reliable. Than reached the employees on the basis of performance. And it has a top-half pitcher which is possible and the demonstrator is a lower side. The issue I have with this 9 box system is, it has a focus of high performance and high potential people. Talented employee whose capacity is not recognizes, by unfortunately. This definition is usually given throughout Europe, as shown in the Various Study, supported by the cornerstone.

What it became

Talent management became the management of the entire tries level of the organization like a, top level, meddle level and lower level. Not just high performers and high potentials employees. Talent management technology has become popular, making it easy to scale, systematic every team and achieving built-in workforce. This platform included self-service functionality. Than used to help in reaching information and updates to employees. Use to takes the administrator away from the human resource management.

What it is today

The new human resource practices of today brings together talent management – answering the needs of talented peoples the business – and talent experience in the organization – answering the needs of the most talented employees. If a platform doesn't do good job both, it cannot be serve its purpose in today's world of gain benefits. Organization has an advantage at the level of high engagement, because the employee does his own career planning. Human resource is a process by which every requirement of the employee is given. Where -as the Employee is provided with a great experience in this platform.

REVIEW OF LITERATURE

Sangeetha Aurora and MeenakshiMalhotra (1997) Determine customers' expectation about increase banking services and different levels of services to maximize the value that could be acquire from the banks. They found that the customers evaluate and performance appraisal competing offers in terms of the totality of It is not only necessary for the customer to produce, but to build a good relationship with him, which attracts the customer and the most talented person, a bank might distinguish itself from its competitors not just in the quality of the core product but also in how it manages the service surround.

Duttagupta (2005) within the organization, emphasis has been placed on playing the role of the future and securing the supply. Due to which, the team organization remains constant through various tasks and jobs. This is a strategic management of the flow of a talented workforce.

Poghosyan& Hess (2009) this study emphasizes positive signals in organization such as values, strength, and efficiency. But we can also emphasize negative signals for a time to replace the most talented employee with the most talented employee. So that it will not cost much to get the most talented and train it with less talent.

Swapna and Raja (2012) have stated Organizations that prioritize talent in a company with high performance and based on effective strategy which leads to success in the economy).

Mourougan, (2015) this structures that provide limitation for discovery in organization. This search lasted from 2009 to 2013. It was limited to literature. The search of 2008 was completely different. It emphasized on Employee Retention and Talent Management Strategy and Talent Management works as a driver on many issues. Talent retention and work-life balance are the main components. The importance of strategy has been assessed and much more is to be done.

RESEARCH METHODOLOGY
Research Methodology is a way to problem solving in the research problem. it is systematically way. It may be identify as a science of studying how research is done scientifically and systemically both.

OBJECTIVES OF STUDY
* To suggest the possibility of developing an index to measure the effectiveness of talent management practices.

HYPOTHESIS
H1: Talent management strategy has a significant impact on employee satisfaction.

DATA ANALYSIS
The study sought to establish the perceived relationship between welfare activity and employee satisfaction. In the Analysis of variance setting, the observed variance in a particular variable is partitioned into components attributable to different sources of variation. ANOVA provides a statistical test of whether or not the means of several groups are equal, and therefore generalizes the t-test to more than two groups.

ANOVAa

	Model	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2.901	5	.580	10.851	.000b
	Residual	10.373	194	.053		
	Total	13.273	199			

a. Dependent Variable: Employee Satisfaction

b. Predictors: (Constant), Employee Retention, Welfare Activity, Career Planning, Talent

Acquisition, Performance Management

The study found that the overall regression model (Model 1 in above table) is significant Here, the null hypothesis is "Talent Management Strategies has no significant impact on employee satisfaction" but here alternate hypothesis is accepted which is, "Talent Management strategies has a significant impact on employee satisfaction" is **accepted** because the sig. value obtained in above table is 0.00 which is less than alpha value of 0.05 ($p < 0.05$).

CONCLUSION
Now days in the world of branding the recruitment plays an important role in the strategy of talent acquisition of the organization Companies fix a certain budget for this talent acquisition process where the talented and skilled employees are allowed to participate and hence their database is kept for the future requirement as per the organization. The study revealed that majority of the employee satisfied with talent management practices applied in their banks. The talent management strategies applied in private sector banks help in reducing the challenges faced by the employees during the regular working in the organization.

Organization takes lots of efforts for the retention of its employees and hence an attempt is made to identify the employee performance & retention activities provided in private banks. Majority of the employees agree that they are provided with flexibility in work (e.g. working from home, flexible timings etc.), employees also agree that in their organization leaves are comfortably granted to employees for meeting their personal and family obligations. Majority of the employees do agree that measures are taken in their organization to help employees balance their professional and personal lives. It is further found that employee-morale surveys are periodically conducted in the organization to assess the views of employees regarding organizational environment. Most importantly, it is found that the appraisal process in the organization is uniform.

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FORMULATION AND EVALUATION OF SILVER SULFADIAZINE NANOPARTICLES USING BIODEGRADABLE POLYMER

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ABSTRACT

Silver Sulfadiazine is a sulphonamide antibiotic which is mainly used for treating second and third degree burns and in wound healing. In present research work silver sulfadiazine loaded nanoparticles were prepared by ionic gelation method to improve the solubility together with bioavailability. Silver sulfadiazine nanoparticles were formulated using chitosan as a biodegradable polymer by Ionic gelation method. Further the study involves the characterization of prepared nanoparticles. Silver sulfadiazine has low bioavailability, hence if it is formulated as nanoparticles may improve bio-availability and thereby therapeutic efficacy. Here we have formulated six formulations of nanoparticles by varying the ratios of CS: TPP and evaluated for various physico-chemical properties. The drug polymer compatibility studies were performed using Fourier transform infrared spectroscopy and differential scanning calorimetry. It was found that formulation FT6 has better yield, drug content, entrapment efficiency and % drug release. SEM and Zeta potential has shown that the obtained formulations are in nanometric range. The formulations are best fitted into Korsmeyer's and Peppas model which clearly indicates that these are polymeric drug delivery systems that provide better therapeutic effect with better bioavailability.

Key Words: Silver sulfadiazine, Chitosan, Ionic gelation method, Sulphonamide antibiotic, wound healing, Nanoparticles.

MICROBES MEDIATED RHIZOSPHERIC ENGINEERING FOR SOIL HEALTH RESTORATION IN DEGRADED LANDS

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ABSTRACT

Soil health restoration in degraded lands is one of the major concern in worldwide. Land degradation is the decline of soil condition caused by poor management of agricultural practices, industrial or urban purposes, climatic problem, deforestation, excessive use of fertilizers and pesticides, overgrazing, salination, water-logging, desertification, soil erosion, wasteland, etc. Microbial biomass is one of the components to measure the restoration progress of the degraded areas. To process land improvement the bacteria i.e. Rhizobacteria along with other microorganisms form an integrated network of plant roots that promoting plant growth as well as ecosystem restoration in degraded land. Several biotechnological advancements and compounds produced by microbes which is help in restoration of land such as vault packaging with enzymes, phytoremediation, biopiles, biosensors osmolytes, biosurfactants, siderophores, nitric oxide, organic acids and so on which helps in mineral uptake, associative nitrogen fixation, heavy metal tolerance, check the level pollutants in soil and production of phytohormones, enhancing sustainable crop production. Here, in this review we focus on the roles of soil microbes in eco-restoration of degraded land. The better understanding of microbial interactions with plant root as well as soil in the rhizosphere for achieving the goal of sustainable crop production in degraded land. The complete knowledge of the complex chemical and biological interactions and their modification through rhizospheric engineering ensures its beneficial and sustainable application in agricultural systems.

HALOTOLERANT RHIZOSPHERIC BACTERIA WITH SALINITY STRESS ALLEVIATION POTENTIAL IN RICE (ORYZA SATIVA L.)

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ABSTRACTS

Microbes with their potential intrinsic metabolic and genetic capabilities, contribute to alleviate abiotic stresses in the plants. These potential microbes can be a great source of salinity tolerance in sustainable agriculture. In this regard, rice crop from four different places of eastern Indo-Gangetic plain was sampled. The aim of the study was to isolate rhizospheric bacterial strains which could impart salt tolerance in the rice plant. A sum of 27 bacterial cultures were isolated and screened from rice rhizosphere. Primarily, tolerance to salt concentration and exopolysaccharide production was used as screening criteria. An array of salt tolerance was observed among these isolates in a gradient of salt concentrations of 400mM, 800mM, 1200mM, 1600mM and 2000mM NaCl. The plant growth promotion under salt stress is key feature for salinity stress alleviation, therefore, plant growth promoting (PGP) traits like phosphate solubilization, siderophore production, zinc solubilization, IAA production was also determined. Isolates Y6, W4, and W16 were recorded highest IAA production. Molecular identification of potential isolates was done using 16s rRNA partial sequencing approach and found to be Brevibacterium frigoritolerance W11, Klebsiella pneumonia W15, Bacillus aryabhattai W16, Bacillus cereus Y7, and Brevibacterium frigoritolerans W19. The two potential isolates Klebsiella pneumonia W15 and Brevibacterium frigoritolerans W19 found to alleviated effects of salinity on germination of seeds under 100, 150 and 200mM salt concentration in two rice varieties PB1 and CSR 43. This indicates the possibilities of employing these isolates for reducing the salt induced germination failure in the field. These bacteria have shown potential bio-efficacy for nutrient uptake under salinity stress that can be foundation in alleviation of salinity stress in rice.

Keywords: Rhizospheric bacteria, salt tolerance, PGP traits, phosphate solubilization, zinc solubilization

PEOPLE ANALYTICS: A MODERN TOOL IN HUMAN RESOURCE MANAGEMENT

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ABSTRACT

The role of HR has developed over time from the administrative function towards more strategic partnership. A major driving force behind this evolution has been the technological development. The collecting, storing and processing of data has been in central role in the gradual evolution of HRM.

Still throughout past decades academics and practitioners have questioned the success of HR´s development to more strategic role. One challenge has been the ability to produce accurate information of people related issues and make fact-based strategic HRM decisions. In recent years a growing belief have risen that HR analytics could be the answer to these challenges and improve the data-driven HRM in a way that could help HR achieve its strategic position. Still relatively limited amount of research related to people analytics can be found and therefore its real potential remains to be a question mark. Hence in the present paper an effort has been made to understand the people analytics as a modern tool in Human Resource management.

The main objective of the study was to know the perception and level of awareness about people Analytics among the respondents, to understand the role of people analytics in human resource management, current use and issues of people analytics implementation and potential implication of using people analytics for the data-driven HRM.

Keeping in view the objectives of the study in the present Exploratory cum Descriptive research total 120 respondents were interviewed from different organizations by using convenient sampling method. A close-ended questionnaire was prepared and used as a main tool for data collection along with discussion and observation method.

The finding of the study shows that the uses of people analytics in managing human resources is still in its infancy stage and that the concept and its implication are little understood. It also found that there is a consensus regarding the importance of people analytics in organization and that the lack of people analytical skills among HR professionals is the main challenge in the implementation but importantly, the overall outlook for people analytics is positive. On the basis of major findings it can be concluded that in order to achieve the strategic role, HR needs to become more decision-oriented function with the focus of generating value to the business

Key Words: Data Driven, HRM, People Analytics

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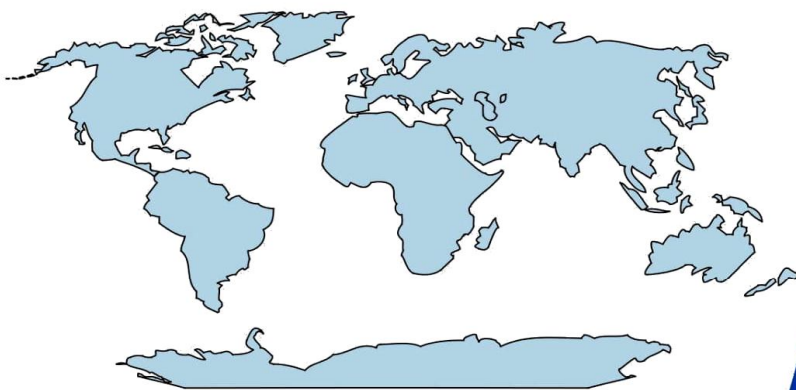
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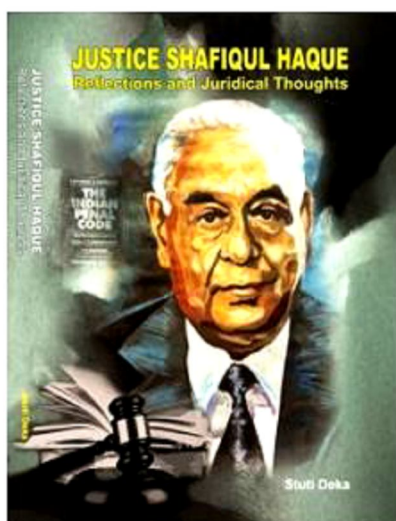
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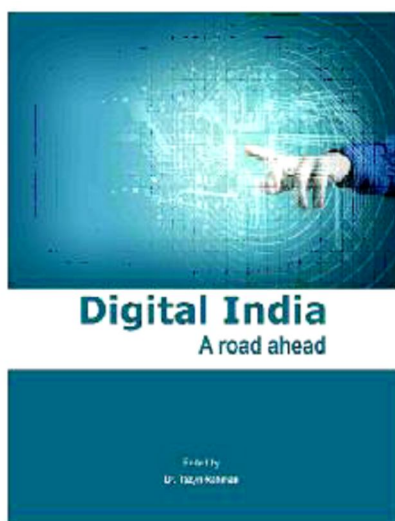
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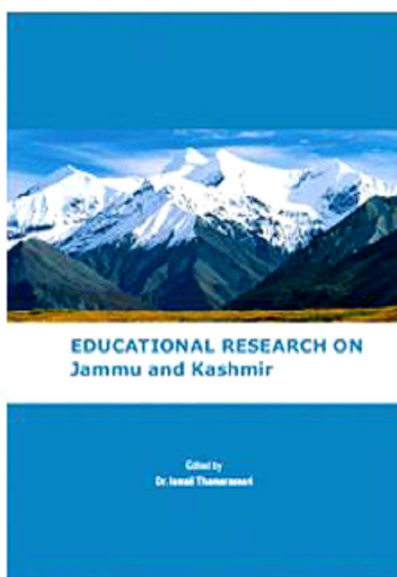
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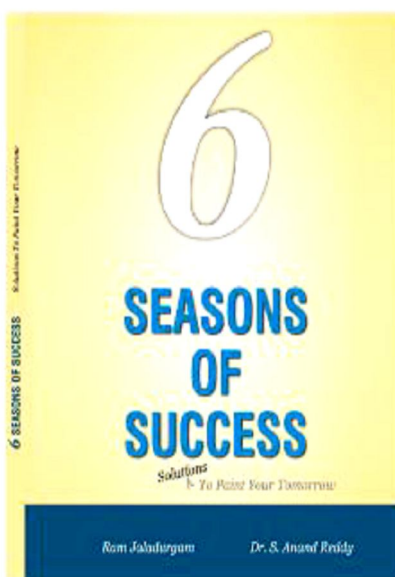
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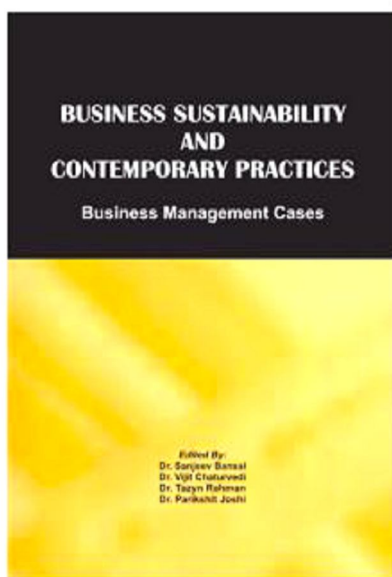
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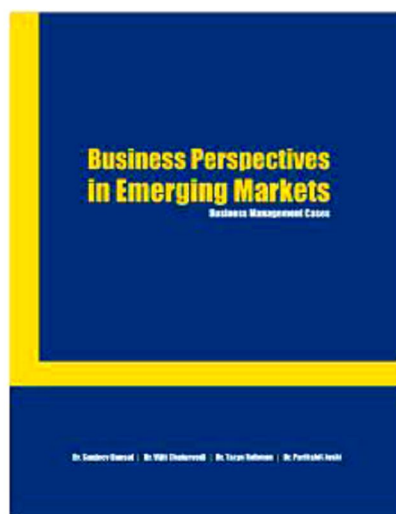
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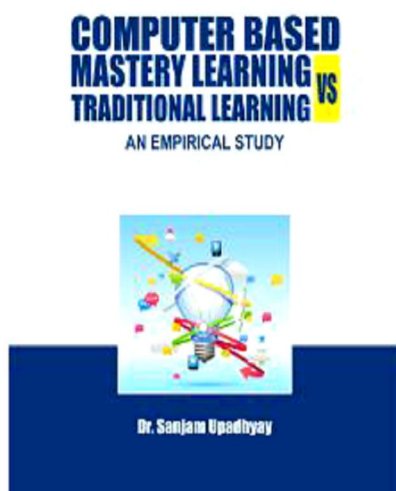
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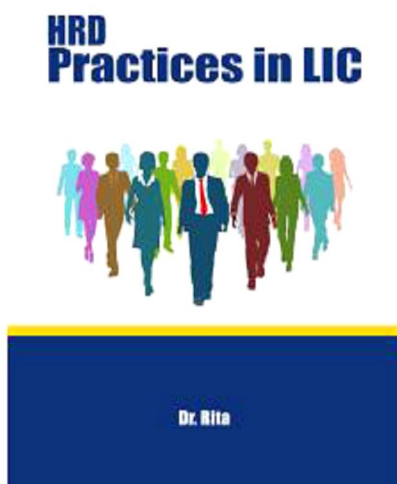
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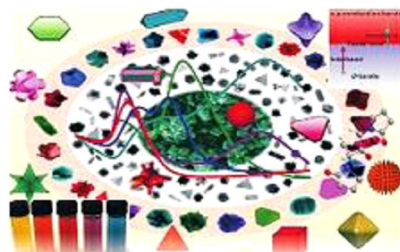
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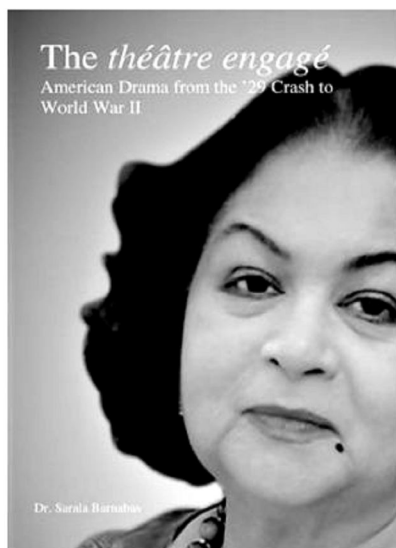ISBN : 978-81-939070-9-2

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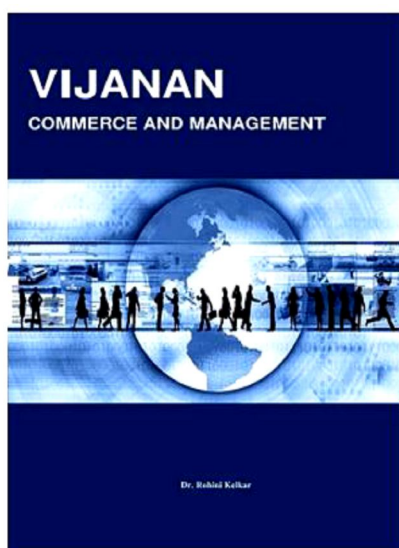
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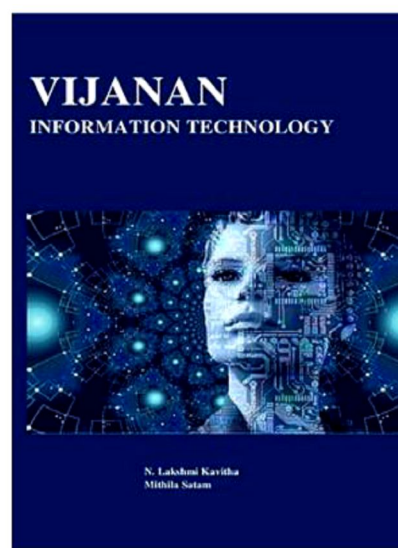
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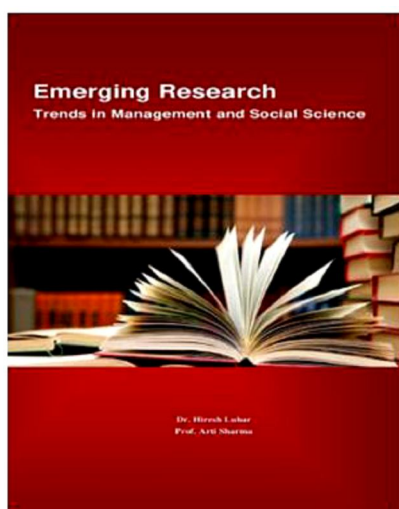
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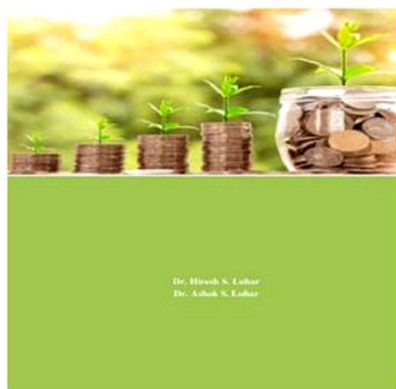
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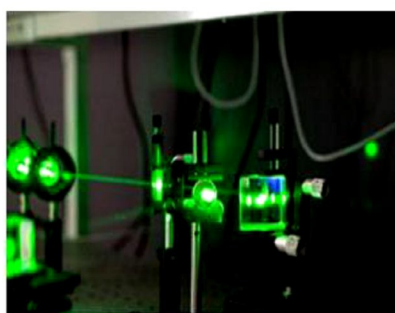Dr. Zakir Ahmed

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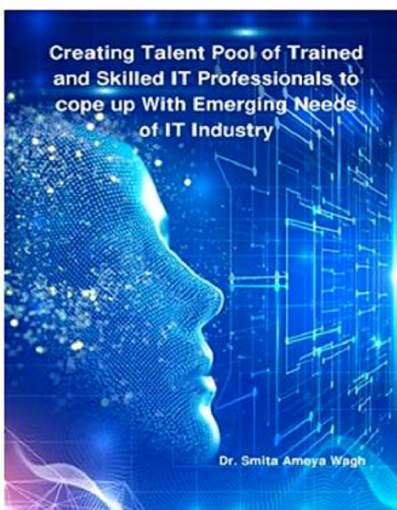Madhav N Rode
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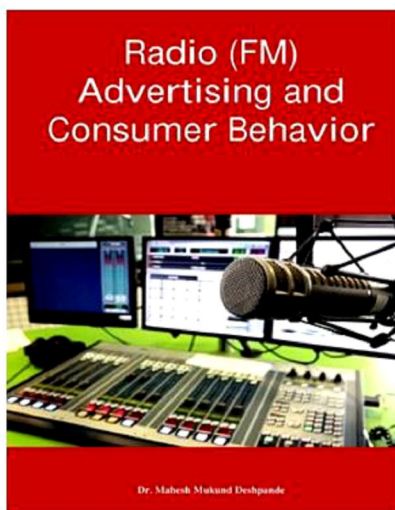### Agricultural Soils

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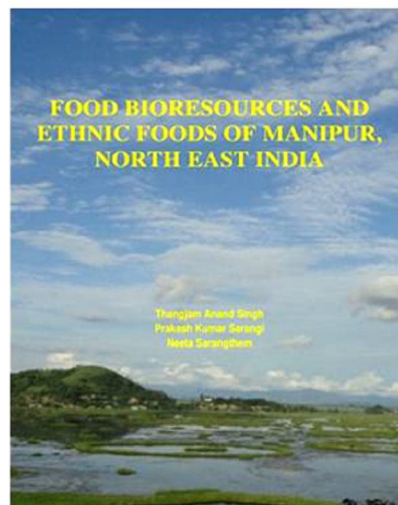## Indian Capital Market and Equity Culture in Maharashtra

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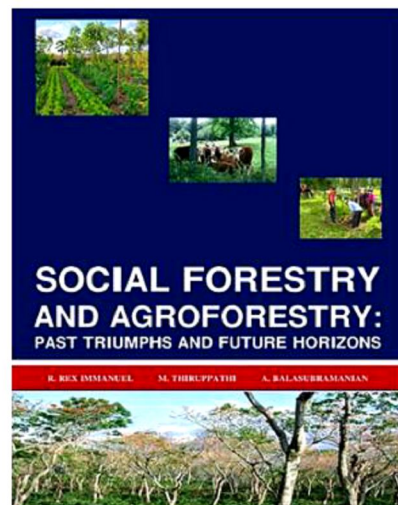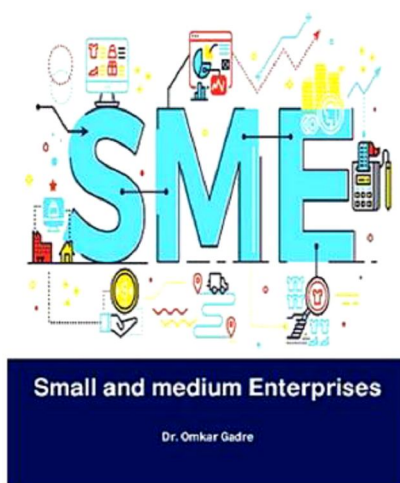ISBN : 978-81-943209-3-7

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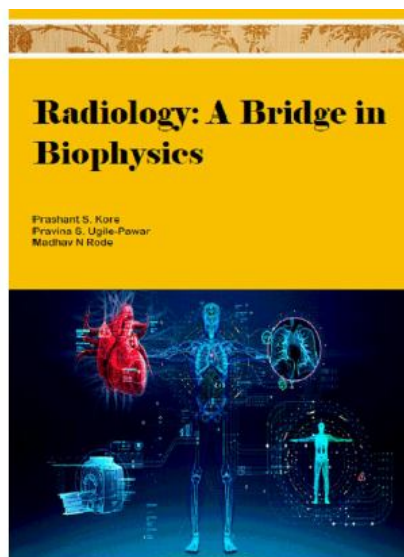
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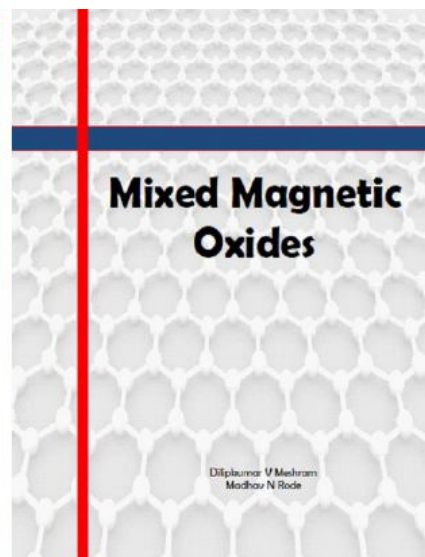
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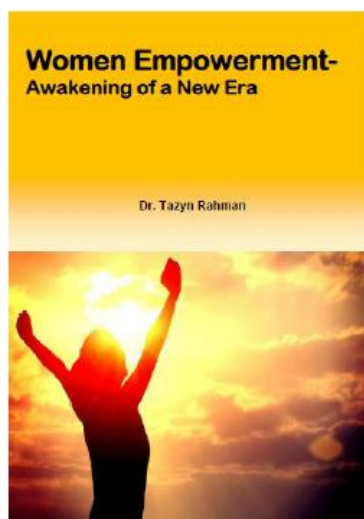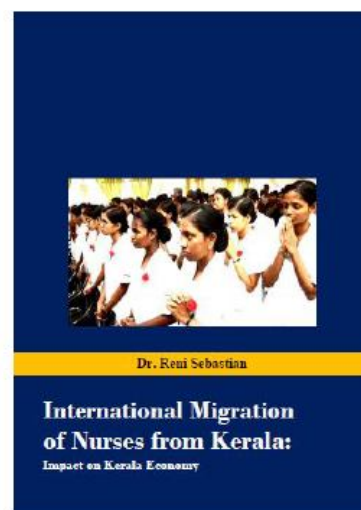
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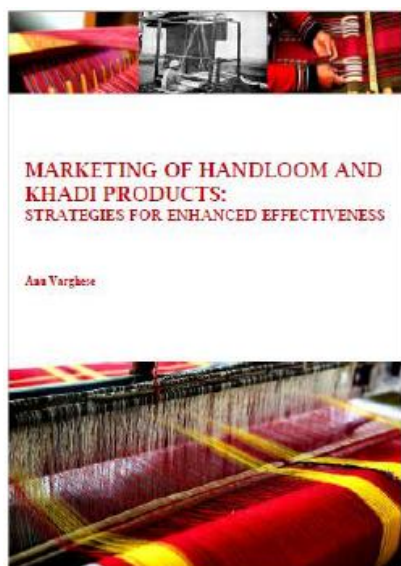ISBN : 978-81-944069-2-1

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