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CONTENTS

Research Papers

A STUDY ON CITIZEN PERCEPTION ABOUT SMART CITY INITIATIVE WITH REFERENCE TO AUNDH AREA IN PUNE CITY	1 – 5
Prof. Amruta Kirtane Deshpande and Dr. Kirti Gupta	
A STUDY ON EMOTIONAL INTELLIGENCE, ACADEMIC ACHIEVEMENT, SOCIO-ECONOMIC STATUS AND LOCALE AMONG SECONDARY SCHOOL STUDENTS	6 – 11
Zaffar Ahmad Nadaf	
COMBINATORIAL OPTIMIZATION IN NETWORK FLOW AND MACHINING TECHNIQUES: A RETROSPECTIVE AND LITERATURE REVIEW	12 – 26
Nilofer and Mohd. Rizwanullah	
CRYSTALLIZATION, SPECTRAL, THERMAL, DIELECTRIC, MECHANICAL AND NONLINEAR OPTICAL STUDIES ON UREA LITHIUM SULPHATE SINGLE CRYSTALS	27 – 34
P. S. Angel Prabha, P. Selvarajan and V. Bena Jothy	
DESIGN OF LOW POWER HIGH SPEED HYBRID ADDER USING GDI TECHNIQUE	35 – 41
E. Anu Joel and Dr. R. Manjith	
DETERMINANTS OF RURAL HOUSEHOLDS' INVESTMENT IN TAMIL NADU – A STUDY	42 – 50
Dr. B. Chinna Muthu	
DIGITAL LIBRARY: SERVICES AND ITS APPLICATIONS IN THE INFORMATION AGE	51 – 55
Fakir Ashraf Shah Sattar Shah and Dr. Shilpa Satish Waghchoure	
ENTREPRENEURSHIP DEVELOPMENT AND BRIDGING GENDER GAPS	56 – 65
Manjib Bhuyan and Dr. Prachi Pathak	
IMPACT OF CRM IN TELECOM SECTOR	66 – 73
Prachi Bansal	
INTELLIGENT CONTROL FOR INDUSTRIAL DRIVES	74 – 79
Keerthana P, Indu M and Vinoth G	
OPTICAL STUDIES ON ZnSO₄ DOPED MTS SINGLE CRYSTALS	80 – 84
M. Jeyalekshimi, T. H. Freeda and N. Neelakanda Pillai	
OVERVIEW OF HR ANALYTICS TO MAXIMIZE HUMAN CAPITAL INVESTMENT	85 – 88
Dr. Rita	
VARIATION IN RANGE OF COLOURS OBTAINED BY APPLICATION OF NATURAL DYES AND MORDANTS ON SILK FABRIC	89 – 91
Sanjeeda Iqbal and Arif Patel	

WASTE MANGAEMENT AND RECYCLING USING ARDUINO	92 – 96
Viji R, Vignesh K, ThamaraiSelvi G and Reshmashree M K	
CHALLENGES ENCOUNTERED BY TRIBAL POPULATION IN THE ERA OF GLOBALIZATION	97 – 105
Sumbl Ahmad Khanday and Ishfaq Majeed	
COMMODITIES FUTURES MARKET IN INDIA IN THE ICT ERA: THE WAY AHEAD	106 – 111
Dr. Manoj P K and Milan Sam Mathew	
JUVENILE JUSTICE SYSTEM-ISSUES AND CHALLENGES	112 – 117
Dr. Dipti Gala	
A STUDY OF CONSUMER PREFERNCE TOWARDS MOBILE WALLET AND UPI	118 – 137
Dr. Suchita Shukla and Chirag Malhotra	
A REPORT ON “A STUDY ON EVALUATION OF MUTUAL FUNDS PERFORMANCE AND INVESTOR BEHAVIOUR	138 – 146
Yogesh Puri and Shivani Shukla	
A STUDY ON IMPACT OF TRANING AND DEVELOPMENT ON EMPLOYEE’S PRODUCTIVITY AT SOCIETY MOTORS	147 – 157
Yogesh Puri and Pragya Dubey	
CONSUMER PERCEPTION TOWARDS MOBILE WALLET	158 – 172
Rashi Saxena and Sweta Chaudhary	
WASTE SEGREGATION USING PLC	173 – 178
Viji R, Kirubhakaran T, Hemalatha S and Rajesh S	
A STUDY ON THE BEHAVIOR OF MUSLIMS TOWARDS ISLAMIC FINANCIAL PLANNING AND MANAGEMENT IN MUMBAI CITY	179 – 186
Dr. Arvind S. Luhar and Ms. Shama A. Shah	
AN ADAPTION OF RETENTION STRATEGIES IN SELECT MANUFACTURING AND IT FIRMS: AN EMPLOYEE PERCEPTION	187 – 194
H. N Srikanta, Dr. G. V. Mruthyunjaya Sharma and Dr. Sudheendra Rao. L. N	
TOWARDS UNDERSTANDING THE MUSLIM PERSONAL LAW WITH SPECIAL REFERENCE TO WOMEN’S RIGHT	195 - 198
Dr. Badre alam Khan	
B R AMBEDKAR ON BUDDHISM	199 - 204
Karnika Dubey	
THE STUDY OF FACTORS AFFECTING CROPPING PATTERN IN BELAGAVI DISTRICT	205 - 212
Adivappa S. Gutti and Dr. S. B. Somannavar (Rtd)	
TERRORISM IN SOUTH ASIA: INDIA’S FOREIGN POLICY TOWARDS SOUTH ASIA UNDER UPA GOVERNMENT OF INDIA	213 - 218
Purabi Kundu	

DEPOSIT MOBILIZATION FROM THE UNSERVED	219 – 226
Fazle Hussain Wadiwala and Dr. Mohammad Khalil Ahmad	
AN EXPLANATORY STUDY ON ELECTRONIC BANKING IN INDIA: MODERNIZATIONS, CHALLENGES AND OPPORTUNITIES	227 - 232
Mr. Abbas Lalani	
WOMEN’S PARTICIPATION IN INDIAN POLITICS AFTER INDEPENDENCE	233 – 239
Baijayanti Ghosh	
AMBEDKAR’S THOUGHTS ON ISLAM AND INDIAN MUSLIMS	240 - 242
Buddhadeb Bag	
A SYSTEMATIC LITERATURE REVIEW: IMPLEMENTATION OF LEAN MANUFACTURING TOOLS IN VARIOUS SECTORS	243 - 247
Chinmay Pingulkar and Dr. N. S. Poonawala	
THE ROLE OF INDUSTRY MENTORSHIP AND ALUMNI ENGAGEMENT IN BRIDGING THE EMPLOYABILITY SKILL GAP	248 – 253
Aniket M Swaraj	

A STUDY ON CITIZEN PERCEPTION ABOUT SMART CITY INITIATIVE WITH REFERENCE TO AUNDH AREA IN PUNE CITY

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ABSTRACT

Smart city initiative is one of the steps towards development of cities. Smart city mission is to improve the quality of life of all the people residing in the area by supporting local development and connecting technology as a means to create smart outcomes for citizens. It is an innovative and quality based initiative taken by government of India. This paper aims to understand the awareness of such initiatives taken by government towards development of cities. Also the study aims to study the level of satisfaction that the citizens feel about the initiatives in this area. This was an exploratory study on understanding level of awareness about the smart city initiatives in citizens of the Aundh Area in Pune city. Data was collected from 100 respondents residing in Aundh Area in age group of 18 to 76 years. Findings of this study shows most of the citizens were not aware of all the initiatives under smart city project although citizens were satisfied with the way smart city project is running in Pune City. There are some issues like delay in execution of work, parking of vehicle, slow pace of work, theft of cycles etc. Although people residing in the Aundh area are quite satisfied with construction quality of these projects and also with initiatives on beautification of road.

In a nutshell, we conclude that smart city initiatives are very good for development of city although there are some challenges and issues in execution of these initiatives. Citizens recommended that there should be definite timeline mentioned about completion of any road construction, encroachment by hawkers should not be allowed.

Keywords: Smart City, Quality Of Life, Initiatives, Awareness

INTRODCUTION

Smart city refers to the city which is very much innovative with respect to the infrastructure, real estate, communication facilities and also market availability Smart city initiative is one of the steps towards development of cities. Smart city mission is to improve the quality of life of all the people residing in the area by supporting local development and connecting technology as a means to create smart outcomes for citizens. It is an innovative and quality based initiative taken by government of India. Watson (2015) Introduced the term Fantasy city which is quite similar to smart city, with regards to the concepts different ideas were compiled about how beautifully we can develop our city, where we stay. New vision of new city was illustrated as replicas of some of the counties like Singapore, Dubai.

Towards adding new dimension for urban development in 2015, the Government of India came up with concept of smart city, exact definition of smart city was not specified by our Government .The Government identified about 100 such smart cities for integrated urban development. To start with only twenty such cities would be taken up for planning and development in 2016, followed by rest of cities. Smart cities are making lot of sense they waste less, offer better quality of life and ensure a brighter future for the next generation.

Towards the development of smart city, public places would be given Wi-Fi internet access. Would be given to all public places. Smart city initiatives does not only cover new development of a region but even redevelopment of the existing infrastructure would be part of it. Total 98 cities including many state capitals are to be developed under this initiative. In the first round around twenty cities will be allotted with the fund to turn them into smart cities. The first ten smart cities of India would be Bhubaneswar, Pune, Jaipur, Surat, Ludhiana, Kochi, Ahmedabad, Solapur, New Delhi, and Udaipur.

PUNE SMART CITY INITIATIVES

Pune holds an important place as it has ranked second in the Smart Cities competition organized by the Government of India. Some of the initiatives which are already implemented in Pune are as follows

- Free Wi-Fi,
- Smart Public Bicycle Sharing,
- Smart Place making,

- Smart Street Redesign,
- SCOC and Smart Elements,
- Lighthouse
- Citizens Engagement

These are few of the successfully implemented projects of Pune Smart City.

With respect to Smart city project initiated by government of India ,In Pune city “Smart City Development Corporation Limited ” (PSCDCL) has proposed a plans to spend Rs 325 crore in initial year and develop 27-km smart street with free space for citizen initiatives. Mr.Rajendra Jagtap CEO, Smart City Corporation specified that (PSCDCL) has also planned initiatives such as E connectivity and Transport Hub under smart city in Aundh Area. Pune smart city project awareness campaign was initiated by (PSCDCL) in which under the category of citizen engagement, visit to societies were planned. Fortunately due to lot encouragement and positive response from the citizens of Pune lot of genuine responses were collected and used for development purpose.

Apart from it some other proposed planned initiatives are as follows.

- Around 200 poles with close circuit cameras,
- Computerised system for transport and an IT network for the bus rapid transport system will be set up.
- 35 Wi-Fi Towers
- E Buses and E Rickshaws for BRT Route
- awareness campaign by visiting societies
- Seating Accommodation
- Wide Footpaths for pedestrians
- Bicycle on rent
- Pedestrian friendly roads / bicycle-friendly roads
- Tactile paving Distinctive surface pattern alerts
- smart parking project(pilot run)
- Smart Mechanized Street Sweeping (Pilot Run)

CHALLENGES FACED BY CITIZEN RESIDING IN AUNDH AREA

1. Uneven paver blocks and broken paver blocks are creating difficulties in walking on road for pedestrians at the same time it was observed that Cycle track made by Smart City Corporation was just an extension of the road, motorcyclists encroach on these tracks which has created difficulties for the pedestrians.
2. It was observed that footpath was encroached by hawkers, Juice tuck-shops, Neera Sellers and Fruit vendors for selling their own stuff.
3. Parking of Vehicle is a big time challenge as lot of challenges are faced in conventional parking towards reducing congestion on city roads, it is extremely time-consuming which causes traffic congestion and adds to pollution levels in city.
4. Raw material like paver blocks, cement, stones, ready-mix concrete and asphalt at times was just lying on the roads.

REVIEW OF LITERATURE

A number of studies have been narrated on smart City Initiatives .In this research paper authors refer to various aspects related to smart city Initiatives undertaken by Government of India towards development of City.

Alawadhi et al (2012) tried to understand about new aspects of smart city initiatives. Author tried to characterize various aspects related to smart city into 8 different categories namely natural environment, people and communities connected, economy, technology based development, management & organization, policies and procedures, governance, and infrastructure.

Neirotti et al (2014) explored in their paper about all the different domains covered by a city's best practices in comparison with all the potential domains of smart city initiatives. Some of the variables which have influenced the planning process are economic, urban, demographic, and geographical parameters. There were multiple factors which affected on development of city. Economic development and urban structure were likely to influence a city's digital path. Factors like the geographical location affected on Smart city planning strategy, and the factors like density of population, affected the implementation of smart city work. Findings acts as guideline for policy makers to design strategies and implement accordingly.

Vanolo (2014) tried to understand by taking the reference of theoretical framework and case study of city politics in Italy. It was observed that smart city policies support new ways of thinking and imagining, organising, managing the city. On the other, this initiatives have also tried to create new moral order on the aspects of smart city by presenting specific technical factors in order to distinguish between the 'good' and 'bad' city.

Van den Bergh et al (2015) tried to find out about how a city, aspiring to become a 'smart city' with reference to the case of the City of Ghent, Belgium. Study also highlights the key challenges faced by cities. Garg (2017) said in her article some of the challenges which are faced by upcoming smart cities in India are financing, lack of centre and state coordination, no master plan, lack of technology, lack of skilled manpower, lack of facilities, and corruptions to name a few.

OBJECTIVES

1. To understand about the awareness of such initiatives taken by Government towards development of cities
2. To find perception about smart city initiatives from citizens residing in Aundh area of Pune city
3. To study the level of satisfaction that the citizens feel about the initiatives in this area.
4. To give recommendations towards such initiatives taken by Government of India

SCOPE OF THE STUDY

This paper is focused on citizens residing in Aundh area from Pune city and attempts to study perceptions about smart city initiatives. It is exploratory study in its nature.

RESEARCH METHODOLOGY

Data was collected from 100 respondents residing in Pune city specifically from Aundh area, they were in age group of 18 to 76 years who lived in Aundh for minimum 3 years. Respondents were selected through simple random sampling.

DATA COLLECTION

The data was collected with the help of structured Questionnaire and through unstructured interview and discussion with citizens from Aundh Area of Pune City.

ANALYSIS AND INTERPRETATION OF DATA

The collected data was analysed by MS Excel. The Statistical tools used for the analysis include tables, graphs and charts. Open-ended questions formed the base for recommendations in the report and to understand the true perceptions of the respondents from Pune City.

As it is not possible to present every question data in chart form, only concerned questions related to objectives are shown through charts.

FINDINGS

The age group of the respondents was mostly in the category of 18 to 76 years. Majority of respondents (65%) are males and remaining (35%) are females.

Key findings were drawn and suitable recommendations were made.

1. All of the respondents said they were aware of smart city initiatives taken by Government of India
2. All of the respondents were aware that Pune is one of the city which is selected under smart city
3. 74% of the respondents were aware about various initiatives like Free Wi-Fi, Smart Public Bicycle Sharing, Smart Place making, Smart Street Redesign, Beautification of streets under smart city undertaken in Pune and 26% of the respondents were not aware about some of the initiatives like SCOC (Smart City Operations Centre) and Smart Elements, Lighthouse, Citizens Engagement undertaken by Pune city "Smart City Development Corporation Limited"

4. Findings of the study shows that 48% of respondents had a perception that the smart city initiatives taken up in their area were appropriate as they believed, the construction quality used in execution of project was good, some of them also mentioned initiatives like beautification of road, Smart Public Bicycle Sharing was a great initiative taken in smart city, wherein rest of 52% of respondents had a perception that the smart city initiatives taken up in their area were not that appropriate as they experience different issues and difficulties in their area where they were residing, some of the issues reported were: delay in execution of work, parking of vehicle, slow pace of work, theft of cycles etc.
5. 48 % of respondents were quite satisfied with construction quality of these projects and also with initiatives on beautification of road and smart Public Bicycle sharing etc.
- 52 % of respondents were not satisfied with the same.

RECOMMENDATION

1. Indiscipline among people while riding their vehicle, creates lot of trouble and traffic jams, people should note the same, and should try to avoid such behaviour.
2. Parking of four wheel vehicle on cycle track should be avoided.
3. Delay in execution of the work should be communicated to the citizens by using communication Board on the actual site
4. Citizen engagement activities should be increased which can help in maximizing citizen participation towards creating better awareness about smart city initiatives.
5. By volunteering our time, citizens can help in beautification of the city.
6. We can encourage our friends, family, and colleagues to bike or carpool to work, which can help in controlling the City traffic.
7. People should have integrated, accommodating approach.

CONCLUSION

Smart city intends to improve the quality of life of all the people residing in the area by supporting local development and connecting technology as a means to create smart outcomes for citizens. With respect to Pune "Smart City Development Corporation Limited" has initiated various initiatives, some of the initiatives were planned and yet to implement. Study has found out that all of the respondents were aware of smart city initiative taken by Government of Maharashtra. People residing in Pune felt that, some of the initiatives taken towards smart city were appropriate, although there were some issues reported by Citizens residing in Aundh area towards various initiative taken in this area. Challenges faced by Citizen residing in Aundh area were identified. At the end some recommendations are made which can help to overcome these challenges and also to make smart city initiate successful

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A STUDY ON EMOTIONAL INTELLIGENCE, ACADEMIC ACHIEVEMENT, SOCIO-ECONOMIC STATUS AND LOCALE AMONG SECONDARY SCHOOL STUDENTS

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ABSTRACT

The fundamental aim of the present study was to inspect the relationship between emotional intelligence and academic achievement among students of higher secondary schools. Furthermore the proposed aimed to investigate the differences between emotional intelligence in relation to certain demographic variables of the students in relation to sexual orientation financial status and geographical location among secondary school students. The sample of 200 senior secondary school students was drawn from twenty senior secondary schools with the help of stratified random sampling technique from twin districts Anantnag and Kulgam of south Kashmir. Bar-On Emotional Quotient Inventory was used for the collection of data. Academic achievement of the members was measured through their year results. Pearson relationship and t-test was connected to test the theories. Positive relationship between the two constructs was found. Furthermore it was analysed that there exists a significant difference between emotional intelligence and gender, geographical location, socio-economic status and birth order of the students.

Keywords: Emotional intelligence, academic achievement, secondary school students, Kashmir Valley

INTRODUCTION

There is an increasing insight that much more than cognitive ability, emotional Proficiency not only occupies a central role in determining one's level of functioning but it also confirms the overall success in one's life (Nadaf, 2018). Emotional intelligence is regarded as a prominent build and is in-charge of accomplishment in every part of human life. Goleman (1995) speculated that emotional intelligence is the foundation of emotional capabilities that advance social and individual aptitudes among people for the better execution in working places. The individuals who have high competency can perceive feelings and affect others sentiments, when contrasted with the individuals who have less capacity. They standardise their feelings and have the capacity to perform better in association.

Bar-On (1996) discovered the term Emotional Quotient, and expressed that it reflects capacities related to arrangement of emotions related to ones-self and that of other individuals. Bar-Ons emotional remainder deals with the stock with extraordinary emotional endeavours. It was the first logical apparatus that deliberate emotional intelligence, and concentrated on individual and expert achievement (Abraham, 1999). Non-subjective mind shapes one's capacity and adapt weight to ecological requests.

Abi-Samra (2000), conducted a study on the relationship of emotional Intelligence and academic achievement, it revealed that the students with high emotional intelligence were emotionally savvy when contrasted with the individuals with lower level of emotional intelligence. In addition to that, a correlational study conducted on the relationship between academic achievement and Emotional Intelligence among secondary school students. It was discovered there exists a relationship between academic achievement and Emotional Intelligence among students (Bar-On & Parker, 2000). Another study discovered the relationship among the segments of the emotional intelligence and its profound consequences for students' academic routine under sex contrasts. The analyst reasoned that students who got high score on emotional intelligence had great academic achievement relatively to those students who acquired low scores on these scales (Asif, 2007). Bruni et al. (2006) inspected the relationship between psycho-social components and emotional intelligence on school students. This study revealed that the females had higher academic achievement and emotional intelligence than males. Herbert and Stipek (2005) examined that young ladies created verbal abilities sooner than young men's that implies they were more talented in articulating their sentiments and have significant ability of utilising words.

Conception request is a successive request of kids in a gang. Conception request assumes an imperative part in organizing the feelings among kin. Adler (1956) is viewed as the most conspicuous in such manner. Adler is of the perspective that youngsters who conceived first in their family stay steady, helpful, and mindful. They deal with their young siblings and sisters, while centre conceived kids endure in distinctive edifices and the last conceived infants were given much significance. Herrera and Zonjanc (2003) guaranteed that kids who conceived first in their families have attributes of obligation, mentally solid, faithful and minimum emotional, and later conceived have the qualities of expressive more judicious, oppressed and garrulous. They make clear, the first conceived are viewed as, more coherent than later. Through their studies they asserted, most seasoned

youngsters accomplish higher academic proficiencies, than centre conceived who have social attributes, and last conceived keep emotional and decisive qualities.

Financial status is the blend of monetary and social angles that measure singular's position in the public eye. An overwhelming specialist has solid impact on emotional intelligence and emotional related components. It has central impacts on achievement and academic achievements. Brown, Curran, and Smith (2003) chipped away at the relationship over the financial status and emotional intelligence and discovered noteworthy relationship in the middle of SES and emotional intelligence.

A descriptive study conducted on the nursing students of Namdar, Sahebiagh, Ebrahimi, and Rahmani (2008) on the relationship between financial status and emotional intelligence. Results demonstrated the critical relationship between variables i.e. financial status of the students and emotional intelligence.

In nutshell, emotional intelligence is the capacity to see and express feeling, acclimatize feeling, comprehend and direct feeling in the self as well as in other. There is a genuinely impressive collection of literature, which recommends that Emotional Intelligence is absolutely related with the academic achievement in instructive settings. Therefore an attempt has been made by the researcher to analyse whether there is any relationship between Emotional Intelligence and Academic Achievement, with the view that the outcomes end up being will help to students and parents to plan better the new century.

OBJECTIVES OF THE STUDY

Objective 1

To study the relationship between Emotional Intelligence and Academic Qualification of the students.

Objective 2

study the difference between Emotional Intelligence and Gender, Geographical Location, Socio-economic Status and Birth Order of the students.

Sub objectives

- 2.1 To study the difference between Emotional Intelligence and Gender of the students.
- 2.2 To study the difference between Emotional Intelligence and Geographical Location of the students.
- 2.3 To study the difference between Emotional Intelligence and Socio-economic Status of the students.
- 2.4 To study the difference between Emotional Intelligence and Birth Order of the students.

Keeping in view, the objectives and review of related literature following hypothesis were framed:

HYPOTHESIS OF THE STUDY:

- H1. There exists a significant relationship between Emotional intelligence and Academic Achievement.
- H2. There exists a significant difference between Emotional Intelligence and Gender, Geographical origin, Socio-economic Status of the students.

Sub-Hypothesis

- H2.1. There exists a significant difference between Emotional Intelligence and Gender of the students
- H2.2. There exists a significant difference between Emotional Intelligence and Geographical origin of the students.
- H2.3. There exists a significant difference between Emotional Intelligence and Socio-economic Status of the students.
- H2.4. There exists a significant difference between Emotional Intelligence and Birth Order of the students.

RESEARCH DESIGN AND METHODOLOGY

Research Design in the sense of the word usually implies decisions, which are taken before hand to ensure that potential mistakes in research are eliminated, thereby maintaining the lowest possible cost (Nadaf & Siddiqui, 2017). Moreover, the research design is the conceptual structure within which research is conducted; it constitutes the blueprint for the collection, measurement and analysis of data. Research design stands for advance planning of the methods to be adopted for collecting the relevant data and the techniques to be used for their analysis keeping in view of the research objectives. A descriptive research design is adopted by the researcher in order to meet the objectives of the study.

POPULATION

The present study was carried out on senior secondary school students from twin districts Anantnag and Kulgam of south Kashmir. The researcher selected the population due to operational ease. Therefore all the senior secondary school students of District Anantnag and Kulgam were viewed as a Population of the study.

SAMPLE

The impediments which came in studying of the entire population are cost, time and other factors. According to David S. Fox (1969), "It is not possible to collect data from every respondent relevant to our study, but only from some fractional part of the respondents. This process of selecting the fractional part is called sampling." Therefore sampling is an important and crucial part of behavioural research. For the present study a sample of 200 (male = 100 and female 100) senior secondary school students from twin districts Anantnag and Kulgam of south Kashmir were drawn through stratified random sampling technique. The age of the students ranges from 16 to 19 years. After providing a brief presentation and important guidelines by the researcher, educated assent was received from the respondents. Inventory was directed on the respondents, and forty-five minutes were given to them for the consummation of inventory.

MEASURES

In the present study, Bar-On Emotional Quotient Inventory created by Bar-On (1996) was connected on current sample. This Inventory has five principle parts and 15 sub-scales. Academic achievement of the students was measured through their imprints in the yearly examination at Sr. Secondary School level.

ANALYSIS AND INTERPRETATION

The principle goal of the momentum examination was to study the relationship of emotional intelligence with academic achievement at higher secondary school level. The other target was to analyse the part of different demographic variables of the students including sexual orientation financial status, parental training, and land root in emotional intelligence. Data was analysed on the basis of the objectives formulated for the study and to serve that purpose appropriate statistical techniques were used with the help of SPSS V 21. Statistical techniques like Pearson connection was connected to focus the relationship of emotional intelligence with academic achievement. Besides that, t-test was utilised to analyse the mean contrasts concerning different demographic variables.

Objective 1

To study the relationship between Emotional Intelligence and Academic Qualification of the students.

H1. There exists a significant relationship between Emotional intelligence and Academic Achievement.

To meet the objective 1 Pearson Product Moment Correlation was used to establish a relationship between emotional Intelligence and Academic Achievement among senior secondary school students of District Anantnag and Kulgam

Table-1: Relationship between Emotional Intelligence and Academic Achievement

Scale	<i>n</i>	<i>M</i>	<i>SD</i>	<i>r</i>
Emotional Intelligence	200	373.61	88.35	.81*
Academic Achievement		672.69	29.57	

* $p < .001$

Interpretation of Table 1

The stated table demonstrates that the Pearson product moment co-relation between emotional intelligence and academic achievement on Bar-On Emotional Intelligence Scale. The stated table reveal that there is a positive relationship between emotional intelligence and academic achievement. Therefore the H1 is accepted

Objective 2

To study the difference between Emotional Intelligence and Gender, Geographical Location, Socio-economic Status and Birth Order of the students.

H2. There exists a significant difference between Emotional Intelligence and Gender, Geographical origin, Socio-economic Status of the students.

The Hypothesis2 was divided into three sub-hypothesis. To test these sub-hypothesis a t-test was utilized to find differences among means Emotional Intelligence on the basis of Gender, Socio-economic Status, Geographic Location and Birth order

Table-2: Difference between Emotional Intelligence and Demographic Variables

Variables	Categories	N	M	SD	t
Gender	Male	100	369.50	31.52	1.98*
	Female	100	377.72	27.02	
Geographical origin	Urban	100	376.82	31.20	2.54**
	Rural	100	370.40	27.62	
Socio-economic status	Above Poverty Line	86	373.18	27.39	2.20**
	Below poverty Line	114	373.09	31.22	
Birth order	First born	60	375.86	32.41	2.76**
	Later born	140	372.64	28.38	

* $p < .05$, ** $p < .01$ **Interpretation of Table 2**

The stated Table determines the difference in scores of emotional intelligence among secondary school students in relation to certain demographic variables. The table demonstrate that there exists a significant difference between male and female students on emotional intelligence scale. Female students scored high when contrasted with male students. In addition to that there exists a significant distinction between urban students and rural students on emotional intelligence scale. Students from urban regions scored high on Bar-on emotional intelligence scale when contrasted with students from provincial territories. Moreover, the stated table revealed that there exists a significant difference between emotional intelligence and socio-economic status. Students from above poverty line scored high on the scale of emotional intelligence than the students from below poverty line. Further the said table demonstrated there exists a significant difference between emotional intelligence and birth order of the students. The students who are born first, are more emotionally intelligent then the students who are born later.

Therefore we can conclude that the results are in accordance with the hypothesis.

DISCUSSION

The relationship between emotional intelligence and academic achievement was wanted to explore in this learn at higher secondary school testament level among students. To accomplish this goal, the study was carried out over the 200 hundred students from twenty public and private senior secondary schools of District Anantnag and Kulgam (J&K) India. The Bar-On Emotional Quotient Inventory (1996) was utilized to collect data from the respondents. The acquired marks by the students in their previous examinations were viewed as the academic achievement. Through demographic sheet, other data including age, sexual orientation, and financial status of the understudy's guardians, rustic urban living status, and conception request and so on were taken into record, the impacts of demographic variables on Emotional Intelligence and Academic Achievement was attempted to investigate. The analyst chose to take information from the five universities of open and private division through utilizing a fitting procedure. Through descriptive statistics, all the variables were considered of and were discovered their mean contrasts.

The principal hypothesis "Emotional intelligence would be positively related with academic achievement." was bolstered as there is tasteful relationship between said variables. The finding was in accordance with past examination (Richardson & Evans, 1997; Abraham, 1999; Parker & Majeski, 2002; Pool, 1997). Inquires about showed that emotionally solid students have high academic profile.

The second hypothesis foreseen that "female students would have high level of emotional intelligence scores on Emotional Quotient Inventory when contrasted with male students". In the present examination, this hypothesis was bolstered by watched sex distinction. Mean contrast was significant and demonstrated that female students are all the more emotionally solid when contrasted with the male students. The results are in line with the Nadaf (2018) and Herbert and Stepik (2005) who also found that the female folks score possess higher emotional intelligence than males. Bar-On and Cohen, (2003) discoveries on sex distinction likewise bolster this hypothesis that women have preferable emotional security nearly over men.

The third hypothesis "Students from upper financial class will demonstrate high level of Emotional Intelligence than the students from lower financial class" was upheld in the present study. The discoveries are predictable with the past examination by Namdar et al. (2008) on Emotional Intelligence and financial parts of students. Bar-On emotional remainder stock was utilized. Significant relationship was found between variables. Investigation of Brown, Curran and Smith (2003) likewise underpins this hypothesis which was directed on Emotional Intelligence, test execution academic achievement, dialect advancement, and instructive desires.

The fourth hypothesis was that "students from urban territory will indicate high level of emotional intelligence than the students of rustic zone." This hypothesis was halfway upheld by results. Nichols (2000) examined the relationship between the private status and emotional intelligence, and discovered significant relationship inside of the variables.

The fifth hypothesis expressed, as "first conceived students will demonstrate high level of emotional intelligence than the later conceived" was likewise upheld in the examination. Sulloway (2007) led examines on the emotional intelligence and the conception request relationship and finished in number relationship inside of the variables. He expressed that firstborns are all the more emotionally better when contrasted with later conceived. Another study on emotional intelligence and conception arrange by Walton (2001) that discovered a significant distinction between emotional intelligence and conception request.

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COMBINATORIAL OPTIMIZATION IN NETWORK FLOW AND MACHINING TECHNIQUES: A RETROSPECTIVE AND LITERATURE REVIEW

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ABSTRACT

Combinatorics is a branch of pure mathematics concerning the study of discrete objects. The problems of network in which we investigate those values for the dimensions of the links and/or for the flows on the links which optimize the objective function, comes under optimization in networks flow, e.g. to find minimum cost, length, max. flow, profit etc. Various conventional techniques employed for machining optimization include geometric programming, geometric plus linear programming, goal programming, sequential unconstrained minimization technique, dynamic programming etc. The latest techniques for optimization in machining include fuzzy logic, scatter search technique, genetic algorithm, Taguchi technique and response surface methodology etc. The first part of the research paper highlights the historical development of combinatorial Optimization techniques specially focuses on network optimization techniques and then describes some very exciting future opportunities. In other part, an attempt is made to review the literature on optimizing machining parameters in turning processes.

Keywords: Combinatorics, Heuristics, Network flow, Max flow, Shortest Path, Machining optimization etc.

PART-I**1. INTRODUCTION**

Combinatorics is a branch of pure mathematics concerning the study of discrete (and usually finite) objects. It is related to many other areas of Mathematics, such as algebra, probability theory, ergodic theory and geometry, as well as to applied subjects in computer science and statistical physics.

2. COMBINATORIAL THEORY

Combinatorial theory (or combinatorial analysis) is concerned with problems of enumeration and structure of mathematical objects. The objects may represent physical situation or things in applications or may be purely abstract and under study for theoretical reason. It is common practice to refer to the subject matter of combinatorial theory as combinatorics. Counting the number of objects of a certain type or the number of ways a particular operation can be carried out from the central problem of enumerative combinatorial theory.

3. COMBINATORIAL OPTIMIZATION

Combinatorial Optimization is a branch of optimization. Its domain is optimization problems, where the set of feasible solution is discrete or can be reduced to a discrete one, and the goal is to find the best possible solution. It is a branch of applied mathematics and computer science, related to operations research, algorithm theory and computational complexity theory that sit at the intersection of several fields, including artificial intelligence, mathematics and software engineering. For Example Vehicle Routine Problem, Traveling Salesman Problem (TSP), Minimum Spanning Tree Problem, Integer Programming Problem, Eight Queen Puzzle, Knapsack Problem, Cutting Stock Problem and so on.

4. NETWORK OPTIMIZATION

The problems of network in which we investigate those values for the dimensions of the links and/or for the flows on the links which optimize the objective function (maximization or minimization), i.e. the technique which apply to the network problems to optimize the objective function under the given circumstances. For the solution of different situation/problems such as minimum cost, length, max. flow, profit etc. in networks and other like, the following family of network optimization techniques can be used: Minimal Spanning Tree, Shortest route/path algorithm, Maximum flow algorithm, Minimum cost network flow, Critical Path algorithm (CPM), Transportation & Assignment Problems, Dynamic Programming, Simulation Technique, etc.

5. HISTORY OF COMBINATORICS

Basic combinatorial concepts and enumerative results have appeared throughout the ancient world. In sixth century BC, physician Sushruta asserts in Sushruta Samhita that 63 combinations can be made out of 6 different tastes, taken one at a time, two at a time, etc., thus computing all $2^6 - 1$ possibilities. Roman historian Plutarch discusses an argument between Chrysippus (3rd century BC) and Hipparchus (2nd century BC) of a rather delicate enumerative problem, which was later shown to be related to Schroder numbers. In the Ostomachion, Archimedes (3rd century BC) calculates the number of solutions of a certain tiling puzzle.

In the Middle Ages, combinatorics continued to be studied, largely outside of the European civilization. Notably, an Indian mathematician Mahavira (c. 850) provided the general formulae for the number of permutations and combinations. The philosopher and astronomer Rabbi Abraham ibn Ezra (c. 1140) established the symmetry of binomial coefficients, while a closed formula was obtained later by the Talmudist and mathematician Levi ben Gerson (better known as Gersonides), in 1321, the arithmetical triangle— a graphical diagram showing relationships among the binomial coefficients— was presented by mathematicians in treatises dating as far back as the 10th century, and would eventually become known as Pascal's triangle. Later, in Medieval England, Campanology provided examples of what is now known as Hamiltonian cycles in certain Cayley graphs on permutations.

During the Renaissance, together with the rest of Mathematics and the sciences, combinatorics enjoyed a rebirth. Works of Pascal, Newton, Jacob Bernoulli and Euler became foundational in the emerging field. In the modern times, the works by J. J. Sylvester (late 19th century) and Percy Mac Mahon (early 20th century) laid the foundation for enumerative and algebraic combinatorics. Graph theory also enjoyed an explosion of interest at the same time, especially in connection with the four colour problem.

6. ENUMERATIVE COMBINATORICS

It is the most classical area of combinatorics, and concentrates on counting the number of certain combinatorial objects. Even though many of the problems that arise in applications have a relatively simple combinatorial description. Fibonacci numbers is the basic example of a problem in enumerative combinatorics. The twelvefold way provides a unified framework for counting permutations, combinations and partitions.

7. ANALYTIC COMBINATORICS:

Analytic Combinatorics concerns the enumeration of combinatorial structures using tools from complex analysis and probability theory. In contrast with enumerative combinatorics which uses explicit combinatorial formulae and generating functions to describe the results, the analytic combinatorics aims at obtaining the asymptotic formulae.

8. PARTITION THEORY

Partition theory studies various enumeration and asymptotic problems related to integer partitions, and is closely related to q-series, special functions and orthogonal polynomials. Originally a part of number theory and analysis, it is now considered a part of combinatorics or an independent field. It incorporates the bijective approach and various tools in analysis, analytic number theory, and has connections with statistical mechanics.

9. GRAPH THEORY

Graphs are basic objects in combinatorics. The questions range from counting (e.g. the number of graphs on n vertices with k edges) to structural (e.g. which graphs contain Hamiltonian cycles) to algebraic questions (e.g. given a graph G and two numbers x and y , does the Tutte polynomial $TG(x,y)$ have a combinatorial interpretation?). It should be noted that while there are very strong connections between graph theory and combinatorics, these two are sometimes thought of as separate subjects.

10. PROBABILISTIC COMBINATORICS

In Probabilistic Combinatorics, the questions are of the following type: what is the probability of a certain property for a random discrete object, such as a random graph. For instance, what is the average number of triangles in a random graph? Probabilistic methods are also used to determine the existence of combinatorial objects with certain prescribed properties (for which explicit examples might be difficult to find), simply by observing that the probability of randomly selecting an object with those properties is greater than 0. This approach proved highly effective in applications to extremal combinatorics and graph theory. A closely related area is the study of finite Markov chains, especially on combinatorial objects. Here again probabilistic tools are used to estimate the mixing time.

11. ALGEBRAIC COMBINATORICS

Algebraic combinatorics is an area of Mathematics that employs methods of abstract algebra, notably group theory and representation theory, in various combinatorial contexts and, conversely, applies combinatorial techniques to problems in algebra. Within the last decade or so, algebraic combinatorics came to be seen more expansively as the area of mathematics where the interaction of combinatorial and algebraic methods is particularly strong and significant. One of the fastest developing subfields within algebraic combinatorics is combinatorial commutative algebra.

Geometric combinatorics is related to convex and discrete geometry, in particular polyhedral combinatorics. It asks, e.g. how many faces of each dimension can a convex polytope have. Metric properties of polytopes play

an important role as well, e.g. the Cauchy theorem on rigidity of convex polytopes. Special polytopes are also considered, such as permutohedron, associahedron and Birkhoff polytope.

12. TOPOLOGICAL COMBINATORICS

Combinatorial analogs of concepts and methods in topology are used to study graph coloring, fair division, partitions, partially ordered sets, decision trees, necklace problems and discrete Morse theory.

13. ARITHMETIC COMBINATORICS

Arithmetic combinatorics arose out of the interplay between number theory, combinatorics, ergodic theory and harmonic analysis. It is about combinatorial estimates associated with arithmetic operations (addition, subtraction, multiplication, and division). Additive combinatorics refers to the special case when only the operations of addition and subtraction are involved. One important technique in arithmetic combinatorics is the ergodic theory of dynamical systems.

14. INFINITARY COMBINATORICS

Infinitary combinatorics, or combinatorial set theory, is an extension of ideas in combinatorics to infinite sets. It is a part of set theory, an area of mathematical logic, but uses tools and ideas from both set theory and extremal combinatorics.

15. HISTORY OF COMBINATORIAL OPTIMIZATION

As a coherent mathematical discipline, combinatorial optimization is relatively young. Only in the 1950's, when the unifying tool of linear and integer programming became available and the area of Operations Research got intensive attention, these problems were put into one framework, and relations between them were laid. Indeed, linear programming forms the hinge in the history of combinatorial optimization. Its initial conception by Kantorovich and Koopmans was motivated by combinatorial applications, in particular in transportation and transshipment. After the formulation of linear programming as generic problem, and the development in 1947 by Dantzig of the simplex method as a tool. One has tried to attack about all combinatorial optimization problems with linear programming technique quite often very successfully.

16. THE ASSIGNMENT PROBLEM

Monge 1784

The assignment problem is one of the first studied combinatorial optimization problems. It was investigated by G. Monge [1784], albeit camouflaged as a continuous problem, and often called a transportation problem. Monge was motivated by transporting earth, which he considered as the discontinuous, combinatorial problem of transporting molecules. There are two areas of equal acreage, one filled with earth, the other empty. The question is to move the earth from the first area to the second, in such a way that the total transportation distance is as small as possible.

Bipartite matching: Frobenius 1912-1917, Konig 1915-1931

Finding a largest matching in a bipartite graph can be considered as a special case of the assignment problem. The fundamentals of matching theory in bipartite graphs were laid by Frobenius (in terms of matrices and determinants) and Konig. While Frobenius result characterizes which bipartite graphs have a perfect matching, a more general theorem characterizing the maximum size of matching in a bipartite graph was found by Konig [1930].

Egervary 1931

After the presentation by Konig of his theorem at the Budapest Mathematical and Physical Society on 26 March 1931, E. Egervary [1931] found a weighted version of Konig's theorem. It characterizes the maximum weight of a matching in a bipartite graph, and thus applies to the assignment problem.

Egervary's theorem and proof method formed, in the 1950's, the impulse for Kuhn to develop a new, fast method for the assignment problem, which he therefore baptized the Hungarian method. But first there were some other developments on the assignment problem.

Easterfield 1946

The first algorithm for the assignment problem might have been published by Easterfield [1946]. He formulated and proved a theorem equivalent to Konig's theorem and he described a primal-dual type method for the assignment problem from which Egervary's result can be derived.

Cycle reduction is an important tool in combinatorial optimization. In a RAND Report dated 5 December 1949, Robinson [1949] reports that an 'unsuccessful attempt' to solve the traveling salesman problem, led her to the following cycle reduction method for the optimum assignment problem.

Let matrix (a_{ij}) be given, and consider any permutation π . Define for all i, j a 'length' l_{ij} by: $l_{ij} : a_{j\pi(i)} - a_{i,\pi(i)}$ if $j \neq \pi(i)$ and $l_{i,\pi(i)} = \infty$. If there exists a negative-length directed circuit, there is a straightforward way to improve π . If there is no such circuit, then π is an optimal permutation.

Von Neumann considered the complexity of the assignment problem. In a talk in the Princeton University Game Seminar on October 26, 1951, he showed that the assignment problem can be reduced to finding an optimum column strategy in a certain zero-sum two person game, and that it can be found by a method given by Brown and Von Neumann [1950].

17. THE HUNGARIAN METHOD

The basic combinatorial (non-simplex) method for the assignment problem is the Hungarian method. The method was developed by Kuhn [1955b,1956], based on the work of Egervary [1931], when Kuhn introduced the name Hungarian method for it.

18. THE TRANSPORTATION PROBLEM

Tolstoy 1930

An early study of the transportation problem was made by A.N. Tolstoy [1930]. He published, in a book on transportation planning issued by the National Commissariat of Transportation of the Soviet Union, an article called Methods of finding the minimal total kilometrage in cargo-transportation planning in space, in which he formulated and studied the transportation problem, and described a number of solution approaches, including the, now well-known, idea that an optimum solution does not have any negative-cost cycle in its residual graph.

Kantorovich 1939

Apparently unaware (by that time) of the work of Tolstoy, L.V. Kantorovich studied a general class of problems, that includes the transportation problem. Kantorovich outlined a new method to maximize a linear function under given linear inequality constraints. The method consists of determining dual variables ('resolving multipliers') and finding the corresponding primal solution. Kantorovich [1942] also gave a cycle reduction method for finding a minimum-cost transshipment (which is a un-capacitated minimum-cost flow problem). He restricted himself to symmetric distance functions.

Hitchcock 1941

Independently of Kantorovich, the transportation problem was studied by Hitchcock and Koopmans. Hitchcock [1941] might be the first, giving a precise mathematical description of the problem. The interpretation of the problem is, in Hitchcock's words:

He showed that the minimum is attained at a vertex of the feasible region, and he outlined a scheme for solving the transportation problem which has much in common with the simplex method for linear programming.

Koopmans 1942-1948

Koopmans was appointed, in March 1942, as a statistician on the staff of the British Merchant Shipping Mission, he was interested in tanker freights and capacities. Koopmans [1942] analyzed the sensitivity of the optimum shipments for small changes in the demands. In this memorandum (first published in Koopmans' Collected Works), Koopmans did not yet give a method to find an optimum shipment.

Linear Programming and the Simplex Method 1949-1950:

The transportation problem was pivotal in the development of the more general problem of linear programming. The simplex method, found in 1947 by G.B. Dantzig, extends the methods of Kantorovich, Hitchcock, and Koopmans. It was published in Dantzig [1951b]. In another paper, Dantzig [1951a] described a direct implementation of the simplex method as applied to the transportation problem.

Menger's Theorem and Maximum Flow

Menger's theorem forms an important precursor of the max-flow min-cut theorem found in the 1950's by Ford and Fulkerson. The topologist Karl Menger published his theorem in an article called Zur allgemeinen Kurventheorie (On the general theory of curves) (Menger [1927]). The result can be formulated in terms of graphs as: Let $G = (V, E)$ be an undirected graph and let $P, Q \subseteq V$. Then the maximum number of disjoint $P - Q$ paths is equal to the minimum cardinality of a set W of vertices such that each $P - Q$ path intersects W .

Maximum Flow 1954

The maximum flow problem is: given a graph, with a 'source' vertex s and a 'terminal' vertex t specified, and given a capacity function c defined on its edges, find a flow from s to t subject to c , of maximum value. In their basic paper Maximal Flow through a Network (published first as a RAND Report of 19 November 1954), Ford and Fulkerson [1954] mentioned that the maximum Flow problem was formulated by T.E. Harris as follows:

19. THE MAX-FLOW MIN-CUT THEOREM

In the RAND Report of 19 November 1954, Ford and Fulkerson [1954] gave (next to defining the maximum flow problem and suggesting the simplex method for it) the max-flow min-cut theorem for undirected graphs, saying that the maximum flow value is equal to the minimum capacity of a cut separating source and terminal. In a report of 26 May 1955, Robacker [1955a] showed that the max-flow min-cut theorem can be derived also from the vertex-disjoint version of Menger's theorem.

20. MINIMUM-COST FLOWS

The minimum-cost flow problem was studied, in rudimentary form, by Dantzig and Fulkerson [1954], in order to determine the minimum number of tankers to meet a fixed schedule. Similarly, Bartlett [1957] and Bartlett and Charnes [1957] gave methods to determine the minimum railway stock to run a given schedule. It was noted by Orden [1955] and Prager [1957] that the minimum-cost flow problem is equivalent to the capacitated transportation problem.

A basic combinatorial minimum-cost flow algorithm was given (in disguised form) by Ford and Fulkerson [1957]. It consists of repeatedly finding a zero-length s-t path in the residual graph, making lengths non-negative by translating the cost with the help of a potential. If no zero-length path exists, the potential is updated. The complexity of this method was studied in a report by Fulkerson [1958].

21. SHORTEST SPANNING TREE

The problem of finding a shortest spanning tree came up in several applied areas, like in the construction of road, energy, and communication networks and in the clustering of data in anthropology and taxonomy. We refer to Graham and Hell [1985] for an extensive historical survey of shortest tree algorithms, with several quotes (with translations) from old papers. Our notes below have profited from their investigations.

Boruvka 1926

Boruvka [1926a] seems to be the first to consider the shortest spanning tree problem. His interest came from a question of the Electric Power Company of Western Moravia in Brno, at the beginning of the 1920's, asking for the most economical construction of an electric power network (Boruvka [1977]).

Jarnik 1929

In a reaction to Boruvka's work, Jarnik wrote on 12 February 1929 a letter to Boruvka in which he described a 'new solution of a minimal problem discussed by Mr. Boruvka.' The 'new solution' amounts to tree growing: keep a tree on a subset of the vertices, and iteratively extend it by adding a shortest edge joining the tree with a vertex outside of the tree. An extract of the letter was published as Jarnik [1930].

Shortest Spanning Trees 1956-1959

In the years 1956-1959, a number of papers appeared that again presented methods for the shortest spanning tree problem. Several of the results overlap, also with the earlier papers of Boruvka and Jarnik, but also a few new and more general methods were given. Kruskal [1956] was motivated by Boruvka's first paper and by the application to the traveling salesman problem, described as follows (where [1] is reference Boruvka [1926a]):

22. SHORTEST PATH

Path finding, in particular searching in a maze, belongs to the classical graph problems, and the classical references are Wiener [1873], Lucas [1882] (describing a method due to C.P. Tremaux), and Tarry [1895] -- see Biggs, Lloyd, and Wilson [1976]. They form the basis for depth-first search techniques.

Path problems were also studied at the beginning of the 1950's in the context of 'alternate routing', that is, finding a second shortest route if the shortest route is blocked. This applies to freeway usage (Trueblood [1952]), but also to telephone call routing. At that time making long-distance calls in the U.S.A. was automatized, and alternate routes for telephone calls over the U.S. telephone network nation-wide should be found automatically.

Matrix methods for unit-length shortest path 1946-1953

Matrix methods were developed to study relations in networks, like finding the transitive closure of a relation; that is, identifying in a directed graph the pairs of points s, t such that t is reachable from s. Such methods were studied because of their application to communication nets (including neural nets) and to animal sociology (e.g. peck rights).

The matrix methods consist of representing the directed graph by a matrix, and then taking iterative matrix products to calculate the transitive closure. This was studied by Landahl and Runge [1946], Landahl [1947], Luce and Perry [1949], Luce [1950], Lunts [1950, 1952], and by A. Shimbel.

Bellman 1958

After having published several papers on dynamic programming (which is, in some sense, a generalization of shortest path methods), Bellman [1958] eventually focused on the shortest path problem by itself, in a paper in the Quarterly of Applied Mathematics. He described the following functional equation approach for the shortest path problem, which is the same as that of Shimbel [1955].

There are N cities, numbered $1, \dots, N$, every two of which are linked by a direct road. A matrix $T = (t_{ij})$ is given, where t_{ij} is time required to travel from i to j (not necessarily symmetric). Find a path between 1 and N which consumes minimum time.

23. THE TRAVELING SALESMAN PROBLEM

The Traveling Salesman Problem (TSP) is: given n cities and their intermediate distances, find a shortest route traversing each city exactly once. Mathematically, the traveling salesman problem is related to, in fact generalizes, the question for a Hamiltonian circuit in a graph. This question goes back to Kirkman [1856] and Hamilton [1856, 1858] and was also studied by Kowalewski [1917b, 1917a] -- see Biggs, Lloyd, and Wilson [1976]. We restrict our survey to the traveling salesman problem in its general form.

The mathematical roots of the traveling salesman problem are obscure. Dantzig, Fulkerson, and Johnson [1954] say:

Label Setting Algorithm:

The first label setting algorithm was suggested by Dijkstra [1959], and independently by Dantzig [1960] and Whitney and Hiller [1960]. The original implementation of Dijkstra's algorithm runs in $O(n^2)$ time which is the optimal running time for fully dense networks (e.g. $= \Omega(n^2)$), since any algorithm must examine every one. The following table summarizes various implementations of Dijkstra's algorithm designed to improve running on

the worst-case or in practice. In the table, $d = [2 + \frac{m}{n}]$ represents the average degree of a node in the network plus 2.

#	Discoverers	Running Time
1.	Dijkstra [1959]	$O(n^2)$
2.	Williams [1964]	$O(m \log n)$
3.	Dial [1969]	$O(m + n C)$
4.	Johnson [1977a]	$O(m \log_d^n)$
5.	Johnson [1977b]	$O((m + n \log C) \log \log C)$
6.	Boas, Kaas	$O(nC + m \log \log nC)$
7.	Denardo, Fox [1979]	$O(m \log \log C + n \log C)$
8.	Johnson [1982]	$O(m \log \log C)$
9.	Fredman, Tarjan [1984]	$O(m + n \log n)$
10.	Gabow [1985]	$O(m \log_d C)$
11.	Ahuja, Mehlhorn, Orl (a)	$O(m + n \log C)$
	Tarjan [1988] (b)	$O(m + \frac{n \log C}{\log \log C})$
	(c)	$O(m + n \sqrt{\log C})$

Running times of the label setting algorithms

24. LABEL CORRECTING ALGORITHM

Ford [1956] suggested, in skeleton form, the first label correcting algorithm for the shortest path problem. Subsequently, several other researchers - Ford and Fulkerson [1962] and Moore [1957] - studied the theoretical properties of the algorithm. Bellman's [1958] algorithm can also be regarded as a label correcting algorithm.

Glover, Klingman and Phillips [1985] proposed a new polynomially bounded label correcting algorithm, called the partitioning shortest path (PSP) algorithm. Ahuja and Orlin [1988] recently discovered a scaling variation of this approach that performs $O(n^2 \log C)$ pivots and runs in $O(nm \log C)$ time.

26. MAXIMUM FLOW PROBLEM

In the maximum flow problem, we wish to send the maximum amount of flow from a specified source node s to another specified sink node t in a network with arc capacities u_{ij} 's. The maximum flow problem is distinguished by the long line of successive contributions the researchers have made in improving the worst-case complexity of algorithms; some, but not all, of these improvements have produced improvements in practice.

Several researchers - Dantzig and Fulkerson [1956], Ford and Fulkerson [1956] and Elias, Feinstein and Shannon [1956] - independently established the max-flow min-cut theorem. Fulkerson and Dantzig [1955] solved the maximum flow problem by specializing the primal simplex algorithm, whereas Ford and Fulkerson [1956] and Elias et al. [1956] solved it by augmenting path algorithms.

In the running times of the maximum flow algorithms which is shown below, n is the number of nodes, m is the number of arcs, and U is an upper bound on the integral arc capacities.

#	Discoverers	Running Time
1.	Edmonds, Karp [1972]	$O(nm^2)$
2.	Dinic [1970]	$O(n^2m)$
3.	Karzanov [1974]	$O(n^3)$
4.	Cherkasky [1977]	$O(n^2 \sqrt{m})$
5.	Malhotra, Maheshwari [1978]	$O(n^3)$
6.	Tarjan [1984]	$O(n^3)$
7.	Bertsekas [1986]	$O(n^3)$
8.	Cheriyian, Maheshwari [1987]	$O(n^2 \sqrt{m})$
9.	Ahuja and Orlin [1987]	$O(nm + n^2 \log U)$
10.	Ahuja, Tarjan [1988] (a)	$O(nm + \frac{n^2 \log U}{\log \log U})$
(b) $O(nm + n^2 \sqrt{\log U})$		
(c) $O(nm \log(\frac{n \sqrt{\log U}}{m} + 2))$		

Running times of the maximum flow algorithms.

Developing a polynomial time primal simplex algorithm for the maximum flow problem has been an outstanding open problem for quite some time. Recently, Goldfarb and Hao [1988] developed such an algorithm. This algorithm is essentially based on selecting pivot arcs so that flow is augmented along a shortest path from the source to the sink. The multi-terminal flow problem is to determine the maximum flow value between every pair of nodes. Gomory and Hu [1961] showed how to solve the multi-terminal flow problem by solving $(n-1)$ maximum flow problems. Recently, Gusfield [1987] has suggested a simpler multi-terminal flow algorithm.

27. MINIMUM COST FLOW PROBLEM

The minimum cost flow model is the most fundamental of all network flow problems. In this problem, we wish to determine a least cost shipment of a commodity through a network that will satisfy demands at certain nodes from available supplies at other nodes.

The minimum cost flow problem has a rich history. The classical transportation problem, a special case of the minimum cost flow problem, was posed and solved (though incompletely) by Kantorovich [1939], Hitchcock [1941], and Koopmans [1947]. Dantzig [1951] developed the first complete solution procedure for the transportation problem by specializing his simplex algorithm for linear programming. Ford and Fulkerson [1956, 1957] suggested the first combinatorial algorithms for the un-capacitated and capacitated transportation problem; these algorithms are known as the primal-dual algorithms.

The Out-of-Kilter algorithm was independently discovered by Minty [1960] and Fulkerson [1961]. The negative cycle algorithm is credited to Klein [1967]. The specialization of the linear programming dual simplex

algorithm for the minimum cost flow problem can be found in Helgason and Kennington [1977] and Armstrong, Klingman and Whitman [1980].

The recent relaxation algorithm by Bertsekas and Tseng (1988) is another interesting algorithm for solving the minimum cost flow problem. This algorithm maintains a pseudo flow satisfying the optimality conditions.

28. POLYNOMIAL ALGORITHMS:

In the recent past, researchers have actively pursued the design of fast (weakly) polynomial and strongly polynomial algorithms for the minimum cost flow problem. An algorithm is strongly polynomial, if it's running time is polynomial in the number of nodes and arcs, and does not evolve terms containing logarithms of C or U . The table below reports running times for networks with n nodes and m arcs of which m' arcs are capacitated. It assumes that the integral cost coefficients are bounded in absolute value by C , and the integral capacities, supplies and demands are bounded in absolute value by U . The term $S()$ is the running time for the shortest path problem and the term $M()$ represents the corresponding running time to solve a maximum flow problem.

Polynomial Combinatorial Algorithms:

# Discoverers	Running Time
1. Edmonds, Karp [1972]	$O((n + m') \log U S(n, m, C))$
2. Rock [1980]	$O((n + m') \log U S(n, m, C))$
3. Rock [1980]	$O(n \log C M(n, m, U))$
4. Bland, Jensen [1985]	$O(n \log C M(n, m, U))$
5. Goldberg [1985]	$O(nm \log (n^2/m) \log nC)$
6. Bertekas [1988]	$O(n^3 \log nC)$
7. Gabow [1987]	$O(nm \log n \log U \log nC)$
8. Goldberg [1988]	$O(nm \log n \log nC)$
9. Ahuja [1988]	$O(nm (\log U / \log \log U) \log nC)$ $O(nm \log \log U \log nC)$

Strongly Polynomial Combinatorial Algorithms

# Discoverers	Running Time
1. Tardos [1985]	$O(m^4)$
2. Orlin [1984]	$O((n + m')^2 S(n, m))$
3. Fujishige [1986]	$O((n + m')^2 S(n, m))$
4. Galil, Tardos [1986]	$O(n^2 \log n S(n, m))$
5. Goldberg Tarjan [1987]	$O(nm^2 \log n \log(n^2/m))$
6. Goldberg and Tarjan [1988]	$O(nm^2 \log^2 n)$
7. Orlin [1988]	$O((n + m') \log n S(n, m))$

Polynomial algorithms for the minimum cost flow problem

29. ASSIGNMENT PROBLEM

The research community has developed several different algorithms for the assignment problem, many of these algorithms share common features. The successive shortest path algorithm for the minimum cost flow problem, appears to be at the heart of many assignment algorithms. This algorithm is implicit in the first assignment algorithm due to Kuhn [1955], known as the Hungarian method, and is explicit in the papers by Tomizava [1971] and Edmonds and Karp [1972].

The more recent threshold assignment algorithm by Glover, Glover and Klingman [1986] is also a successive shortest path algorithm which integrates their threshold shortest path algorithm (see Glover, Glover and Klingman [1984]) with the flow augmentation process. Carraresi and Sadini [1986] also suggested a similar threshold assignment algorithm. The relaxation approaches due to Dinic and Kronrod [1969], Hung and Rom [1980] and Engquist [1982] are also closely related to the successive shortest path approach.

Balinski [1985] developed the signature method, which is a dual simplex algorithm for the assignment problem. Balinski's algorithm performs $O(n^2)$ pivots and runs in $O(n^3)$ time. Goldfarb [1985] also describes some implementations of Balinski's algorithm that run in $O(n^3)$ time using simple data structures and in $O(nm + n^2 \log n)$ time using Fibonacci heaps.

Others Problems

Several other problems related to the network optimization problem are of considerable theoretical and practical interests.

i) Multi-commodity flow problems

For this class of problems, several commodities use the same underlying network, sharing common arc capacities. That is, the problem formulation contains "bundle constraints" that specify that the total flow on certain arcs cannot exceed the arc's capacity. The text by Kennington and Helgason [1980] describes the basic approaches to this problem, as do surveys by Assad [1978], Kennington [1978], and Ali et al. [1984].

(ii) Convex Cost Network Flow Problems

One of the most natural extensions of the network flow models we have considered would be to replace the linear objective functions by more general convex cost functions. In some instances, for example when the cost function separates by arcs, that is approximating each arc by a series of parallel arcs with linear costs, would permit us to use the techniques we have considered to solve these problems approximately to within any desired degree of accuracy. More elaborate algorithms are also possible. The general convex cost case requires solution techniques from nonlinear programming that are quite different than those I have described. As an overview to this literature, the reader might refer to the Kennington and Helgason [1980], Florian [1986] and the monograph by Rockafellar [1984].

iii) Network Design

The design problem in network itself is of considerable importance in practice and has generated an extensive literature of its own. Many design problems can be stated as fixed cost network flow problems: (some) arcs have an associated fixed cost which is incurred whenever the arc carries any flow. This class of problem requires solution techniques from integer programming and other type of solution methods from combinatorial optimization. Magnanti and Wong [1984].

PART-II: MACHINING TECHNIQUES

1. INTRODUCTION

Manufacturing industries have long depended on the skill and experience of shop-floor machine-tool operators for optimal selection of cutting conditions and cutting tools. Considerable efforts are still in progress on the use of handbook based conservative cutting conditions and cutting tool selection at the process planning level. The most adverse effect of such a not-very scientific practice is decreased productivity due to sub-optimal use of machining capability. The need for selecting and implementing optimal machining conditions and the most suitable cutting tool has been felt over the last few decades. Despite Taylor's early work on establishing optimum cutting speeds in single pass turnings, progress has been slow since all the process parameters need to be optimized. Furthermore, for realistic solutions, the many constraints met in practice, such as low machine tool power, torque, force limits and component surface roughness, must be overcome.

The non-availability of the required technological performance equation represents a major obstacle to implementation of optimized cutting conditions in practice. This follows since extensive testing is required to establish empirical performance equations for each tool coating-work material combination for a given machining operation, which can be quite expensive when a wide spectrum of machining operations is considered. While comprehensive sets of equations are found in some Chinese and Russian handbooks (Ai et al 1966; Ai&Xiao 1985; Kasilova&Mescheryakov 1985), as well in the American handbook (ASME 1952) and Kroneberg's (1966), textbook most authors have not included discussions on the more modern tools, new work materials and tool coatings.

Difficulties are experienced in locating the empirical performance equations for modern tool designs because these are hidden under computerized databases in proprietary software (Sandvik 1981), as noted in recent investigations (Armarego & Ostafiev 1998; Ostafiev 1999).

2. REVIEW OF TRADITIONAL OPTIMIZATION TECHNIQUES

Traditionally, the selection of cutting conditions for metal cutting is left to the machine operator. In such cases, the experience of the operator plays a major role, but even for a skilled operator it is very difficult to attain the optimum values each time. Machining parameters in metal turning are cutting speed, feed rate and depth of cut.

The setting of these parameters determines the quality characteristics of turned parts. Following the pioneering work of Taylor (1907) and his famous tool life equation, different analytical and experimental approaches for the optimization of machining parameters have been investigated.

Gilbert (1950) studied the optimization of machining parameters in turning with respect to maximum production rate and minimum production cost as criteria. Armarego & Brown (1969) investigated unconstrained machine-parameter optimization using differential calculus. Brewer & Rueda (1963) carried out simplified optimum analysis for non-ferrous materials. For cast iron (CI) and steels, they employed the criterion of reducing the machining cost to a minimum.

Brewer (1966) suggested the use of Lagrangian multipliers for optimization of the constrained problem of unit cost, with cutting power as the main constraint. Bhattacharya et al (1970) optimized the unit cost for turning, subject to the constraints of surface roughness and cutting power by the use of Lagrange's method. Walvekar & Lambert (1970) discussed the use of geometric programming to selection of machining variables

Sundaram (1978) applied a goal-programming technique in metal cutting for selecting levels of machining parameters in a fine turning operation on AISI 4140 steel using cemented tungsten carbide tools. Ermer & Kromodiharajo (1981) developed a multi-step mathematical model to solve a constrained multi-pass machining problem. They concluded that in some cases with certain constant total depths of cut, multi-pass machining was more economical than single-pass machining, if depth of cut for each pass was properly allocated. They used high speed steel (HSS) cutting tools to machine carbon steel.

Hinduja et al (1985) described a procedure to calculate the optimum cutting conditions for turning operations with minimum cost or maximum production rate as the objective function. For a given combination of tool and work material, the search for the optimum was confined to a feed rate versus depth-of-cut plane defined by the chip-breaking constraint. Some of the other constraints considered include power available, work holding, surface finish and dimensional accuracy.

Tsai (1986) studied the relationship between the multi-pass machining and single-pass machining. He presented the concept of a break-even point, i.e. there is always a point, a certain value of depth of cut, at which single-pass and double-pass machining are equally effective. When the depth of cut drops below the break-even point, the single-pass is more economical than the double-pass, and when the depth of cut rises above this break-even point, double-pass is better. Carbide tools are used to turn the carbon steel work material.

Gopalakrishnan & Khayyal (1991) described the design and development of an analytical tool for the selection of machine parameters in turning. Geometric programming was used as the basic methodology to determine values for feed rate and cutting speed that minimize the total cost of machining SAE 1045 steel with cemented carbide tools of ISO P-10 grade. Surface finish and machine power were taken as the constraints while optimizing cutting speed and feed rate for a given depth of cut.

Agapiou (1992) formulated single-pass and multi-pass machining operations. Production cost and total time were taken as objectives and a weighting factor was assigned to prioritize the two objectives in the objective function. He optimized the number of passes, depth of cut, cutting speed and feed rate in his model, through a multi-stage solution process called dynamic programming. Several physical constraints were considered and applied in his model. In his solution methodology, every cutting pass is independent of the previous pass, hence the optimality for each pass is not reached simultaneously.

Prasad et al (1997) reported the development of an optimization module for determining process parameters for turning operations as part of a PC-based generative CAPP system. The work piece materials considered in their study include steels, cast iron, aluminium, copper and brass. HSS and carbide tool materials are considered in this study. The minimization of production time is taken as the basis for formulating the objective function. The constraints considered in this study include power, surface finish, tolerance, work piece rigidity, range of cutting speed, maximum and minimum depths of cut and total depth of cut. Improved mathematical models are formulated by modifying the tolerance and work piece rigidity constraints for multi-pass turning operations. The formulated models are solved by the combination of geometric and linear programming techniques.

3. LATEST TECHNIQUES

The latest techniques for optimization include fuzzy logic, scatter search technique, genetic algorithm, Taguchi technique and response surface methodology.

Fuzzy logic

Fuzzy logic has great capability to capture human commonsense reasoning, decision-making and other aspects of human cognition. Kosko (1997) shows that it overcomes the limitations of classic logical systems, which

impose inherent restrictions on representation of imprecise concepts. Vagueness in the coefficients and constraints may be naturally modelled by fuzzy logic. Modelling by fuzzy logic opens up a new way to optimize cutting conditions and also tool selection.

Methodology: As per Klir & Yuan (1998) fuzzy logic involves a fuzzy interference engine and a fuzzification-defuzzification module. Fuzzification expresses the input variables in the form of fuzzy membership values based on various membership functions. Governing rules in linguistic form, such as if cutting force is high and machining time is high, then tool wear is high, are formulated on the basis of experimental observations. Based on each rule, inference can be drawn on output grade and membership value. Inferences obtained from various rules are combined to arrive at a final decision. The membership values thus obtained are defuzzified using various techniques to obtain true value, say of flank wear.

Genetic algorithm (GA)

These are the algorithms based on mechanics of natural selection and natural genetics, which are more robust and more likely to locate global optimum. It is because of this feature that GA goes through solution space starting from a group of points and not from a single point. The cutting conditions are encoded as genes by binary encoding to apply GA in optimization of machining parameters. A set of genes is combined together to form chromosomes, used to perform the basic mechanisms in GA, such as crossover and mutation. Crossover is the operation to exchange some part of two chromosomes to generate new offspring, which is important when exploring the whole search space rapidly. Mutation is applied after crossover to provide a small randomness to the new chromosomes.

Implementation of GA: First of all, the variables are encoded as n-bit binary numbers assigned in a row as chromosome strings. To implement constraints in GA, penalties are given to individuals out of constraint. If an individual is out of constraint, its fitness will be assigned as zero. Because individuals are selected to mate according to fitness value, zero fitness individuals will not become parents. Thus most individuals in the next generation are ensured in feasible regions bounded by constraints.

The GA is initialized by randomly selecting individuals in the full range of variables. Individuals are selected to be parents of the next generation according to their fitness value. The larger the fitness value, the greater their possibility of being selected as parents. Wang & Jawahir (2004) have used this technique for optimization of milling machine parameters. Kuo & Yen (2002) have used a genetic algorithm based parameter tuning algorithm for multidimensional.

Scatter search technique (SS)

This technique originates from strategies for combining decision rules and surrogate constraints. SS is completely generalized and problem-independent since it has no restrictive assumptions about objective function, parameter set and constraint set. It can be easily modified to optimize machining operation under various economic criteria and numerous practical constraints. It can obtain near-optimal solutions within reasonable execution time on PC. Potentially, it can be extended as an on-line quality control strategy for optimizing machining parameters based on signals from sensors. Chen & Chen (2003) have done extensive work on this technique.

Methodology: First of all, machining models are required to determine the optimum machining parameters including cutting speed, feed rate and depth of cut, in order to minimize unit production cost. Unit production cost can be divided into four basic cost elements:

- Cutting cost by actual cut in time
- Machine idle cost due to loading and unloading operation and idling tool motion cost
- Tool replacement cost
- Tool cost

For the optimization of unit production cost, practical constraints which present the state of machining processes need to be considered. The constraints imposed during machining operations are:

- Parameter constraint – Ranges of cutting speed, feed rate and depth of cut
- Tool life constraint – Allowable values of flank wear width and crater wear depth
- Operating constraint – Maximum allowable cutting force, power available on machine tool and surface finish requirement.

An optimization model for multi-pass turning operation can be formulated. The multipass turning model is a constrained nonlinear programming problem with multiple variables (machining variables). The initial solution for SS is picked in a randomway. The user-specified parameters have to be given. The experimentation can be run on a PC with Pentium800Mhz processor. The computational results validate the advantage of SS in terms of solution quality and computational requirement.

Taguchi Approach: The Taguchi method involves reducing the variation in a process through robust design of experiments. Generally objective of the method is to produce high quality product at low cost to the manufacturer. Taguchi method uses a special design of International Journal of Advance Engineering and Research Development (IJAERD) volume 3, issue 5, may -2016, E-ISSN: 2348 - 4470, PRINT-ISSN: 2348-6406 @IJAERD-2016, All rights Reserved 137 orthogonal arrays to study the complete parameter with a small number of experiments only. The experimental results are then converted into a signal – to – noise (S/N) ratio to measure the quality characteristics different from the desired values. Usually, there are three categories of quality characteristics in the analysis of the S/N ratio, i.e., Smaller the better, larger the better, and nominal the best. The S/N ratio for each level of process parameter is compared based on the S/N ratio analysis. Regardless of the category of the quality characteristic, a smaller S/N ratio corresponds to better quality characteristics. The optimal blend of the process parameters can be predicted. Finally, a confirmation experiment is conducted to verify the optimal process parameters obtained from the parameter design. The formula for Smaller-The-Better signal to noise ratio is designed so that an experimenter can always select the smallest S/N ratio value to optimize the quality characteristic of an experiment. Smaller-The-Better, S/N ratio is determined by following equations: For the smaller surface roughness, the solution is “Smaller-The-Better”. Where, $S/N = \text{Signal to Noise Ratio}$, $n = \text{No. of Measurements}$, $Y = \text{Measured Value of surface roughness}$.

Response surface methodology (RSM)

Experimentation and making inferences are the twin features of general scientific methodology. Statistics as a scientific discipline is mainly designed to achieve these objectives. Planning of experiments is particularly very useful in deriving clear and accurate conclusions from the experimental observations, on the basis of which inferences can be made in the best possible manner. The methodology for making inferences has three main aspects. First, it establishes methods for drawing inferences from observations when these are not exact but subject to variation, because inferences are not exact but probabilistic in nature. Second, it specifies methods for collection of data appropriately, so that assumptions for the application of appropriate statistical methods to them are satisfied. Lastly, techniques for proper interpretation of results are devised.

The advantages of design of experiments as reported by Adler et al (1975) and Johnston (1964) are as follows.

- (1) Numbers of trials are reduced.
- (2) Optimum values of parameters can be determined.
- (3) Assessment of experimental error can be made.
- (4) Qualitative estimation of parameters can be made.
- (5) Inference regarding the effect of parameters on the characteristics of the process can be made.

Cochran & Cox (1962) quoted Box and Wilson as having proposed response surface methodology for the optimization of experiments. In many experimental situations, it is possible to represent independent factors in quantitative form. Then these factors can be thought of as having a functional relationship or response:

$$Y = \phi(X_1, X_2, \dots, X_k) \pm e_r,$$

between the response Y and X_1, X_2, \dots, X_k of k quantitative factors. The function ϕ is called response surface or response function. The residual e_r measures the experimental error. For a given set of independent variables, a characteristic surface responds. When the mathematical form of ϕ is not known, it can be approximated satisfactorily within the experimental region by a polynomial. The higher the degree of the polynomial the better is the correlation, though at the same time the costs of experimentation become higher.

The methodology may be applied for developing the mathematical models in the form of multiple regression equations correlating the dependent parameters such as cutting force, power consumption, surface roughness, tool life etc. with three independent parameters, viz. cutting speed, feed rate and depth of cut, in a turning process. In applying the response surface methodology, the dependent parameter is viewed as a surface to which a mathematical model is fitted. For the development of regression equations related to various quality characteristics of turned parts, the second-order response surface may be assumed as:

$$Y = b_o + \sum_{i=1}^k b_i X_i + \sum_{i=1}^k b_{ii} X_i^2 + \sum_{i < j=2}^k b_{ij} X_i X_j \pm e_r. \quad (1)$$

This assumed surface Y contains linear, squared and cross-product terms of variables X_i 's. In order to estimate the regression coefficients a number of experimental design techniques are available. Box & Hunter (1957) have proposed that the scheme based on central composite rotatable design fits the second-order response surfaces very accurately.

Lambert & Taraman (1973) developed an adequate mathematical model for the cutting force acting on a carbide tool while machining SAE 1018 cold-rolled steel in a turning operation and then utilized the model in the selection of the levels of the machining variables of cutting speed, feed rate, and depth of cut, such that the rate of metal-removal could be at the highest possible value without violating some given force restriction. By using response surface methodology the three independent variables (cutting speed, feed rate and depth of cut) could be investigated simultaneously to study their effects on the cutting force, resulting in considerable saving in time and money over traditional methods of analysis.

Taraman (1974) investigated multi-machining output multi-independent variable turning research by response surface methodology. The purpose of this research was to develop a methodology that would allow determination of the cutting conditions (cutting speed, feed rate and depth of cut) such that the specified criterion for each of several machining-dependent parameters (surface finish, tool force and tool life) could be achieved simultaneously. To accomplish this, first mathematical models were developed representing the relationship between the dependent and independent variables of the process. A central composite design was used to develop the models in order to minimize the amount of experimentation. The models were represented by response surfaces and contours of these surfaces were obtained at different levels of each of the independent variables in planes of the other independent variables. By superimposing the contours, a proper combination of the cutting speed, feed rate and depth of cut can be selected to satisfy some specified criteria. Disposable inserts of tungsten carbide were used to turn SAE1018 cold-rolled steel.

Hassan & Suliman (1990) presented mathematical models for the prediction of surface roughness, tool vibration, power consumption and cutting time, when turning medium carbon steel using tungsten carbide tools under dry conditions. The functional relationships of these variables and the machining-independent variables (cutting speed, feed rate and depth of cut) were established by a second-order polynomial multi-regression analysis. The surface roughness model developed was used as an objective function to establish the optimum cutting conditions while the tool vibration level, power consumption and cutting time were considered the functional constraints.

El Baradie (1993) presented a study of the development of a surface roughness model for turning grey cast iron (154 BHN) using tipped carbide tools under dry conditions and for a constant depth of cut ($d = 1.00\text{mm}$). The mathematical model utilizing the response surface methodology was developed in terms of cutting speed, feed rate and nose radius of the cutting tool. These variables were investigated using design of experiments and utilization of the response surface methodology. The turning operation was performed on a 10 h.p. lathe. The work pieces were cast in the form of cylindrical bars 200mm in diameter and approximately 500mm in length. The cutting tests were carried out using a tungsten carbide insert (grade K10). Surface roughness measurements were made using a Taylor–Hobson Surtronic surface roughness measuring instrument. A first-order model covering the cutting speed range of 110–350 m/min and a second-order model covering the cutting speed range of 80–495 m/min are presented in this study. Contours of the surface roughness outputs were obtained in planes containing two of the independent variables. These contours were further developed to select the proper combination of the cutting speed and feed rate to increase the metal removal rate without sacrificing the quality of the surface roughness produced.

4. CONCLUSIONS

A review of literature shows that various combinatorial optimization techniques for networks flow and traditional machining optimization techniques like Lagrange's method, geometric programming, goal programming, dynamic programming etc. have been successfully applied in the past for optimizing the various turning process variables. Fuzzy logic, genetic algorithm, scatter search, Taguchi technique and response surface methodology are the latest optimization techniques that are being applied successfully in industrial applications for optimal selection of process variables in the area of machining. A review of literature on optimization techniques has revealed that there are, in particular, successful industrial applications of design of experiment-based approaches for optimal settings of process variables. Taguchi methods and response surface

methodology are robust design techniques widely used in industries for making the product/process insensitive to any uncontrollable factors such as environmental variables. Japanese companies such as Nippon Denso, NEC, and Fugitsu have become world economic competitors by using the Taguchi approach that has potential for savings in experimental time and cost on product or process development and quality improvement. There is general agreement that off-line experiments during product or process design stage are of great value. Reducing quality loss by designing the products and processes to be insensitive to variation in noise variables is a novel concept to statisticians and quality engineers.

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CRYSTALLIZATION, SPECTRAL, THERMAL, DIELECTRIC, MECHANICAL AND NONLINEAR OPTICAL STUDIES ON UREA LITHIUM SULPHATE SINGLE CRYSTALS**P. S. Angel Prabha¹, P. Selvarajan² and V. Bena Jothy³**Research Scholar¹ and Assistant Professor³, Women's Christian College, Nagercoil

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Associate Professor², Aditanar College of Arts and Science, Thiruchendur**ABSTRACT**

Single crystals of a new semiorganic nonlinear optical material, urea lithium sulphate (ULS) have been grown from aqueous solution by slow evaporation technique. The single crystal X-ray diffraction technique has been enlisted to confirm that the crystal belongs to monoclinic system. The presence of functional groups from the title compound has been qualitatively determined by FT-IR analysis. The transparency of the grown crystal was revealed by optical absorption spectrum. The thermal stability and mechanical properties of the grown crystal were evaluated by TG/DTA and Vickers microhardness test respectively. The chemical composition of the grown crystal could be analysed by EDAX spectrum. The dielectric constant and dielectric loss of the grown crystal was carried out as a function of various frequencies and temperatures. Second harmonic generation of the powdered crystal was studied using modified Kurtz and Perry technique. The motivating results shows that the ULS crystals have great potential applications in optical devices.

Keywords: NLO; semiorganic crystal; solution growth; characterization; SHG; XRD; TG/DTA; EDAX; FTIR

1. INTRODUCTION

In the past decade, the nonlinear optical (NLO) crystals possess a number of applications in the field of science and technology. But current interest is paying more attention to the development of the novel semiorganic (NLO) materials, owing to its high mechanical and thermal stability, broad optical frequency, higher NLO properties and laser damage threshold, which is desirable for the enhancement of potential applications such as frequency doubling, optical switching, optical disc data storage, optical modulation, optical communication, photonics, medical diagnostics, optical image processing and laser remote sensing [1-6].

Urea is one of the most promising organic, non-centrosymmetric compound and it belongs to the tetragonal system resembles to that of KDP [7-11]. Nowadays, urea is used as a main chemical in the fertilizer industries and it possess novel properties such as large birefringence, high optical damage threshold, good transparency and large NLO coefficients [12-17]. Harries *et al.* [18] have reported that urea molecule forms of considerable hydrogen bonded host structure. Chadwick *et al.* [19] have reported that the related phase diagram of urea-dicarboxylic acid. Jerome Das *et al.* [20] have reported that the combination of urea and succinic acid shows ferroelectric properties. The ferroelectric crystal play a vital role in the application field of optoelectronics and acousto-optic devices such as capacitors, non-volatile memory devices, actuators, gate insulators etc. Shanthi *et al.* [21] have reported that the combined product of urea adipic acid (UAA) crystal formed centrosymmetric structure with third order NLO properties. Motivated from the above results, it is decided to synthesized and characterize urea lithium sulphate (ULS) single crystal in this work. The aim of this paper is to report the growth and characterization of ULS single crystals and the various studies such as XRD, NLO, FT-IR, EDAX, UV-Visible, microhardness and dielectric studies were carried out for the first time and the obtained results are reported here.

2. SYNTHESIS AND GROWTH

In the present study ULS salt was synthesized by taking purified (AR) grade sample of urea and lithium sulphate in the equimolar ratio of 1:1 and dissolved in deionized water as solvent. It was continuously stirred about 5 hours to attain homogenous saturated solution. After that, the solution was filtered by high quality 4 micro Whatmann filter paper and was allowed to evaporate at room temperature. After the growth period of about 13-15 days, colourless and transparent ULS crystals were harvested. The size of the crystal is 8 x 4 x 3 mm³ and the photograph of the grown crystals is shown in Fig.1.



Fig-1: The grown crystal of urea lithium sulphate.

3. RESULTS AND DISCUSSION

3.1 Single crystal X-ray diffraction

Single crystal-XRD analysis for grown crystals has been carried out to affirm the identification of lattice parameters and crystallinity of the grown crystal of ULS using an ENRAF NONIUS CAD4 automatic X-ray diffractometer. The measured lattice parameter values are $a = 5.521(3) \text{ \AA}$, $b = 6.865(2) \text{ \AA}$, $c = 12.573(5) \text{ \AA}$, $\alpha = 90^\circ$, $\beta = 110.8(2)^\circ$, $\gamma = 90^\circ$, $V = 445.46(4) \text{ \AA}^3$ and the crystal system of ULS crystal is monoclinic in structure.

3.2 Linear optical parameters

Linear absorption coefficient, extinction coefficient, reflectance and refractive index are the linear optical parameters of ULS crystal and these values were determined from UV-visible transmittance data. The recorded absorbance and transmittance spectra of ULS crystal are shown in the figures 2 and 3 respectively. The instrument involved for recording UV-visible spectra is LAMBDA-35 UV-visible spectrophotometer. A good transparent crystal of ULS with a thickness of 1.5 mm was used for this study. Transmission spectra are very important tool for measuring transparency window of the crystal and it can be used for the practical applications of NLO materials. It is examined that the lower cut-off wavelength is around at 320 nm, which shows that the crystal is transparent in the visible and IR regions. The reflectance spectrum of ULS crystal is presented in the figure 4. The reflectance is observed to be low in the visible region of the spectrum. Optical absorption coefficient (α) was calculated using the following relation [22]

$$\alpha = [2.303 \log_{10}(1/T)]/d$$

where T is the transmittance, d is the thickness of sample and using the values of absorption coefficient, the extinction coefficient (K) can be calculated using the formula $K = \alpha \lambda / 4\pi$ where λ is the wavelength of light. The variation of extinction coefficient with optical energy for ULS crystal is shown in the figure 5. The extinction coefficient of ULS crystal is found to be very low energy region and it is high at the fundamental absorption region. The high transmittance, low absorption and low reflectance of ULS crystal in the visible region indicates that this crystal is suitable for NLO and antireflection applications [23]. Optical band gap of ULS crystal is found using the Tauc's equation as given by

$$\alpha = \frac{A(h\nu - E_g)^{\frac{1}{2}}}{h\nu}$$

where E_g is optical band gap of the crystal, h is the Planck's constant, ν is the frequency of light and A is a constant. The plot of variation of $(\alpha h\nu)^2$ versus $h\nu$ is shown in the figure 6. The optical band gap was evaluated by the extrapolation of the linear part to the X-axis and the value is found to be 3.8 eV.

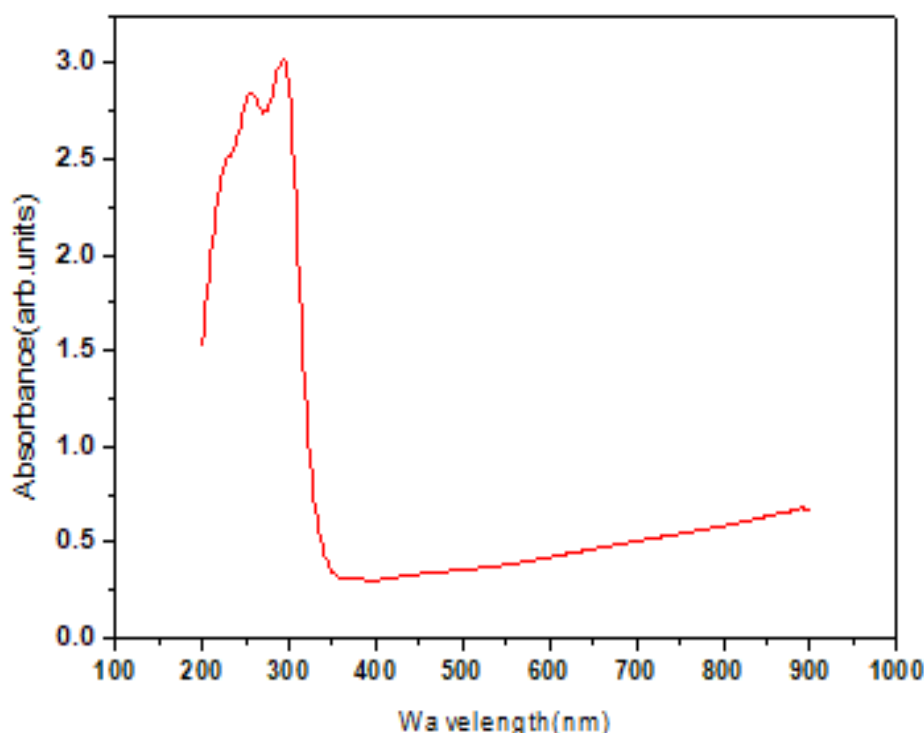


Fig-2: Absorbance spectrum of ULS crystal

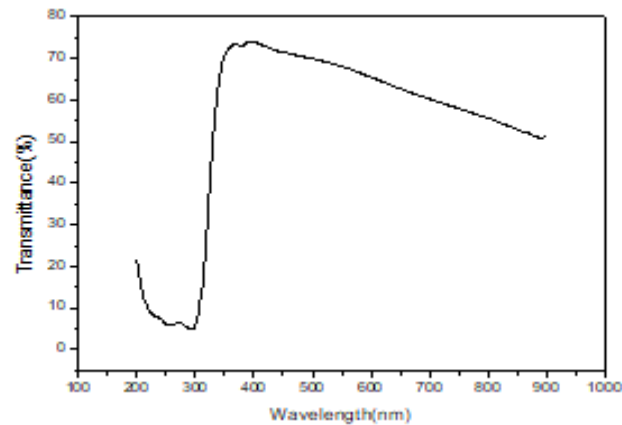


Fig-3: Transmittance spectrum of ULS crystal.

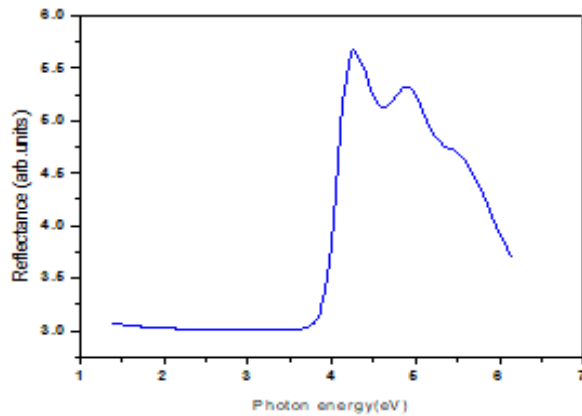


Fig-4: Plot of reflectance versus wavelength for ULS crystal

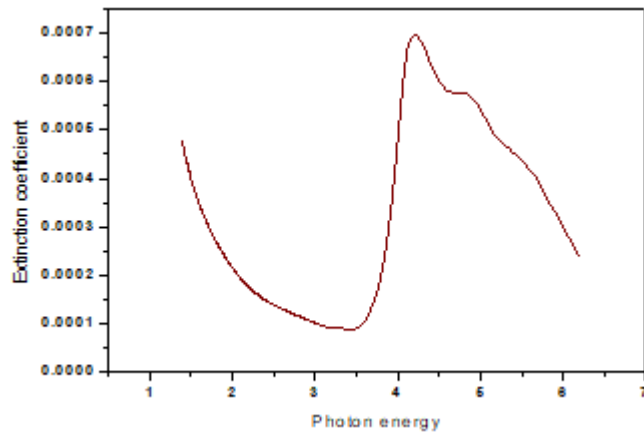


Fig-5: Variation of extinction coefficient with photon energy for ULS crystal.

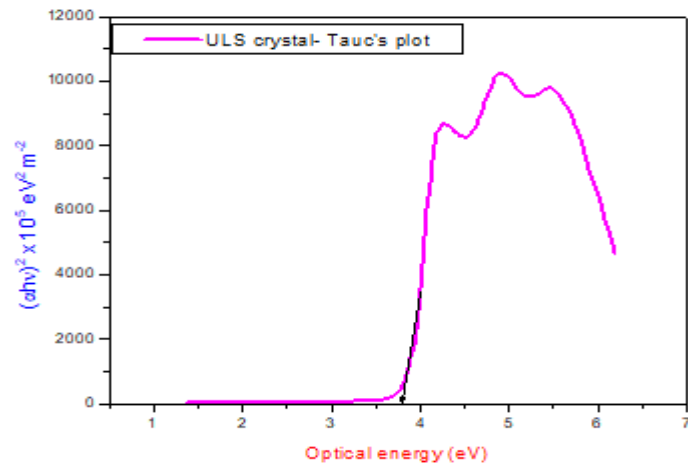


Fig-6: Tauc's plot for ULS crystal

3.3. FT-IR spectral studies

Fourier Transform Infrared (FT-IR) spectrum of ULS crystal was recorded using a Perkin Elmer spectrometer by KBr pellet technique in the wavenumber range from 400-4000 cm^{-1} . The presence of functional groups and the metal coordination of urea are confirmed by FT-IR spectrum of ULS crystal which is shown in Fig.7. In ULS complex, there are two possibilities by which the co-ordination of lithium with urea may occur either through nitrogen or oxygen of urea. The broadness of the peak from 2682 cm^{-1} to 3700 cm^{-1} is due to the intermolecular hydrogen bonding. The band at 1617 cm^{-1} is assigned for NH_2 bending which represents the existence of urea part of the molecule. An intense sharp peak at 1411 cm^{-1} is due to the C-O-H bending vibration. The peaks around 3278 cm^{-1} and 1082 cm^{-1} are assigned to N-H stretching and C-N stretching vibrations respectively. The peak at 1467 cm^{-1} reveals C-N antisymmetric stretching vibrations. The presence of sulphate ion is confirmed at 1082 cm^{-1} and 631 cm^{-1} . The band at 767 cm^{-1} is due to the O-H out of plane bending vibration. Examined frequencies and its vibrations such as wagging, stretching and bending are assigned qualitatively and are tabulated in the table 1.

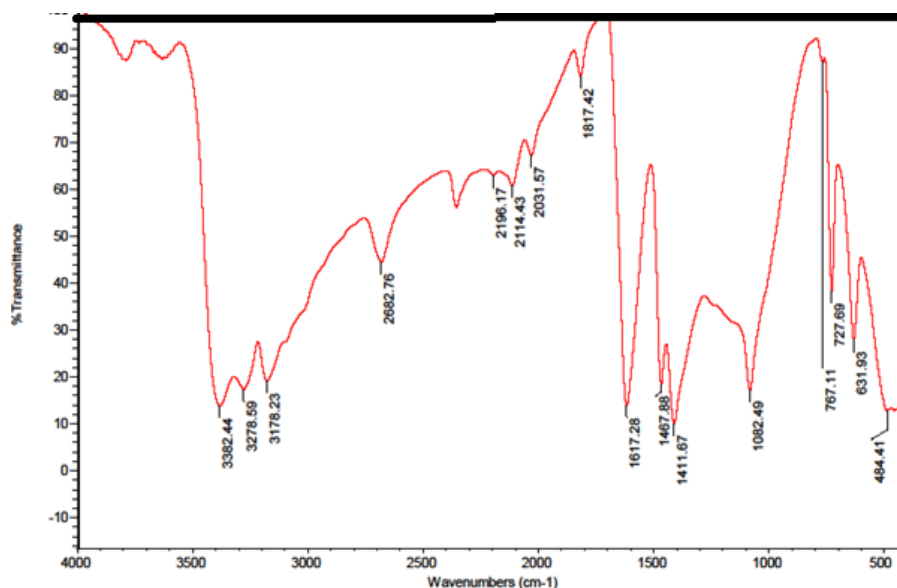


Fig-7: FT-IR spectrum of ULS crystal

Table-1: FTIR spectral assignments for ULS crystal

Bands/Peaks (cm^{-1})	Band assignments
3382	N-H asymmetric stretching
3278	N-H asymmetric stretching
3178	N-H symmetric stretching
2682	C-H stretching
2196	C-H stretching
2114	CH stretching
2031	Combination band
1817	C=O symmetric stretching of urea
1617	NH_2 bending
1467	CO symmetric stretching vibration
1411	C-O-H bending vibration
1082	SO_4^{2-} stretching
767	O-H out of plane
727	(NH_2) and (NH) wagging
631	SO_4^{2-} bending
484	N-C-N bending vibration

3.4 TG/DTA studies

Thermogravimetric and differential thermal analyses provide the information such as phase transition, thermal stability, different stages of decomposition, exothermic and endothermic transition of the crystal system. Thermogravimetric analysis of urea lithium sulphate crystal was carried out for the sample of weight of 15.82 mg in the temperature between 50 and 800°C at heating rate of 20 K/ minute in nitrogen atmosphere. Simultaneously, DTA curve of the sample was recorded and the TG/DTA curves for ULS crystal are shown in

the figure 8. The TG curve shows that the compound is thermally stable upto 200°C and this curve represents the absence of water molecule in the grown ULS crystal. The observation of DTA curve shows that the sample undergoes an endothermic transitions around 222°C and 340 °C. The peak at 222°C is corresponding to the melting point of ULS crystal and the endothermic peak at 340 °C is due to further weight loss of the sample. This study gives the idea the sample could be used in the application of device fabrication below its melting point of the crystal.

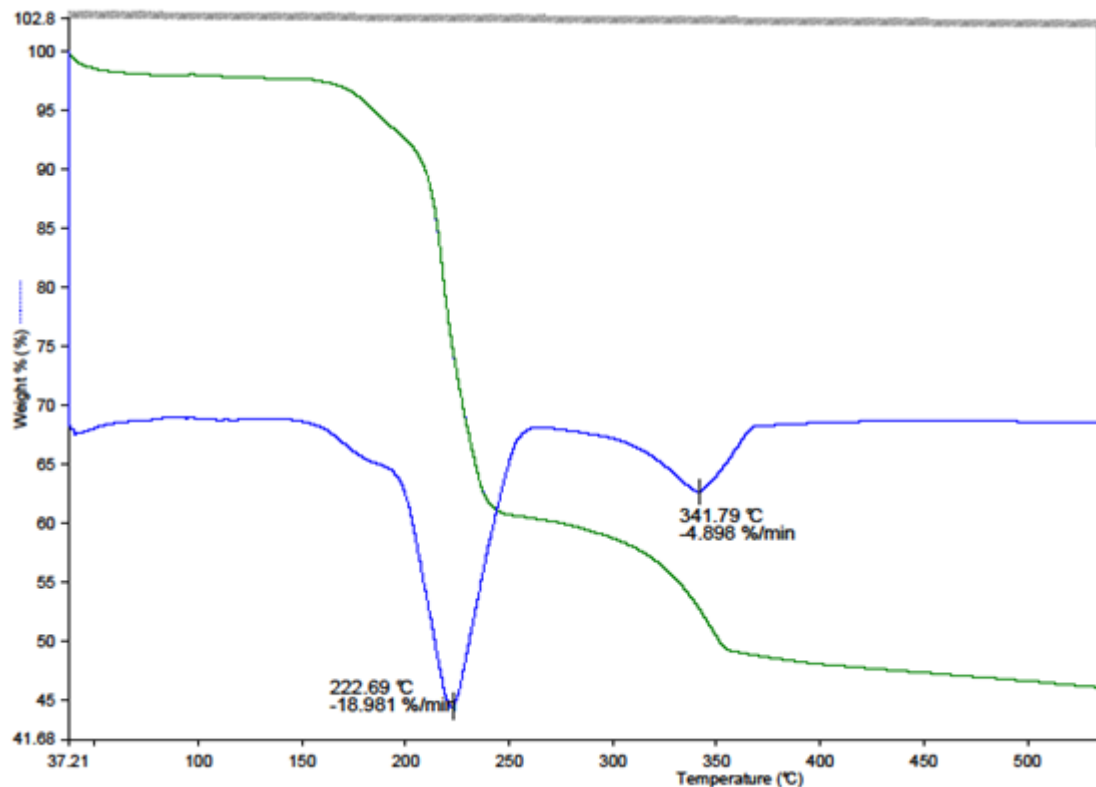


Fig-8: TG/DTA thermal curves of ULS crystal

3.5 Elemental analysis

Elemental analysis of the sample can be analysed by EDS or EDAX technique. The EDAX spectrum of ULS crystal was recorded using an EDAX analyser in a SEM instrument and it is shown in Fig.9. Interaction of an electron beam with a sample target produces a variety of emissions, including X-rays. EDS system software is used to analyse the energy spectrum in order to determine the abundance of specific elements. Using the spectrum the elements such as C, N, O, S were identified. It is to be mentioned here that the element Li cannot be identified by EDAX analysis.

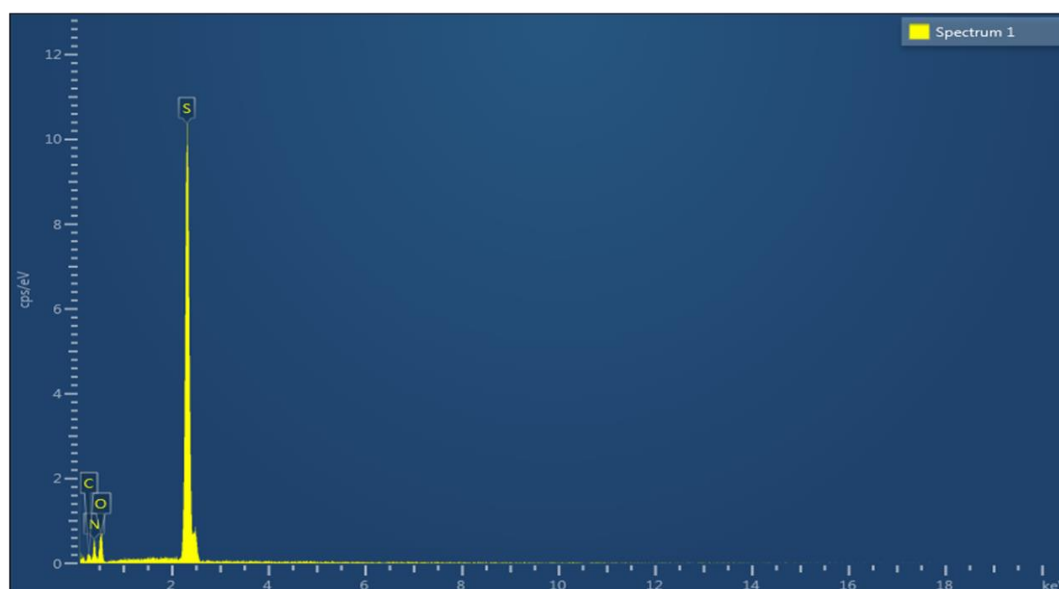


Fig-9: EDAX spectrum of ULS crystal

3.6 SHG efficiency

In ULS crystal, the second harmonic generation signal was inspected by Kurtz and Perry technique [24]. A high intense beam of Nd: YAG laser with the wavelength 1064 nm with a pulse duration 6 ns was allowed to be incident on the powdered ULS sample. The SHG signal generation was asserted by the emission of green radiation with wavelength ($\lambda=532$ nm) and it was observed that ULS sample has the relative SHG efficiency of 1.9 times that of KDP.

3.7 Microhardness studies

Microhardness testing plays a vital role for understanding the mechanical behaviour of materials such as brittleness, fracture behaviour, yield strength, stiffness constant and cracking temperature. Classification of materials based on their mechanical properties leads to device fabrication. This study helps to evaluate the resistance it offers to the local deformation. The microhardness number (H_v) can be calculated using the formula $H_v = 1.8544 P/d^2$ kg/mm² where P is the load applied and d is the average diagonal length of the indentation. Here the single crystal of urea lithium sulphate (ULS) was carefully cleaned before indentation. Various loads from 25 to 100 g were applied in the Vickers pyramidal indenter for making the indentation and the time needed for indentation was 10 s. The variation of load with Vickers hardness number of ULS crystal is represented in Fig. 10. According to normal indentation size effect (ISE), the microhardness number of a crystal decreases with increasing applied load. In reverse indentation effect (RISE), the hardness number of a crystal increases with increasing load. From the plot, the grown crystal possesses hardness values is directly proportional to the applied load, which reveals the sample exhibits (RISE). Beyond 100 g, there is a crack developed on the surface of the crystal and it may cause to the release of internal stress originated locally by indentation. The work hardening coefficient 'n' is obtained using Meyer's relation $P=a d^n$ where a is a constant, P is the load and d is the average value of diagonal indentation. The value of work hardening coefficient of ULS crystal obtained from the plot of log P versus log d (Fig.11) is 2.5358. Since this value is more than 1.6, ULS crystal is soft material [25].

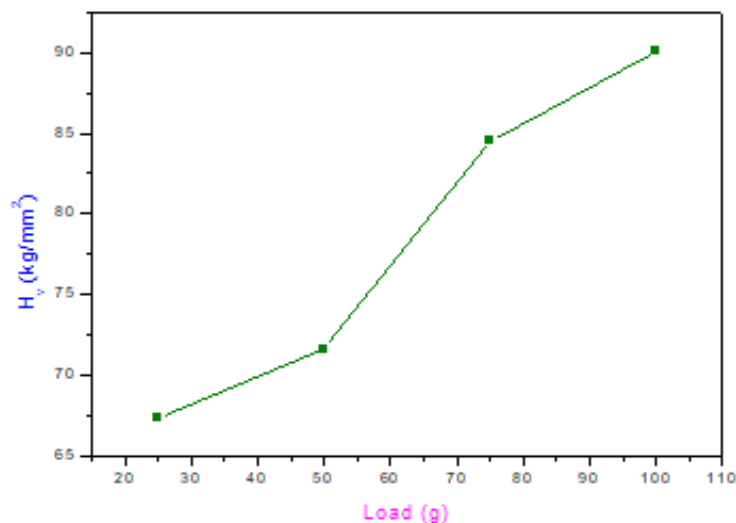


Fig-10: Plot of hardness versus applied load for urea lithium sulfate crystal

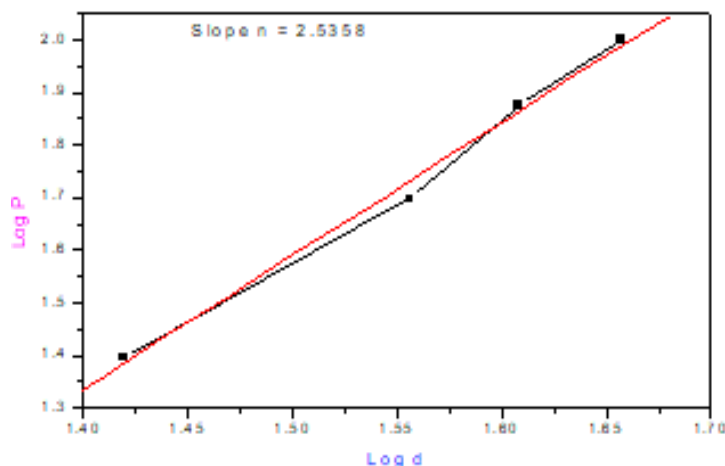


Fig-11: Plot of log P versus log d for urea lithium sulfate crystal

3.8 Dielectric studies

The lattice dynamics of the grown crystal can be analysed by dielectric studies. For that, a defect free transparent sample crystal was chosen. Using the two electrodes forming a parallel plate capacitor and the silver coated ULS crystal, the dielectric constant and dielectric loss have been measured using an LCR meter. The obtained values of dielectric constant and dielectric loss factor for ULS crystal are presented in the form of plots as a function of frequency at three different temperatures such as 30, 50, 70 °C (Figs. 12 and 13). It is clear that the dielectric constant and loss factor are inversely proportional to frequency and directly proportional to temperature. This can be explained on the basis of polarization and conduction process. The maximum values of dielectric constant at low frequencies may due to the presence of space charge polarization and the value of dielectric constant decreases may due to the gradual decrease of the polarization. The high dielectric constant (ϵ_r) with high temperature is generally assigned to crystal expansion, electronic, ionic polarizations and the presence of crystal defects [26, 27]. The low value of dielectric loss ($\tan \delta$) with frequency reveals high optically transparent crystal with lesser defects, which is suitable for the property of NLO applications [28, 29].

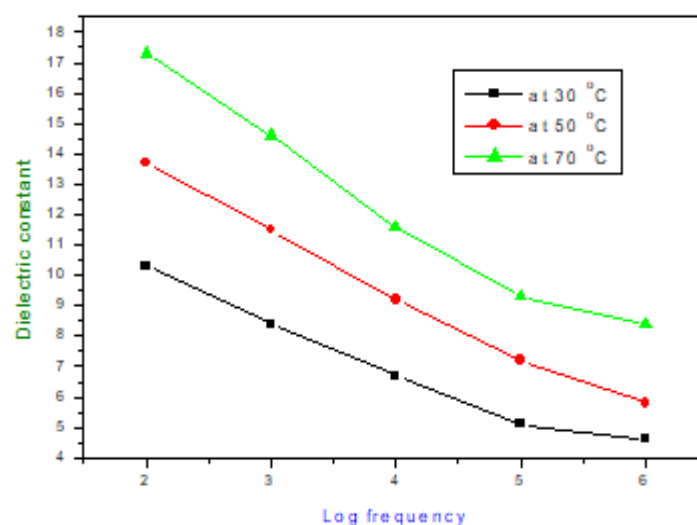


Fig-12: Plots of dielectric constant versus frequency for urea lithium sulphate crystal

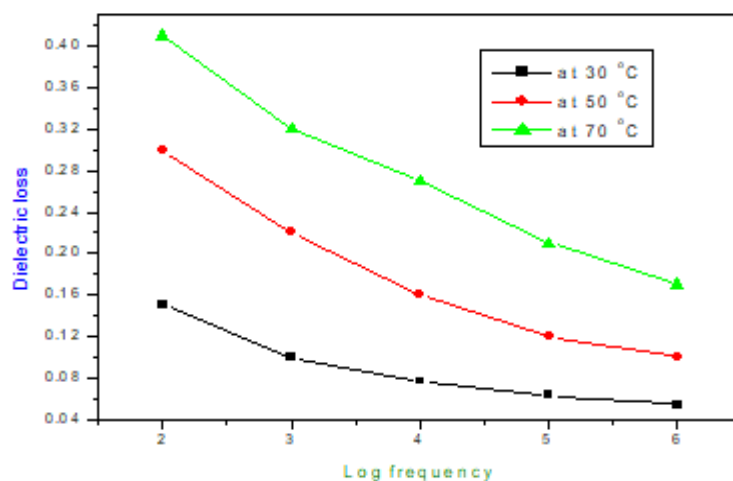


Fig-13: Plots of dielectric loss versus frequency for urea lithium sulphate crystal

4. CONCLUSIONS

The novel single crystal of ULS was successfully grown from aqueous solution by slow solvent evaporation technique. The crystal structure and lattice parameters have been measured by X-ray diffraction studies. The different fundamental groups of the grown ULS crystals have been identified. Thermal studies indicate that the crystal is stable upto 200°C. Elemental analysis was carried out by EDAX studies. The SHG efficiency was measured by Kurtz powder technique and it indicates that the present crystal is a second order NLO material. The optical transmittance spectrum of ULS crystal shows low absorbance, low reflectance and high transmittance and the optical band gap of ULS crystal was found to be 3.8 eV. From the microhardness test, it was observed that hardness number increases with increase of applied load and using the Meyer's plot, work hardening coefficient of the sample was found. The dielectric properties of ULS crystal was analysed and it is observed that the crystal has minimum number of defects because the dielectric loss of ULS crystal is low.

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DESIGN OF LOW POWER HIGH SPEED HYBRID ADDER USING GDI TECHNIQUE

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ABSTRACT

Adders are very important in Digital Signal Processing (DSP) for filter designing. It is profoundly accepted that the main processing unit of any device capable of carrying out computations is the Central Processing Unit (CPU). The most fundamental and integral part of CPU is an Arithmetic and Logical Unit (ALU). Adders are the primary and indispensable component of ALU. There are various adders available in the literature such as Ripple carry adder (RCA), Carry look ahead adder (CLA), Carry Skip adder (CskA) and Carry increment adder (CIA), etc. In this paper, a new hybrid adder is designed by combining the two significant adders such as Carry Skip adder and Carry increment adder. The hybrid adder has two main peripheral components namely RCA and Multiplexer. In this paper, the GDI technique is applied in both RCA and Multiplexer to design a new low power high speed hybrid adder. Simulation is done using Tanner EDA tool in 180nm technology and the results obtained shows a significant improvement in power consumption and delay.

Keywords: Carry Increment adder, Carry Skip adder, Gate Diffusion Input (GDI) Technique, Hybrid adder.

1.0. INTRODUCTION

Very Large-Scale Integration is the process of creating an Integrated Circuit by combining thousands of transistors into a single chip. Addition is one of the fundamental arithmetic operations. It is used extensively in many VLSI systems such as application specific DSP architectures and microprocessors. In most of these systems the adder is part of the critical path that determines the overall performance of the system. That is why to enhance the performance of the adder cell, the hybrid adder is one of the significant goals.

Adder is the core element of complex arithmetic circuits like addition, multiplication, division, exponentiation, and so forth. The demand of Very Large-Scale Integration (VLSI) is blooming. In any device capable of bringing about computation Arithmetic Logic Unit (ALU) and Floating - Point Unit (FPU) happens to be the main brain. Arithmetic Logic Unit is responsible for all the logical computations such as addition, subtraction, multiplication, division and logical operations. Adders are the main component of ALU, FPU Multiplier and they are also used in filter designing. So, to make this device faster we need to modify the basic and most heavily used circuit, i.e, Adders.

The semiconductor industry has witnessed an explosive growth of integration of sophisticated multimedia-based applications into mobile electronics gadgetry since the last decade. However, the critical concern in this arena is to reduce the increase in power consumption beyond a certain range of operating frequency. The main problems that a design engineer faces from time to time are the management between: Delay, Area and power consumptions.

Different logic styles tend to favour, one performance aspect at the expense of the others. The logic style used in logic gates basically influences the speed, size, power dissipation, and the wiring complexity of a circuit. The circuit delay is determined by the number of inversion levels, the number of transistors in series, transistor sizes (i.e., channel widths), and the intra cell wiring capacitances. Circuit size depends upon the number of transistors, their sizes and on the wiring complexity. Some of them use one logic style for the whole full adder while the other use more than one logic style for their implementation.

An adder is a digital circuit that performs addition of numbers. In many computers and other kinds of processors adders are used in the arithmetic logic units or ALU. They are also utilized in other parts of the processor, where they are used to calculate addresses, table indices, increment and decrement operators and similar operations.

Adders are the main component of ALU, Floating point unit (FPU) Multiplier and they are also used in filter designing. So, to make these devices faster we need to modify the basic and most heavily used circuit, i.e. Adders. Adders are classified into various types. They are, Half adder and Full adder.

1.1 Half Adder

A device capable of computing the sum of 2 bits as input and producing two outputs which are Sum and Carry is called Half Adder. It is an example of one of the simplest functional digital circuit which can be implemented using just two logic gates.

1.2 Logical Operation

- The output sum will be high when any one from the input A or B in the high state.
- If both A and B are high or low, the sum will be 0.
- Carry bit will only be high when both the inputs are high.

The equations representing the sum and carry of the half adder are,

The sum can be represented as

$$\text{Sum} = A'B + AB'$$

The carry can be represented as

$$\text{Cout} = A.B$$

1.3 Full Adder

If a device capable of computing the sum of 3 bits as input and producing two outputs which are Sum and Carry is called Full Adder. A full adder circuit adds binary numbers and an account for the values carried in as well as out, it is a combinational circuit that performs the addition operation of three inputs, A, B and Carry in (Cin). There are 8 possible input combinations for each case of sum(S) and carry out (Cout). The Full adder circuit is represented based on simple logical gates.

The equations representing the sum and carry of the full adder are, The sum can be represented as:

$$\text{Sum} = A \oplus B \oplus C$$

The carry function is given by:

$$\text{Cout} = AB + BC + CA$$

There are so many ways to design the Full Adder. A few logics to design a full adder are: Complementary metal oxide semiconductor devices (CMOS), Complementary pass logic (CPL), and Transmission Gate (TG) logic.

As the demand of high computational speed along with compact area and low power consumption is becoming indispensable, it's very important for the most fundamental components to be highly efficient.

Hybrid adder is the combination of two different adders or implementing a new logic style in the conventionally existing adders. In hybrid adders, the addition is performed using two adders. The addition of Least Significant Bit (LSB) is carried out by one adder and the Most Significant Byte (MSB) is carried out by another adder. The main objective to design hybrid adder is to take up the advantages of the adders connected to make it more efficient than individual adder.

1.4 Advantages of Hybrid Adder

- High Speed
- Reduce Power consumption,
- Reduction transistor counts
- Minimize the delay

1.5 Applications of Hybrid Adder

- Cellular phones
- Smart cards
- Laptops

In this paper, a new hybrid adder is designed by combining Carry Skip adder and Carry Increment adder. Further, Gate Diffusion Input Technique (GDI Technique) is used. The proposed hybrid adder using GDI Technique has several advantages over the conventional hybrid adders like improved in power consumption and delay.

2.0. LITERATURE REVIEW

Power consumption and propagation delay is tuned by sizing the transistors. This [1] adder operates successfully on low voltages and provides full output voltage swing and thus exhibits smaller power delay product at low voltages. In this paper, the transmission gates are used for Multiplexer. The 6T XNOR is

connected with Carry propagation adder to fasten the process. [2] Compared with 6T XOR/XNOR, the modified 6T XNOR offered low-power and high-speed. In [3] existed 6 transistors XNOR module is replaced with 4 transistors XNOR module. This modified XNOR module is responsible for most of the power consumption of the entire adder circuit. Due to this reduction of the transistor the performance of the adder is improved. If supply voltage is above the threshold voltage, then in [4] suggested to use PTL-GDI adder, instead if the adder is used in the wide range of supply voltages, then the author suggested to use GDI design.

3.0. GDI BASED HYBRID ADDER

The circuit diagram of the 4-bit Hybrid adder is shown in figure 1. It consists of two adders. The hybrid adder is either designed by combining two separate adders or by implementing a logic styles in the existing adder. The two adders which are used for the design of hybrid adder are Carry skip adder and Carry increment adder.

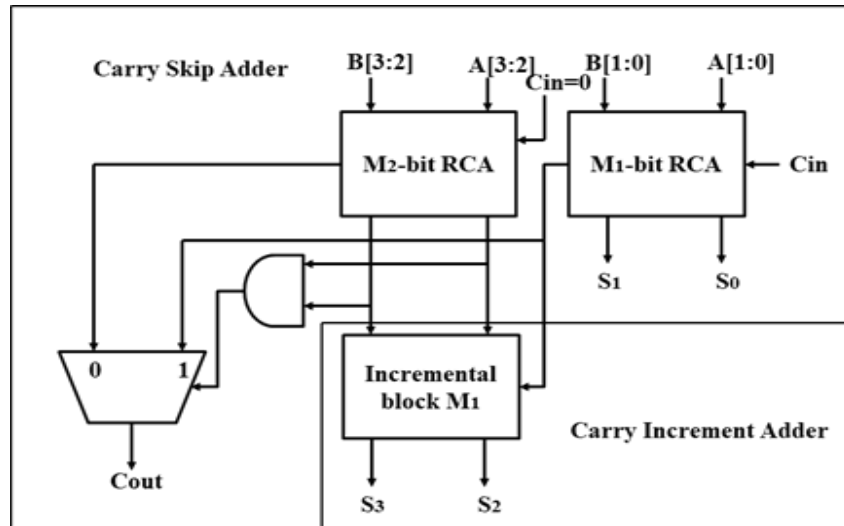


Fig-1: Circuit diagram of 4-bit Hybrid Adder

A carry-skip adder (CSkA) is also known as a carry-bypass adder. This is an adder implementation that improves on the delay of a ripple carry adder with little effort compared to other adders. In this proposed, hybrid adder the Carry Skip adder consists of Ripple Carry Adder (RCA), AND gate and Multiplexer. The RCA circuit is designed simply by cascading Full adder blocks. The carry-out of any full adder is propagated to the next stage as carry-in and the calculation continues in the next block.

3.1 Advantages of CSkA

- Critical path delay is much smaller than RCA.
- Efficient in terms of power consumption and area usage.
- Power delay product is smaller than those of carry select adder and parallel prefix adder structure.
- Benefits from relatively short wiring lengths as well as a regular and simple layout.

The AND gate is used to generate the select line input for the Multiplexer. The input of the AND gate would be the propagate value of the M2-bit RCA. The input of the Multiplexer would be the Cout of the M1-bit RCA and the M2-bit RCA.

The Conventional Full adder and Multiplexer are the two main peripheral components of this hybrid adder: by the optimized design of these two components low power high speed hybrid adder can be obtained. The Figure 1 shows the Circuit diagram of 4-bit Hybrid adder.

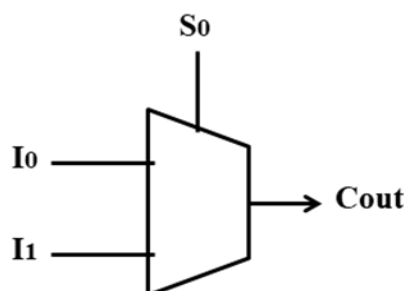


Fig-2: Circuit diagram of 2 to 1 Multiplexer

A multiplexer (or mux) is a device that selects one of several analog or digital input signals and forwards the selected input into a single line. A multiplexer of inputs has select lines, which are used to select which input line to send to the output. Multiplexers are mainly used to increase the amount of data that can be sent over the network within a certain amount of time and bandwidth. A multiplexer is also called a data selector. Multiplexers can also be used to implement Boolean functions of multiple variables. In analog circuit design, a multiplexer is a special type of analog switch that connects one signal selected from several inputs to a single output. In digital circuit design, the selector wires are of digital value. In the case of a 2-to-1 multiplexer, a logic value of 0 would connect I0 to the output while a logic value of 1 would connect I1 to the output. In larger multiplexers, the number of selector pins is equal to where is the number of inputs. Figure 2 represents the circuit diagram of 2 to 1 Multiplexer. A 2-to-1 multiplexer has a boolean equation where 'A' and 'B' are the two inputs, S is the selector input, and Z is the output,

$$Z = (A.S') + (B.S)$$

A Carry Increment Adder, an adder implementation that uses HA blocks for carry propagation. Carry propagation in HA is much faster than that of FA. That's why the total propagation delay in CLA is much less than other adder circuits. First two sum from the RCA is directly taken from the block, but rest is calculated from the carry-out of the first block and rest input through conditional incremental circuit. Second block will continue the operation by summing and creating carry-out. Incremental circuit is containing Half Adders. The increment operation will take place based on the carry-out of the 1st block.

As carry propagation delay is less in half adder than in full adder so, the total propagation delay through the increment adder is less. As the incremental circuit contains Half Adder it takes less time to generate the carry, so the delay is less than RCA circuit.

3.2 Advantages Of CIA

- Circuit complexity is less.
- It has a simple and regular layout in comparison with Carry Look Ahead Adder.
- Effective in higher (more numbers of) bit operation.

The GDI Logic based full adder consists of only 10 transistors to implement the sum and carry function. The Circuit delay is determined by the number of inversion levels, the number of transistors in series, transistor sizes (i.e., channel widths), and the intra cell wiring capacitances. Circuit size depends upon the number of transistors, their sizes and on the wiring complexity. Figure 3 represents the Circuit diagram of 4-bit Hybrid adder using GDI technique.

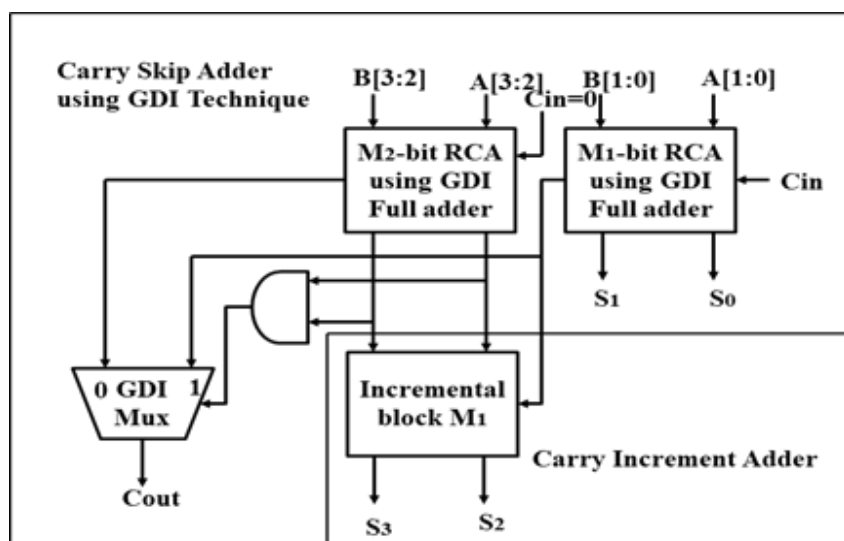


Fig-3: Circuit Diagram of 4-bit Hybrid adder using GDI Technique

In GDI logic based full adder, only 10 transistors are used to implement the sum and carry function. The sum and carry cell are implemented in a cascaded way i.e. firstly the XOR cell is implemented and then using that XOR as input, sum as well as carry cell is implemented. For GDI adder the sum as well as carry cell is designed using GDI technique. The advantage of this adder is if this adder is to be used in a wide range of supply voltages (for example 0.8V-3V), then this GDI design is suggested to use. Figure 4 represents the circuit diagram of Ripple carry adder using GDI technique.

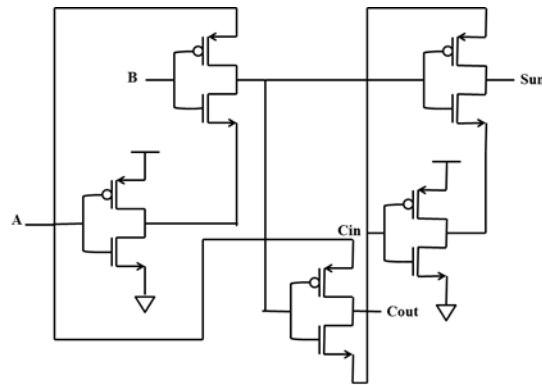


Fig-4: Circuit diagram of Ripple carry adder using GDI technique

The GDI method is based on the use of a simple cell. At the first look the design seems to be like an inverter, but the main differences are the connections. Figure 5 shows the circuit diagram of GDI Multiplexer. GDI multiplexer consists of only two transistors. By using this GDI technique, the power consumption is reduced with the delay because it uses a minimum number of transistors to calculate the output.

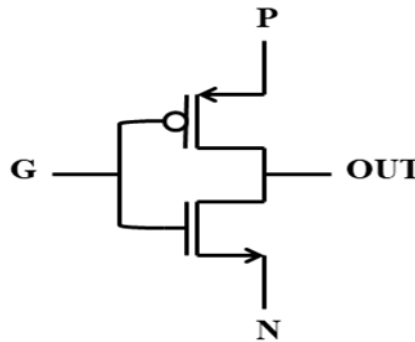


Fig-5: Circuit diagram of GDI Multiplexer

Incremental circuit is a part of the hybrid adder using GDI techniques. The incremental circuit that uses half adder (HA) blocks for carry propagation. Carry propagation in HA is much faster than that of full adder (FA). That's why the total propagation delay in CLA is much less than other adder circuits. First two sum from the RCA is directly taken from the block, but rest is calculated from the carry-out of the first block and rest input through conditional incremental circuit. Second block will continue the operation by summing and creating carry-out. Incremental circuit is containing Half Adders. The increment operation will take place based on the carry-out of the 1st block.

As carry propagation delay is less in half adder than in full adder so, the total propagation delay through the increment adder is less. As the incremental circuit contains Half Adder it takes less time to generate the carry, so the delay is less than RCA circuit.

4.0 RESULTS AND DISCUSSION

The proposed hybrid adder is the combination of Carry Skip adder (CSkA) and Carry Increment adder (CIA). The Full adder (Ripple carry adder) and the multiplexer are the two main peripheral components of the hybrid adder; which are designed using Gate diffusion input (GDI) technique to obtain a low power high speed hybrid adder. The implementation of Hybrid adder is done by using Tanner EDA software.

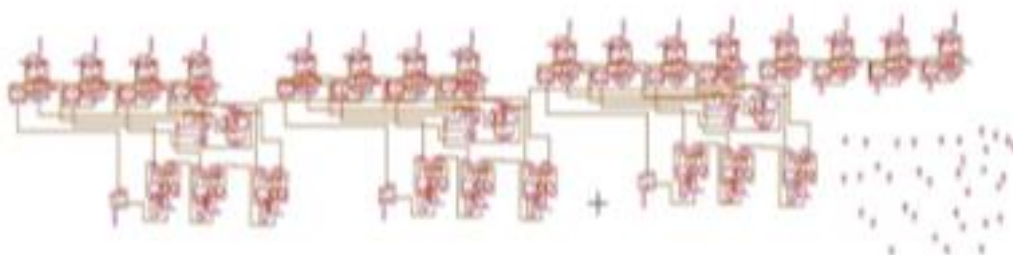


Fig-6: Schematic diagram for 16-bit hybrid adder.

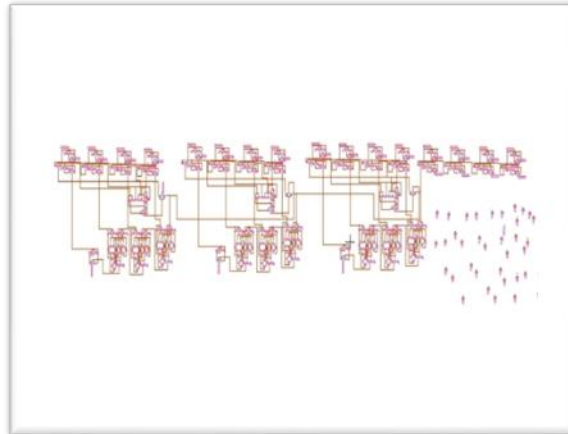


Fig-7: Schematic diagram for 16-bit hybrid adder using GDI Technique

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* BEGIN NON-GRAPHICAL DATA

Power Results
VoltageSource_1 from time 1e-009 to 1e-006
Average power consumed -> 4.138197e-004 watts
Max power 8.227527e-003 at time 5.5e-008
Min power 9.377072e-006 at time 1.08439e-008

* END NON-GRAPHICAL DATA

* BEGIN NON-GRAPHICAL DATA

MEASUREMENT RESULTS
tdelay = 3.9852e-008
Trigger = 5.0900e-008
Target = 1.1048e-008

* END NON-GRAPHICAL DATA
*
    
```

Fig-8: Power and Delay values for 16-bit hybrid adder

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* BEGIN NON-GRAPHICAL DATA

Power Results
VoltageSource_1 from time 1e-009 to 1e-006
Average power consumed -> 1.485201e-004 watts
Max power 3.161050e-003 at time 6.62615e-008
Min power 6.098260e-005 at time 7.06982e-008

* END NON-GRAPHICAL DATA

* BEGIN NON-GRAPHICAL DATA

MEASUREMENT RESULTS
tdelay = 9.3198e-009
Trigger = 5.0900e-008
Target = 4.1580e-008

* END NON-GRAPHICAL DATA
*
    
```

Fig-9: Power and Delay values for 16-bit hybrid adder using GDI technique

Table-1: Performance Comparison of Hybrid Adder

Hybrid Adder	Without GDI Technique			With GDI Technique		
	Power (uW)	Delay (ns)	PDP (pWs)	Power (uW)	Delay (ns)	PDP (pWs)
4-bit	177.138	29.46	5.218	28.335	20.40	0.578
8-bit	212.012	40.06	8.493	102.837	20.39	2.096
16-bit	413.819	39.85	16.49	148.520	9.319	1.384

The above Table 1 shows the performance comparison of 4-bit hybrid adder using GDI technique which provides 84% of power savings and 30.75% of delay improvement when compared with hybrid adder without GDI technique. The performance comparison of 8-bit hybrid adder using GDI technique which provides 51.49% of power savings and 49.10% of delay improvement when compared with hybrid adder without GDI technique and the performance comparison of 16-bit hybrid adder using GDI technique which provides 49.10% of power savings and 43.48% of delay improvement when compared with hybrid adder without GDI technique.

5.0. CONCLUSION

In this paper, a novel hybrid adder was designed. Ripple carry adder (RCA) block and Multiplexer are the two main peripheral components of the Hybrid adder which were designed using the Gate diffusion Input (GDI) technique to obtain a new low power high speed hybrid adder. RCA design using the GDI technique provides 99.3% of power savings and 97.35% of delay improvement and the multiplexer design using the GDI technique provides 28.3% of power savings and 99.6% of delay improvement when compared with the conventional RCA and multiplexer design. In this project, 4-bit, 8-bit and 16-bit hybrid adders were designed using GDI technique. The proposed 4-bit, 8-bit, and 16-bit hybrid adders design using GDI technique provides 84%, 51.49%, and 49.10% of power savings and 30.75%, 49.10% and 43.48% of delay improvement. Thus from the simulation results it was observed that the proposed hybrid adder using GDI technique have improved delay and power consumption performances.

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DETERMINANTS OF RURAL HOUSEHOLDS' INVESTMENT IN TAMIL NADU – A STUDY

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ABSTRACT

After independence, India has witnessed a significant difference between the development of rural and urban regions. The indicator of development is often synonymous to the economic status of people which is conspicuous by their financial capacity. Income, expenditure, savings and investment are the four constituents which facilitates the computation of the financial capacity of an individual or a group in any developing economy. However, investment plays the most significant role to analyse one's financial status as it is an outcome of one's surplus income. Thus, the financial experts also claim that an increase in surplus income of the rural investors positively affects their level of investment. In addition, the economists have acknowledged that financial literacy is one of the latent factors which can positively induce the investment pattern of people in a potential economy. The Government of India along with its Apex bank has a prominent responsibility to develop the economic condition and financial status of its people especially in order to incorporate a balanced regional growth between the rural and urban economy, the government has introduced ample policies and programmes. However, the outcome of the same is not commendable or productive. The research paper attempts to disclose the factors affecting the investment of rural households of Tamil Nadu. The demographic profile of the rural households and their level of awareness on formal financial investment avenues are also discussed in this research work. The study is empirical in nature and encompasses both primary and secondary data. The primary data was surveyed through judgement sampling technique using a well-organised interview schedule among the rural households in the district of Kancheepuram. Books, journals, working papers and web sources contributed to the secondary data of the research work. Suitable statistical tools were used to analyse the collected data and to provide comprehensive inferences. The outcome of the study can assist the government executives and the policymakers to take remedial measures for the financial empowerment of people residing in the rural areas of Tamil Nadu.

Keywords: Financial capacity, Investment pattern, Rural households, Rural investors and Rural topography.

INTRODUCTION

After independence, India has witnessed a significant difference between the development of rural and urban regions. The indicator of development is often synonymous to the economic status of people which is conspicuous by their financial capacity. Income, expenditure, savings and investment are the four constituents which facilitates the computation of the financial capacity of an individual or a group in any developing economy. However, the investment pattern of people plays the most significant role to analyse one's financial status as it is an outcome of one's surplus income. Thus, the financial experts also claim that an increase in surplus income of people positively affects their level of investment. In addition, the economists have acknowledged that financial literacy is one of the latent factors which will positively induce the investment pattern of people in a potential economy.

Since 1961, the Reserve Bank of India (RBI) has been taking the incidence of indebtedness into account to analyse the performance of the financial institutions contiguous to rural areas. The statistics revealed that the outstanding credit to rural communities has been gradually increasing over a period of time. Several studies of the RBI documented that the physical assets and financial assets procured by rural people are neither productive nor contributing to their financial capability (Chavan, 2012). Therefore, a developing economy like India should provide the utmost opportunities to increase the financial capacity of its people. The Government of India along with its Apex bank has a prominent responsibility to develop the economic condition and financial status of its people. In order to incorporate a balanced regional growth between the rural and urban economy, the Government has introduced ample policies and programmes. However, the outcome of the same is not commendable or productive. The research paper attempts to disclose the factors affecting the investment of rural households of Tamil Nadu. The outcome of the study can assist the government executives and the policymakers to take remedial measures for the financial empowerment of people residing in the rural areas of Tamil Nadu.

INVESTMENT – DEFINITIONS AND MEANING

The term 'Investment' is defined as "the act of putting money, effort, time, etc. into something to make a profit or get an advantage" (Cambridge Dictionary). Investment can also be understood as money committed or property acquired for future income (Business Dictionary). Investment is a thing that is worth buying because it

may be profitable or useful in the future (Oxford Dictionary). In general, investment refers to the purchasing of financial assets with a view to expect returns in future. Bank deposits, government bonds, mutual funds, post office deposits, insurance policies, equities, shares, securities, debentures, provident funds, corporate bonds, treasury bills etc., are the prevalent institutional based investment avenues accessible to people. Investors tend to acquire productive assets and real assets as it provides a reasonable rate of return in future.

DETERMINANTS OF RURAL HOUSEHOLDS' INVESTMENT

The investment pattern of an individual primarily depends on his/her income and expenditure. The oddments of income after expenditure can be saved and invested with the purpose of positive future returns. The investment pattern of people influenced by numerous factors namely economic conditions, financial capacity, social factors, financial literacy, awareness of financial investment avenues, family situation etc. However, the factors affecting rural investors would be entirely distinct to general investors as the possibilities of income flow are limited to rural geography.

SOCIO-ECONOMIC CONDITION OF TAMIL NADU

The census of India, 2011 has revealed that the state of Tamil Nadu covers 3.72 crores (approximately) of the population in its rural geography distributed among 31 districts and 15,979 villages. The Rural literacy rate of Tamil Nadu stood at 73.5 percent to the urban literacy rate of 87.0%. The proportion of marginal workers of the state is higher in rural areas as they engage in seasonal activities. Tamil Nadu ranked as the second largest economy in India with a Gross State Domestic Product (GSDP) worth of 14.27 trillion rupees as on December 2018. Agriculture, animal husbandry, fisheries, forestry, industry, energy, transport and communication form part of the state's economy. The socio-economic condition and growth of the state is quite competitive and developing compared to all the leading states of the nation.

REVIEW OF LITERATURE

Savings of rural individuals are often decided by their incentives and financial ability. In such cases, based on their ability people tend to save and the savings can be further invested in financial assets for better returns (Desai, 1983). Consistency in generation of employment, vocational training and access to formal finance improve the financial viability of people in rural areas. The concentration of government policies and programmes on these elements creates a sustained rural economy with better financial potentiality (Nguyen, 2007). Demographic characteristics potentially facilitate the savings and investment behaviour of households in a rural economy, notably the age of the household heads has a greater significance (Komla, 2012). A study conducted in the Kwara state of Nigeria has revealed that the expenditure for food, size of the household, limited social security and reduced number of earning members directly affects the savings and investment behaviour of rural households. In addition, the study also emphasised that people belonging to non-farming communities are observed with an increase in savings and investment (Obayelu, 2012).

Wealth and assets of households have a strong influence on investment possibilities. However, the marginalised people residing in remote areas were recorded with a meagre or lesser investment especially amongst females and older people compared to their household heads (Hohfeld and Waibel, 2013). Investment avenues available for rural households are limited, which trace an impact on their investment pattern. The access to financial literacy also has an influence on the investment behaviour of the people in rural topography (Nayak, 2013). Savings and investments of individuals is a driving force of any economy; This calls for the motivation of investing activities by rural people to improve and sustain their economic conditions. The financial service providers should satiate the demands of rural investors to capitalise the rural markets (Mathi and Kungumapriya, 2014).

Savings and investments of people can be planned through their consumption pattern, however middle-aged people save and invest more in comparison to people of old age due to less income or no income (Amudha and Varathan, 2015). Amongst the financial institutions, the outreach of the mutual fund industry considers the market of the rural people to be insignificant. However, there is potential of small investors from rural areas which would be mutually beneficial for the rural people and the industry if the market is tapped (Sharma and Singh, 2015). The investment attitude of people depends on their awareness level on the different investment avenues prevailing in their society. Thus, by conducting awareness programmes about available investment portals may increase the investors in the rural geography (Gasti, 2017).

RATIONALE OF THE STUDY

The research works on rural investors in the past comprehensively discuss the saving and investment behaviour of people and only very few studies concentrate on the factors of the investment pattern of rural people. However, this research paper aims to disclose the factors affecting investment of rural households. The research

study also intends to study the level of awareness of rural people about formal investment avenues in India. The results and discussions of the paper will be a strong contribution to the existing literature related to rural investors.

OBJECTIVES OF THE STUDY

1. To study the demographic profile of rural households in Tamil Nadu.
2. To measure the level of awareness of rural households about the formal financial avenues.
3. To identify the factors affecting the investment from rural households in Tamil Nadu.
4. To suggest measures to overcome the problems faced by rural investors in Tamil Nadu.

HYPOTHESES OF THE STUDY

1. H_{01} : There is no significant difference between the educational qualification of the respondents and their level of awareness on formal investment avenues.
2. H_{02} : There is no significant difference between the age of the respondents and the factors affecting their investment.

RESEARCH METHODOLOGY

The present research work is empirical in nature. The study comprises both primary and secondary data. In order to study the factors affecting investment of rural households in Tamil Nadu, the researcher has conducted a survey among a valid sample of 200 households in the rural district of Kancheepuram. The primary data was collected with the help of a well-organised interview schedule by exploiting the judgement sampling technique. The interview schedule encompasses objective type, dichotomous and Likert's 5-point scale questions. Books, journals, conference proceedings, unpublished dissertation and web sources constitutes the secondary data of the research work.

LIMITATIONS OF THE STUDY

1. The sample for the study is confined to rural Kancheepuram district in the state of Tamil Nadu only. Hence the findings cannot be treated as a representative of the entire nation.
2. The judgment sampling method and the restricted sample of 200 respondents might have limited the findings of the study.
3. Time is also a major concern; The research work was carried out within a short span of time and it causes a limitation for this study.

DATA ANALYSIS AND INTERPRETATION

After editing the data collected from the 200 rural households were loaded in the statistical package for social science (SPSS 25th Version). In order to check the reliability of the collected data, the Cronbach's Alpha test was used and the value stood at 0.9185 (91.85%), since the value arrived has exceeded the benchmark value of 0.75 (75%), the researcher proceeded with data analysis. In this study, appropriate statistical techniques viz simple percentage analysis, one-way analysis of variance (ANOVA) and multivariate factor analysis are utilised to accomplish the objectives of the study. The results of the data analysis are tabulated and presented below along with detailed inferences.

DEMOGRAPHIC PROFILE OF THE RURAL RESPONDENTS

Many studies have revealed that the savings and investment behaviour of people are influenced by their demographic profile. Age, gender, educational qualification, marital status, occupation and monthly income of the rural households were studied through simple percentage analysis and the results are presented below.

It is inferred from the below table that 32.5% of the sample hails from the age group of 21 – 30 years, 63% of the respondents are male and 34% of the respondents have educational qualification of SSLC or higher secondary. The table also reveals that majority of the rural sample are married which is 81.5%, nearly 34.5% of the rural respondents are private employees followed by labourers and 24.5% of the sample earn less than 5000 rupees as their monthly income. Therefore, the demographic profile of the rural respondents indicates that the majority of them are young married men possessing school level education and employed in the private sector with a monthly earning of less than 5000 rupees.

Table-1.1: showing the Demographic Profile of the Rural Respondents

Demographic Profile		Frequency (n=200)	Percent (%)
Age (In Years)	Up to 20 years	27	13.5

	21-30 years	65	32.5
	31-40 years	55	27.5
	41-50 years	33	16.5
	Above 50 years	20	10.0
Gender	Male	126	63.0
	Female	74	37.0
Educational Qualification	Illiterate	20	10.0
	Primary/Middle	26	13.0
	SSLC/Higher Secondary	68	34.0
	Diploma Holder	26	13.0
	Under Graduate	23	11.5
	Post Graduate/Professional	37	18.5
Marital Status	Single	37	18.5
	Married	163	81.5
Occupation	Farmer	29	14.5
	MNREGA Worker	19	9.5
	Labour	35	17.5
	Private Employee	69	34.5
	Government Employee	24	12.0
	Entrepreneur/Self-Employed/Professional	24	12.0
Monthly Income (In Rupees)	Less than Rs.5000	49	24.5
	Rs.5,001 to 10,000	39	19.5
	Rs.10, 001 to 15,000	41	20.5
	Rs.15,001 to 20,000	27	13.5
	Rs.20,001 & above	44	22.0

Source: Primary Data

TYPE OF INVESTMENT OF RURAL RESPONDENTS

The rural investors have a unique type of investment behaviour to general investors due to their distinct financial capacity and investment access. The type of investment of the rural households is disclosed through a simple percentage analysis and the below table reveals its findings.

Table 1.2 describes that majority (51%) of the rural households invest in the productive assets whereas 22% of the rural people invest in gold, silver and other metals. It is further assessed from the table that 13.5% of the rural respondents possess bank deposits as their investment and only 8% and 5.5% of the sample have insurance and other investments as their type of investment. Hence, it can be clearly understood that the type of investment is dominated by productive assets such as farming lands, cattle, poultry etc.

Table-1.2: showing the Type of Investment made by the Rural Households

Type of Investment	Frequency	Percent (%)
Productive Assets	102	51.0
Gold, Silver and Other Metals	44	22.0
Bank Deposits	27	13.5
Insurance	16	8.0
Other Investments	11	5.5
Total	200	100.0

Source: Primary Data

AWARENESS LEVEL OF RURAL HOUSEHOLDS ON FORMAL INVESTMENT AVENUES

The research work reveals the level of awareness of the rural households on formal financial investment avenues through the tabulation of the data using simple percentage analysis and the results are presented below.

Table-1.3: showing the Awareness level of Rural Households on Formal Investment Avenues

Formal Investment Avenues	Aware	Unaware	Total	Aware (%)	Unaware (%)	Total (%)
Bank Deposits	125	75	200.0	62.5	37.5	100.0
Postal Deposits/Certificates	94	106	200.0	47.0	53.0	100.0
Insurance	73	127	200.0	36.5	63.5	100.0
Mutual Funds	70	130	200.0	35.0	65.0	100.0
Government Bills/Bonds	45	155	200.0	22.5	77.5	100.0
Corporate Securities	71	129	200.0	35.5	64.5	100.0
Provident Fund/Pension Schemes	112	88	200.0	56.0	44.0	100.0

Source: Primary Data

It is inferred from the above table that the majority of the rural households which constitutes to 62.5% are aware of bank deposits and 56% of the respondents are aware of the provident fund or pension schemes. 36.5% of the sample are aware of insurance as one of the formal investment avenues and 35.5% of the rural households are aware of corporate securities. 35% of rural respondents are aware of mutual funds however only 22.5% of the rural investors are aware of government bills or bonds. Therefore, it is vivid from the analysis that rural investors have limited awareness of the formal investment avenues.

INFLUENCE OF EDUCATIONAL QUALIFICATION OF RESPONDENTS ON THEIR AWARENESS LEVEL ON FORMAL INVESTMENT AVENUES

The one-way analysis of variance test reveals the influence of the educational qualification of the rural respondents on their level of awareness about formal investment avenues. The outcomes of the analysis are presented in the below table as follows.

Table 1.4 showing the Influence of Educational Qualification of Respondents on their Awareness level on Formal Investment Avenues

ANOVA						
Educational Qualification of the Respondents		Sum of Squares	df	Mean Square	F	Sig.
Bank Deposits	Between Groups	.548	5	.110	.459	.807
	Within Groups	46.327	194	.239		
	Total	46.875	199			
Postal Deposits/ Certificates	Between Groups	.618	5	.124	.488	.785
	Within Groups	49.202	194	.254		
	Total	49.820	199			
Insurance	Between Groups	1.610	5	.322	1.396	.227
	Within Groups	44.745	194	.231		
	Total	46.355	199			
Mutual Funds	Between Groups	2.247	5	.449	2.016	.078
	Within Groups	43.253	194	.223		
	Total	45.500	199			
Government Bills/Bonds	Between Groups	.912	5	.182	1.042	.394
	Within Groups	33.963	194	.175		
	Total	34.875	199			
Corporate Securities	Between Groups	.966	5	.193	.836	.526
	Within Groups	44.829	194	.231		
	Total	45.795	199			
Provident Fund/ Pension Schemes	Between Groups	2.618	5	.524	2.176	.058
	Within Groups	46.662	194	.241		
	Total	49.280	199			

Source: Computed Data

H_{01} : There is no significant difference between the educational qualification of the respondents and their level of awareness on formal investment avenues.

From the above table it is revealed that bank deposits (F value 0.459, P value 0.807), postal deposits or certificates (F value 0.488, P value 0.785), insurance (F value 1.396, P value 0.227), mutual funds (F value 2.016, P value 0.078), government bills or bonds (F value 1.042, P value 0.394), corporate securities (F value 0.836, P value 0.526) and provident fund or pension schemes (F value 2.176, P value 0.058) are not statistically significant at 5% level of significance. Thus, it can be concluded that there is no influence between the rural respondents' educational qualification and their awareness on formal investment avenues as the P value of the variables are greater than 0.05. Hence, the null hypothesis is accepted.

FACTORS AFFECTING INVESTMENT OF RURAL HOUSEHOLDS

In order to determine the factors affecting investment of rural households, 15 relevant variables were selected and surveyed among the rural respondents. The multivariate exploratory factor analysis was performed for the reduction of 15 variables into meaningful factors. The result of the statistical analysis including Kaiser-Meyer-Olkin Measure of Sampling Adequacy test, Initial Eigen values, Rotation sum of squared loadings, Rotated component matrix and Communalities of each loaded variables were lucidly presented in the following table.

The KMO and Bartlett's test clearly indicated that the variables totally have adequacy of 89.3% and the P value 0.000 revealed that there is a significant relationship exists between the chosen variables related to the study. The extraction method of the principal component analysis was performed to reduce the 15 variables into 3 significant factors. The initial eigen value of each linear factor in the table reveals that the first factor possesses a variance of 48.64% of variance whereas the consequent factors reveal less variance of 13.48% and 7.43%.

From the initial rotation, it is evident that the 17 variables can be extracted into meaningful factors. However, post rotation the variance of the 3 factors was distributed as 30.19%, 22.96% and 16.40% with a cumulative variance of 69.56% as portrayed in table 1.5. The communalities of the 15 surveyed variables range from 0.561 to 0.832 proved that an enormous amount of variance can be extracted by the factor solution. Using Varimax orthogonal criterion and by suppressing the factor loadings less than 0.5 the rotated component matrix is obtained. This is evidential to showcase that all the 15 variables can be converted into 3 significant factors with high loadings based on their interrelationship.

The outcome of the multivariate factor analysis shows that the Factor 1 (30.19% of Variance) is loaded with 7 variables viz, no surplus income to save and invest, regular increase in household expenses, limited awareness about the investment avenues, lack of knowledge about investment, no conducive family condition to invest, having lack of interest towards future and limited earning members in family. So, Factor 1 is named 'Personal Factor'. Secondly, the Factor 2 (22.96% of Variance) is loaded with 5 variables namely lack of regular employment, no increase in income, no guarantee for return on investment, restricted access to formal investment avenues and rural economy is not favourable to invest. Hence, Factor 2 is named 'Economic Factor'. Finally, Factor 3 (16.40% of variance) is loaded with 3 variables lack of trust in investment avenues; government is not favourable to rural investors and no social security for rural people. Therefore, Factor 3 is named 'Social Factor'.

Table-1.5: showing the Factors Affecting Investment of Rural Households

KMO and Bartlett's Test						
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.						0.893
Bartlett's Test of Sphericity				Approx. Chi-Square		1987.704
				df		105
				Sig.		0.000
Total Variance Explained						
Component	Initial Eigen values			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	7.297	48.648	48.648	4.529	30.195	30.195
2	2.023	13.485	62.133	3.445	22.965	53.160
3	1.115	7.433	69.566	2.461	16.406	69.566
Extraction Method: Principal Component Analysis.						
Rotated Component Matrix				Component	Communalities	Factors

No surplus income to save and invest	0.842	0.760	PERSONAL FACTOR
Regular increase in household expenses	0.787	0.660	
Limited awareness about the investment avenues	0.783	0.669	
Lack of knowledge about investment	0.744	0.610	
No conducive family condition to invest	0.709	0.561	
Having lack of interest towards future	0.709	0.655	
Limited earning members in family	0.614	0.687	ECONOMIC FACTOR
Lack of regular employment	0.813	0.743	
No increase in income	0.807	0.725	
No guarantee for return on investment	0.780	0.683	
Restricted access to formal investment avenues	0.751	0.629	
Rural economy is not favourable to invest	0.725	0.625	SOCIAL FACTOR
Lack of trust in investment avenues	0.850	0.832	
Government is not favourable to rural investors	0.799	0.802	
No social security for rural people	0.638	0.793	
Extraction Method: Principal Component Analysis.			
Rotation Method: Varimax with Kaiser Normalization.			
a. Rotation converged in 5 iterations.			

Source: Computed Data

From the factor analysis, it is clearly unveiled that the personal factor explains the most of the variance as it is loaded with numerous variables with a greater percentage of variance followed by the economic factor and social factor. Thus, it can be concluded that the personal, economic and social are the three factors which strongly affects the investment of rural households in Tamil Nadu.

INFLUENCE OF AGE OF THE RESPONDENTS ON THE FACTORS AFFECTING RURAL HOUSEHOLDS' INVESTMENT

The one-way analysis of variance test is used to analyse the influence between the age of the respondents and the factors affecting the investment of rural households in Tamil Nadu. The results are tabulated and presented as follows.

Table-1.6: showing the Influence of Age of the Respondents on the Factors Affecting Rural Households' Investment

ANOVA					
Age of the Respondents		Sum of Squares	df	Mean Square	F
Personal Factor	Between Groups	10.949	4	2.737	4.290
	Within Groups	124.406	195	.638	
	Total	135.355	199		
Economic Factor	Between Groups	26.166	4	6.541	8.076
	Within Groups	157.949	195	.810	
	Total	184.115	199		
Social Factor	Between Groups	6.954	4	1.738	2.506
	Within Groups	140.908	195	.723	
	Total	147.862	199		

Source: Computed Data

H_{02} : There is no significant difference between the age of the respondents and the factors affecting their investment.

The above table discloses that the personal factor ($F=4.290$, $P=0.002$), economic factor ($F=8.076$, $P=0.000$) and social factor ($F=2.506$, $P=0.049$) are statistically significant at 5% level of significance. Therefore, it is understood that there is a strong influence between the age of the respondents and the factors affecting their investment as the P value of the factors are less than 0.05. Thus, the null hypothesis is rejected. So, there is a significant difference between the age of the respondents and the factors affecting their investment.

RESEARCH FINDINGS

1. The demographic profile of the rural respondents indicates that majority of them are young married men possessing school level education and employed in the private sector with a monthly earning of less than 5000 rupees.
2. The type of investment possessed by the rural households is dominated with productive assets like farming lands, cattle, poultry etc followed by gold or silver or other metals.
3. The rural investors have limited awareness about the formal investment avenues except for bank deposits and provident fund or pension schemes.
4. The study exposed that there is no influence exists between the rural respondents' educational qualification and their awareness of formal investment avenues.
5. The personal, economic and social factors are the three factors strongly affecting the investment of rural households in Tamil Nadu.
6. The research work revealed that there is a significant difference between the age of the respondents and the factors affecting their investment.

SUGGESTIONS

The rural households' demographic profile portrays their substandard financial status. Therefore, before envisaging their investment pattern, it is important to upgrade their socio-economic condition. The Government of India should take necessary steps to enrich the overall environment of the rural people on par with the urban. The dominance of productive assets and gold in the investment options of rural households prove that they are inclined towards traditional and informal investment patterns. Hence, the formal investment avenues should take utmost action to make their products accessible and suitable to the rural people. Especially, the insurance and the mutual fund industry should come up with innovative schemes to attract and capitalise the untapped rural market. The study depicts the poor awareness level of rural respondents about the formal investment avenues, which hints the necessity of financial literacy for the rural households. Thus, the financial institutions should utilise effective tools and techniques to enrich the knowledge of people on formal investment avenues. Opening financial literacy centres equipped with investment advisors and professionals may facilitate the rural investors to shift from the informal to formal investment pattern. Since the age of rural people has a significant effect on investment, the investment avenues should provide tailor-made investment services to the rural people classified based on their age.

CONCLUSION

The primary objective of the study was to discover the factors affecting the rural households in Tamil Nadu. The outcome of the research work has been achieved by revealing three significant factors namely personal factor, economic factor and social factor which influences the investment of people residing in the rural areas of Tamil Nadu. The personal factor which affects the investment of rural households can be managed by incorporating better financial management plans and by offering financial counselling in time of need. However, the economic and social factors can be effectively handled through suitable policies and programmes on rural development by the Government of India. Therefore, the government and financial institutions should go hand in hand to create a typical and feasible investment climate for the rural inhabitants by inducting effective framework.

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DIGITAL LIBRARY: SERVICES AND ITS APPLICATIONS IN THE INFORMATION AGE

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ABSTRACT

Over the last three decades a new technologies have helped the early visualizations of digital libraries to become a reality. Digital libraries are becoming a vital part of digital learning age. Their vital role is increasingly becoming a measure of the library's part to the revolution and development of a society and the nation at large. A digital library that deals with data those are born digital as well as those that have been digitized from their analogue form. The aim of this paper is to discuss services and implications of digital libraries in the information age. It represents basic concepts, historical environment, components, characteristics, process, advantages, and disadvantages in digital environment.

Keywords: Digital Library, library services, advantages, ICT, digital age.

INTRODUCTION

The present age is the age of ICT. To adopt with the new trends information technology environment, every field, and department is suppose to accept new emerging technology in it. So digital library is emerged in the case of library. The concept of digital library is depending on storage, process and disseminates information to users through electronic systems. Digital information may include a combination of structured/unstructured text/numeric data, scanned images, photo, video, audio, graphics, recording etc.

DIGITAL LIBRARY: MEANING AND CONCEPT

Digital libraries summarize different aspects hence cannot be explained in a simple definition. Many authors, researchers and organizations tried to define digital libraries that reflect their basic nature and characteristics. Some of the definitions given by the authors are given below.

According to Gladney H.M, et.al.(1994) “ A digital library service is an assemblage of digital computing, storage, and communications machinery together with the software needed to reproduce, emulate and extend services provided by conventional libraries based on paper and other material means of collecting, storing, cataloguing, finding and disseminating information.

Edward A. Fox defined the term “digital library is a machine readable representation of materials which might be found in a university library together with organizing information intended to help users find specific information. A digital library service is an assemblage of digital computing, storage, and communicating machinery together with the software needed to reprise, emulate, and extend the services provided by conventional libraries based on paper and other material means of collecting, storing, cataloging, finding, and disseminating information.”

Paul Duguid (1997) has defined the digital library as an environment to bring together in support of life cycle of information in addition to digital collection and information management tools.

According to William Saffady digital library “is a library that maintains all, or a substantial part, of its collection in computer-processible form as an alternative, supplement, or complement to the conventional printed and microfilm materials that currently dominate library collections”

Stella Keenan "Digital library which looks and feels like a paper-based library but where items have been stored in digital form and stored for access in a networked environment which can be used by users in remote locations".

IFLA/UNESCO Manifesto stated that “A digital library is an online collection of digital objects, of assured quality, that are created or collected and managed according to internationally accepted principles for collection development and made accessible in a coherent and sustainable manner, supported by services necessary to allow users to retrieve and exploit the resources.”

CHARACTERISTICS OF DIGITAL LIBRARY

The collection of digital libraries must be in digitized form. Therefore reading material has to be converted into digital. The digital objects must be organized in easy to access to users. Digital library has the following characteristics

-
- In Digital library resources can be used and viewed by several users with reference to their individual information need.
 - A digital library has remote access to variety of digital information resources worldwide and equally to everyone having internet access.
 - Digital Library may contain several information resources ranging from text to image, audio and video etc.
 - Digital libraries are able to prevent the irrelevant information.
 - Digital libraries largely reduce the need for the physical space required for the building and maintenance.
 - Digital libraries break up the time, space and language barriers.
 - Digital libraries provide advanced searching and retrieving technology.
 - Users may build their own personal collection.

Advantages of Digital library

The main advantage of the Digital library as indicated below

- Digital libraries make use of most up-to-date information technologies to store enormous amounts of information in digitized form
- It helps in resource sharing and inter-library Loan between the libraries.
- It provides quick services to users for searching the needed information
- It saves funds, time and manpower.
- It helps to quick access SDI, CAS, abstracting and indexing of periodicals, retrospective conversion, search, bibliographical information, Boolean search and union catalogues.
- It reduced the repetition and duplication of new information.
- Users will get needed information with minimum time in across the world.
- OPAC through internet gives access to bibliographic records of books, e-journals, and research articles, details of holdings of academic and research libraries and newsletters.

Disadvantages of digital library

The main Disadvantage of the Digital library as indicated below

- A problem frequently encountered and difficult to overcome will be the one of copyright and intellectual property issues.
 - This trend is faced because electronic information is more easily manipulated and reproduced and the identity of the author or changes affected to original data is harder to establish.
 - Changing habits in the arena of learning and teaching is also another problem browsing on the digitized form is difficult when compared to printed form remote access to documents are uncomfortable when compared to spot accesses a disappearance of nascent information in internet.
 - Inadequacy of the libraries to predict the future use of documents, irrespective of its type i.e. printed or digital.
 - Multiple interfaces -Every product will be having its own distinct user interface.
 - Users need to memorize different passwords for different products.
 - The scope of coverage and available archives is often limited.
 - Often there is no cost savings, especially when these products are maintained and the cost of hardware, software; leasing communication circuit is generally very high.
 - Access to archive e-files -There are restrictions, which vary from vendor to vendor, on how the product can be used.
 - Lack of knowledge in using to access the required information.
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DIGITAL LIBRARY SERVICES AND APPLICATION IN THE INFORMATION AGE

Every library followed different type's services to users. In this age of Information ICT changes the concept of traditional library work as well as service. Now days many reference books like dictionaries, hand-books, encyclopedias, directories, abstracting and indexing services etc are published in electronic form. Digital libraries have been focused mainly on providing access to current digital information resources. The new trends of ICT and in Web technologies have brought significant changes in the concepts of traditional reference services and a number of web-based 'expert services'.

1. Web-based Services

Libraries provide Web-based real-time reference services using specific software, BBS, interactive communication tools, call centre management software.

- library catalogue and union catalogue
- bibliographic databases
- subject gate ways in specific discipline
- Remote information services
- CD-ROM databases
- Providing link to websites
- Accessing and procuring e-reference sources
- Document delivery services
- Bulletin board service
- Discussion groups and forum
- Electronic document delivery services

Web 2.0

Web 2.0 is focus on the ability for people to collaborate and share information online. Web 2.0 basically refers to the conversion from static HTML web pages to a more dynamic web that is more organized and is based on serving web applications to users.

Web 2.0 Services and Tools

Web access to OPACs: - With the help of WEBOPAC users can learn how to use one universal access client, the web browser.

Online Instructions: - with the help of Web Browsers library professionals provides online based bibliographic or library use programmes. It provides online instructions on searching online resources and virtual tours of library collections.

Electronic document delivery: - The libraries to deliver the copies of journals and other documents in digital format mainly in PDF to the library users.

Wikis: - It is influential content management and knowledge management tools. It allows any one add a new article or revise an existing article through a web browser. It is an ideal for students, teachers and researchers and support staff for collaborative work allowing focus and content.

Flickr:- It is a social network for showing photos with the help of Flickr users can work together to photo projects and use each other tags to find new photos.

Podcast:-It is a series of digital media files which are distributed over the internet using syndication feeds for playback on portable media players and computers.

2. CAS, SDI services

1. Content pages services from commercial publishers, e.g. Elsevier's Content Digital Service.
 2. Notification service- information of availability of new books by publishers and vendors, e.g. Wiley & Amazon.com.
 3. Current contents and ISI Alerting services from ISI.
 4. SDI services from online search service providers such as Dialog.
-

3. Search Engine Services

The useful search engine services are as follows

5. www.askjeeves.co.uk: It is useful for complex questions and is a good choice for searchers who lack Boolean or other searching skills.
6. The Electric Library helps the researchers providing various online reference sources.
7. www.help.com: that claims to offer real time search assistance any time in 24 hours.
8. www.about.com: It is a service that shows a number of pre-defined categories related to a search topic given by the user.

4. Personalized Services

The development of digital library has focused on access to and disseminate of digital information but they have ignored the personalized service aspects. On priority basis the personalized services in a digital library environment would help the users to find information resources available in a digitally disorganized world.

5. Co-operative digital Library Services

Due to high cost of digital reference sources, lack of trained staff and suitable infra in libraries have influenced different organizations to choose a cooperative model of digital reference services. For example The Library of Congress, USA has launched the collaborative digital reference services with a mission to provide the users, anywhere, anytime in corner of world through an interactional digital network of libraries. In June, 2002 the library of congress and OCLC have developed a cooperative 'Question Point' the advanced generation of CDTs which integrates local as well as global electronic reference networks.

6. Digital Archives

Digital technologies increasingly provide to integrated information resource. Images, Audio, Video and Text numeric data have heretofore resided in print or other analogue media for storage and retrieve. Multimedia and hyperlinked objects on the WWW show some of the new types of information and new paths of knowing in the digital that bring together. Digital archives are very useful to save the place and save a lot of time of the users in searching of information.

CONCLUSION

A digital library is imagining as a comprehensive library of the digital resources and services that are available for education in all area of interest and disciplines. It is considered to be a association of library services and collections that function together to create a digital learning community. Digital library should have a variety of models for access to the materials; some content will be free of charge while other materials will be available on a payment basis. Digital library will also facilitate resource sharing of educational resources within an institutional. The digital library provide the opportunity for students at different institutions to work on joint projects or experiments, perhaps sharing and adding to the same data set and its analysis.

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ENTREPRENEURSHIP DEVELOPMENT AND BRIDGING GENDER GAPS

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ABSTRACT

Entrepreneurial activity is the key to economic development and growth. In the recent years it has been observed that entrepreneurship is considered as an essential tool for achieving continued growth and prosperity. The policy makers are now focusing on encouraging entrepreneurial activity among both men and women by reforming their regulations and announcing lucrative schemes for MSME sectors. But the researches also show that there have been disparities among entrepreneurial activity undertaken by men and women in different countries. Since women entrepreneurs play significant role in the process of economic development, their existence in the entrepreneurial process cannot be overlooked. With this perspective, this paper attempts to study the inequality faced by women entrepreneurs in different countries and the factors responsible for such disparity. It was found that unavailability of women networks, technical training, access to finance, fear of failure and absence of sound policies by institutions are some of the key factors which inhibit women entrepreneurial growth.

Keywords: women entrepreneurs, gender disparity, economic development, inequality.

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INTRODUCTION

Entrepreneurial activity is the need of the hour for any economy to survive in present volatile market. (Richardson, Howarth & Finneyan, 2004). Reynolds, Hay and Camp (2000), points out that several studies declare that long-term growth and prosperity require the participation of women in enterprises. Kofi Annan the former secretary general of United Nations has once quoted that, "There is no tool for development more effective than the empowerment of women". Empowerment of women entrepreneurs leads to the development of women and the economy of the country (Estrin & Mickiewicz, 2010). Different global reports like Global Entrepreneurship Monitor Report (GEM) and The Female Entrepreneurship Index (FEI) studies found that male entrepreneurs have more access to entrepreneurial activity than women entrepreneurs. Unlike male entrepreneurs women entrepreneurs faces barriers like limited access to finance, networking, work-life balance, technical knowledge, training etc. Though the societal environment is different from countries to countries still there is gender inequality when it comes to entrepreneurial activity. A male entrepreneur often enjoys more profitability in business than women. The gender inequality in entrepreneurial activity is persistent everywhere. Therefore it becomes significant to uplift women entrepreneurial activity for not only economic development but also for job creations and women empowerment.

India is one of the fastest emerging economies and the importance of entrepreneurship is realized across the gamut (Masood, 2011). Though women entrepreneurship is encouraged in India too but gender inequalities in entrepreneurship still prevails. The Ministry of Micro Small and Medium Enterprises have undertaken different policies to uplift the ratio of women entrepreneurs in India. But there is still a gap that is to be fulfilled by these institutions.

OBJECTIVES OF THE STUDY

The objectives of this paper are

1. To identify the factors that creating entrepreneurial gender inequality.
2. To identify the barriers faced by women entrepreneurs.
3. To compare the female entrepreneurial activity in different countries.

METHODOLOGY ADOPTED FOR THE STUDY

This study is based on secondary data. The data has been retrieved from different reports on Global Entrepreneurship Monitor (GEM), Female Entrepreneurship Index and Organization for Economic Co-operation and Development (OECD) Reports from 2007-2015. A comparative study with the help of line charts and graphical representation have been used in the study.

LITERATURE REVIEW

The social difference between men and women, known as gender difference, also implies differences with regard to economics, social and business opportunities (**Akehurst, Simarro & Mar-Tur, 2012**). The dramatic growth and participation of women in entrepreneurship and the expanding body of research creates a need for both generic and specific theoretical perspectives and research approaches to better understand this phenomenon (**Bruin, Brush & Welter, 2007**). That is why; several authors maintain that research on women entrepreneur suffers from a number of shortcomings (**Ahl, 2006**). Whereas **Dragusin (2007)** emphasizes that there is difference in economy from country to country and the exact condition of women entrepreneurs and measures to improve their condition is a major concern to study.

When the scenario is about women entrepreneurial condition, research on women entrepreneurs in developed countries is extensive, little has been written about female entrepreneurs in transitioning economies (**Zapalska, Bugaj & Rudd, 2005**). Transitioning economies here constitutes the emerging economies of developing countries. In developing countries, the economic empowerment of women is a prerequisite for sustainable development, pro-poor growth and the achievement of all the millennium development goals (MDGs) and gender equality and empowered-women are catalysts for multiplying development efforts (**OECD, 2012**). **Tambunan (2009)** in this regard on developing countries states that, it is publicly believed that the lack of entrepreneurship together with limited capital, skilled workers and technology have been the main important cause that barriers women to start any business.

Terijesen and Ainsley in 'The 2015 Female Entrepreneurship Index' report argues, when a country does not achieve its full potential the economy suffers, fewer 'high potential' female entrepreneurs result in fewer ideas being realized, less innovation, less export potential, and fewer jobs created. Women and girls constitute three-fifths of the world's poor, their poverty level is worse than that of men as clear gender disparities in education, employment opportunities and decision making power exists (**UNIDO, 2003**).

Women constitute half of the total world population, so is in India too, they are regarded as the better half of the society (**Kumar, Mohan & Lokeshwari, 2013**). But, the societal set up in India has been traditionally a male dominated one, women are not only considered a fairer sex but also a weaker sex and always to depend on men folk in their family and outside, throughout their life (**Siddiqui, 2012**). **Nehru & Bhardwaj (2013)** found that women are equally competent in running business but still lacks behind in spite of women empowerment in our country, there are social, cultural and economic hurdles in the way of women entrepreneurship and the major problem is lack of entrepreneurial environment. In spite of having the potential and talent, women are deprived of opportunities, information and education (**Nehru & Bhardwaj, 2013**). Every woman wants to start their own business but cannot success in our Indian environment in way in which it should be (**Kaushik, 2013**).

In one developmental study (**Sarfaraz, Faghih & Majd, 2014**) states, there is a consensus among scholars that women can play key role in the entrepreneurial phenomenon. According to **Kelley, Brush, Greene & Litovsky** in the **GEM Women Report (2012)**, an estimated 126 million women were starting or running new businesses and an estimate of 98 million were running established businesses. It is estimated that women entrepreneurs presently comprise about 10% of the total number of entrepreneurs in India with the percentage growing every year (**Rao, Venakatachalam & Joshi, 2012**). But women are less likely to climb the career ladder and their salaries are often lower than those of men even if they do the same job, likewise there is strong empirical evidence for a gender gap in entrepreneurship (**Bonte & Jarosch, 2011**). The **Asian Development Bank Report (2007)** states that in countries such as India, Indonesia and Malaysia, the gross domestic product would increase by up to 2%- 4% annually, if women employment rates were raised to 70%, from 30% at present. While women entrepreneurs have demonstrated their potential, the fact remains that they are capable of contributing much more than what they already are (**Fazalbhoy, 2014**). **Vossenberg (2013)** founds that women are not only less likely than men to start a business; their business also tends to be smaller, have fewer staff and less growth expectations. Furthermore, women generate relatively lower revenues than men, and earn less income from entrepreneurial activity (**Vossenberg, 2013**). Due to gender inequality in entrepreneurship, there is high exit rate among women entrepreneurship which causes lack of financing, insufficient profitability and family responsibilities (**Raizada, 2011**). In the study by **Shah (2013)** found that rather than male entrepreneur women entrepreneurs in developing countries receive low level of education and skill training which leads to difference in entrepreneurial activity of men and women. In addition to this **Pines, Lerner and Schwartz (2010)** adds points like, lack of career guidance generally seems to limit their access to various publically and privately offered support services and information on business growth of women entrepreneur. **Vinay and Singh (2015)** states that because of the reproductive roles of women entrepreneurs, they tend to be responsible for business as well as for most of the unpaid work of the household, they have less time to devote to their work

and they are less mobile. The key issue is therefore whether women entrepreneurs face specific problems in setting up in business that is different from those faced by male owned business (Aslam, Latif & Aslam, 2013). Laxmi and Rangarajan (2012) found that since most women entrepreneurs operate on small scale, and are generally not members of professional organizations or part of other networks, they often find it difficult to access information. Most existing networks are male dominated and sometimes not particularly welcoming to women but prefer to be exclusive, even when a women does venture into these networks, her task is often difficult because most network activities take place after regular working hours (Vijayakumar & Naresh, 2013). Singh (2012) states that in former days, for women there were 3 Ks- Kitchen, Kids and Knitting, then came 3 Ps- Powder, Papad and Pickles and now at present there are 4 Es- Electricity, Electronics, Energy and Engineering. But contrary to that Satpal, Rathee and Rajain (2014) argues that despite the increased gender parity in the workforce today, few women attend management positions at the top at large corporations. Policy-makers and educators who are interested in increasing women in the executive ranks need to understand the interaction between family and career aspirations in order to properly guide those who choose business leadership positions (Satpal, et al. 2014). Public gender agencies that are visible with a sufficiently strong mandate, appropriate analytical tools, reliable evidence and resources are needed to combat discrimination and enhance gender equality (Terjesen & Lloyd, 2015). Special education for women students on entrepreneurship were implemented in few education institutions in India but the progression will be mapped after generation of successful women entrepreneurs from the targeted institutions (Bhuyan & Pathak, 2017). On the other hand Jennings and Brush (2013) found that females are much less likely than males to be involved in various forms of entrepreneurial activity. On the other hand Kelley, Brush, Greene and Litovsky (2010) noted that across the 59 participating economies, only Ghana has more female entrepreneurs than men and only a handful of economies had about equal numbers of women and men entrepreneurs; the vast majority had more men than women. And this trend remained constant across a set of eighteen economies that participated in Global Entrepreneurship Monitor Report from 2001 to 2010 (Kelley, et al. 2010).

When it comes to the different constructs that creates gender disparity, the study by Rao, Venakatchalam and Joshi (2012) points out factors like access to finance is a key issue for women; accessing credit, particularly for starting an enterprise is one of the major constraints faced by women entrepreneurs. Gorji and Rahimian (2011) states, women often have fewer opportunities than men to gain access to credit for various reasons, including lack of collateral, unwillingness to accept household assets as collateral and negative perceptions of female entrepreneurs by loan officers. Bhuyan and Pathak (2019) added that lesser support from family members towards firm creation is a major disadvantage towards entrepreneurial intention. Furthermore Akhalwaha and Havenga (2012) points out that Access to training, conflicts between work and domestic commitments, problem of labor, lack of relevant education and experience and access to finance creates hurdles for women entrepreneurs.

ANALYSIS

Terjesen and Lloyd in The Female Entrepreneurship Report, FEI (2015) had undertaken 77 countries including South Asian countries like India to find out the prevailing working environment for women entrepreneurs. India out of 77 countries, falls on 70th position scoring 25.3 wheareas United States pioneers the position with a score of 82.9 and Pakistan is in the last among all with an score of 15.2. It can be inferred from the report and depicted in Figure1.1 given below that European and American countries provide favourable entrepreneurial environment to women.

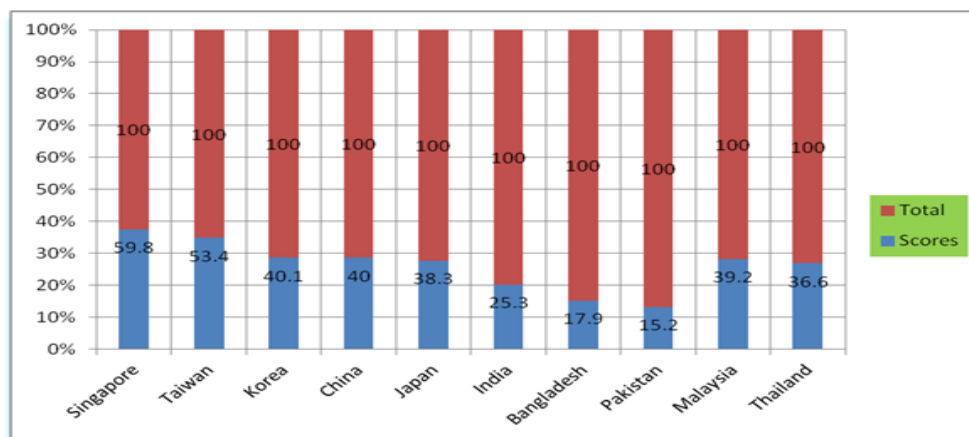


Figure-1.1

Source: Figure 3:1 in Terjesen and Lloyd (2015, p.11).

Country	Score	Global Rank	Remarks
Singapore	59.8	16	Fair
Taiwan	53.4	26	Fair
Korea	40.1	43	Average
China	40.0	44	Average
Japan	38.3	48	B.Average
India	25.3	70	Poor
Bangladesh	17.9	75	Poor
Pakistan	15.2	77	Poor
Malaysia	39.2	46	B.Average
Thailand	36.6	52	B.Average

Figure-1.2

The above figure 1.1 and 1.2 depicts the ranking and score of East, South and South East Asia that has been given by **FEI Report (2015)**.

From the above figure it is clearly visible that Singapore and Taiwan tops the rank among the Asian countries. Whereas India, Pakistan and Bangladesh were at the last. If we are going to compare between Singapore and India that is 59.8 and 25.3 on score, then there is a vast difference between both the countries. It is clearly visible that women entrepreneurs success rate in Singapore is much higher than India. The strongest areas that exists in Singapore are, Market Size; Access to childcare; Research and Development Expenditure; Monopolized Markets according to FEI Report which surely gives encouragement to women entrepreneurs to develop their business networks. But in Indian context, though the market size is big, the women entrepreneurs still lacks to grasp the market. Access to finance and Labour force parity are the barriers that significantly discourages women entrepreneurs in India (**Terjesen and Lloyd, 2105**). Besides these factors some positive determinants like innovativeness and new technology are some of the areas that exists in India, still more efforts are to be implemented by the institutions to fill the gap between male and female entrepreneurs in India and to encourage women entrepreneurs to set-up business.

The European countries including according to **FEI (2015)** report, consists good ranking and score among all the 77 countries. United Kingdom scored a fair 70.6 and ranked on 3rd position and Denmark, Netherlands, France and Iceland are after United Kingdom on Rankings. This makes Europe the favourable environment for women entrepreneurs to become successful in their businesses. The influencing factors that has been detected by **Terjesen and Lloyd in FEI(2015)**, that encourages women entrepreneurs are Tech Sector Businesses, Secondary Education and SME Support and Training. The role of education is an important factor highlighted by many researchers for women entrepreneurs to successfully continue their business, their educational background helps them to expand their networks and to face the competitive market conditions where gender inequality exists.

It is also interesting to find from the **FEI (2015)** report that top ranking countries are not top on GDP ranking but they are countries that are characterised by their suitable and enabling environment for women entrepreneurs.

The influencing factors that affects the entrepreneurial activity of women vary from country to country. Like in India and Chile, the innovation level of women entrepreneurs are high whereas both the countries are from different continent (**Kelley, Singer and Herrington, 2016**). Of all the continents, overall successful rate of women entrepreneurs is fair in North America, Europe and Australia/Oceania, whereas Asian and African continents are still in their developmental phase. In Asia, Japan, China and South Korea are leading economies but still there is an imbalance among male and female entrepreneurs, whereas Vietnam, Philippines, Thailand, Malaysia, Peru and Indonesia has equal or higher rates of women entrepreneurs according to the **GEM 2015/16 Global Report**. In India, the environment for women entrepreneurs normally generates out of necessity. Necessity driven women entrepreneurs rate are higher in India rather than opportunity motivated.

Some parts of African continents like South Africa, Morocco and Tunisia has active women entrepreneurial activity but when compared to male entrepreneurs, activity of women entrepreneurs still lacks behind.

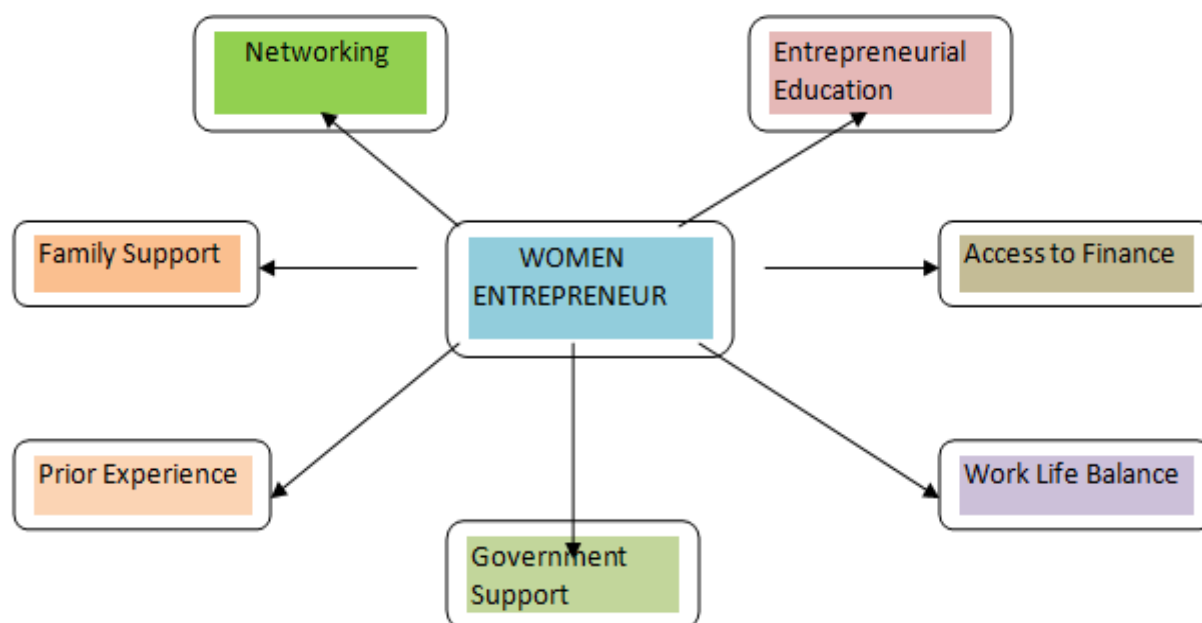


Figure-1.3: Prominent Constructs for Women Entrepreneurs

As shown in the above figure, to overcome gender disparity and enabling entrepreneurial environment women entrepreneurs should be facilitated with the above constructs like, Networking, Education, Family Support, Experience, Government Support etc. The technological advancement makes networking more sophisticated to entrepreneurs, internet, community sites helps to build up entrepreneurial network but still the advancement of networking exists in continents like Europe, North America and Australia.

Asian countries like India lacks behind in women entrepreneurial networking. When it comes to education, European, North American and Australian Women are more educated and qualified than other continent. Access to finance and family-support are crucial factors for development of women entrepreneurial activity, but Asian and African countries are lagging behind. In India, the work-life-balance for women entrepreneurs is quite tough when compared to European and North American women entrepreneurs. As depicted in the fig: 1.4, factors that influence entrepreneurial activity of women are more in Europe, North America and Australia whereas Africa and Asia are at the bottom of it.

WOMEN ENTREPRENEURIAL ACTIVITY AMONG CONTINENTS

Constructs	Europe	Asia	Africa	North America	South America	Australia
Networking	Fair	Average	Average	Fair	Average	Fair
Education	Fair	Poor	Poor	Fair	Average	Fair
Experience	Fair	Average	Average	Fair	Average	Fair
Finance	Average	Poor	Poor	Average	Poor	Average
Government Support	Fair	Average	Average	Fair	Average	Fair

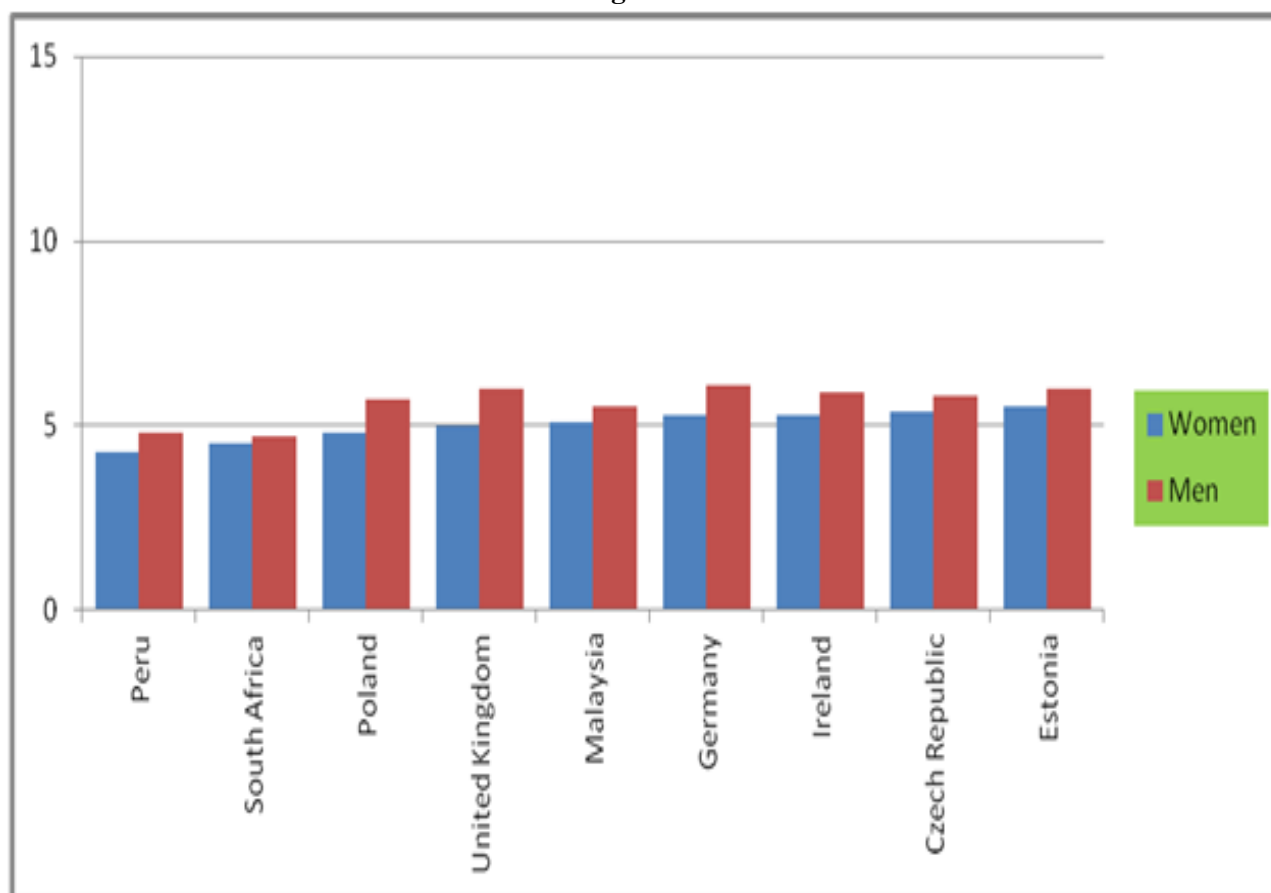
Figure-1.4

The **OECD** report of **2012** finds that Sweden and Norway appear to have least discriminatory attitudes towards gender-gap. These two countries have positive attitude towards women for employment in their country. Whereas Poland and Korea are opposite and appear to think that men have more rights to a job than women when jobs are scarce in the market.

Also, access to external credit for women entrepreneurs is tough to get when comparing to men entrepreneurs. The **OECD Report (2012)** finds that women entrepreneurs are discriminated against by the credit providers when they try to access credit.

Another interesting point that has been implemented by **OECD** report where they took 9 countries to measure the financial knowledge of women entrepreneurs, found that women have slightly lower levels of financial knowledge than men. In a way this situation creates gender inequality among men and women entrepreneurs.

Figure-1.5



Source: Figure 1.2.1 in The OECD Report (2012, p.24).

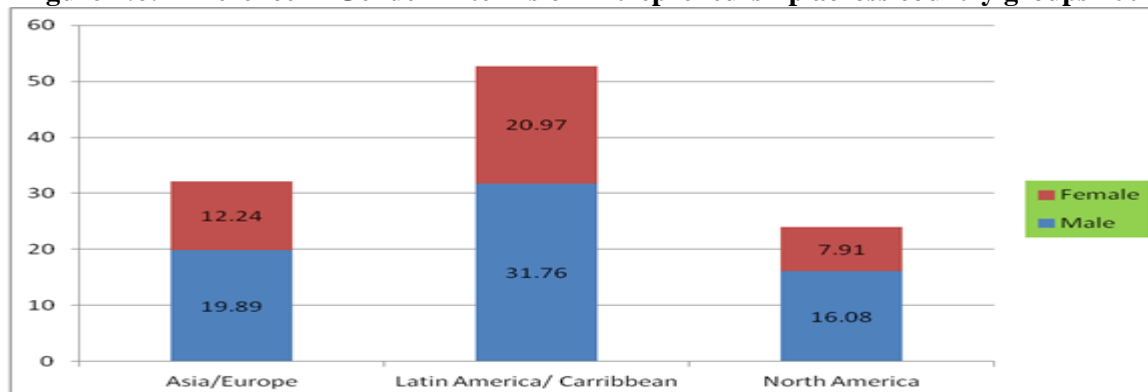
The above figure depicts that the level of financial education of women is lower than men in all the 9 countries. The combination of both the lower lack of confidence and lower levels of financial knowledge means that women are less likely to feel capable when dealing with financial issues, services and their providers and that is the reason why they do not necessarily grasp potential opportunities for income generation through entrepreneurship.

The **OECD Report (2012)** finds that the reasons for this gender gap in financial knowledge are social cultural context and access to finance. For example women's financial dependency on their husbands partly shapes their understanding of financial issues.

Another key finding by **OECD Report (2012)** is that women owned enterprises have on average lower profits and lower productivity than men-owned businesses. There is a decline in the birth of women-owned enterprises in the crises but not as much as for men. Lacks of reliable and up-to-date information are some of the determinants that give barrier to women entrepreneurs.

Fung (2014) in his research found that the implementation of China's One Child Policy in the year 1977 in a way neutralizes the difference between male and female ratio in China. Due to One Child Policy, the contemporary beliefs on female have drastically changed. Since the parents have to abide by the law to have only one child, girl child got the advantage to study higher education and encouragement by the Chinese governments to women entrepreneurs helps them to start up their enterprises. **Settles, Sheng and Zang (2008)** finds that due to the socialization of the only child in China, it nested nuclear family and high expectations are expected whether the child is a girl or a boy. After thirty years of implementation of this policy the gender inequality in China has decreased and female entrepreneurs has got the acceptance to do business along with men.

The Global Entrepreneurship Monitor, Report on Women Entrepreneur, measures the differences in the level of entrepreneurial activity between countries. The **GEM Report on Women Entrepreneurs (2007)** by **Allen, Elam, Langowitz and Dean** has undertaken 41 countries including India to measure the entrepreneurial activities. Surprisingly out of 41 countries only in Japan and Peru women are more active in starting a business than men.

Figure-1.6: Difference in Gender in terms of Entrepreneurship across country groups 2007


Source: Table 2 in Allen, Elam, Langowitz and Dean (2007 p.14).

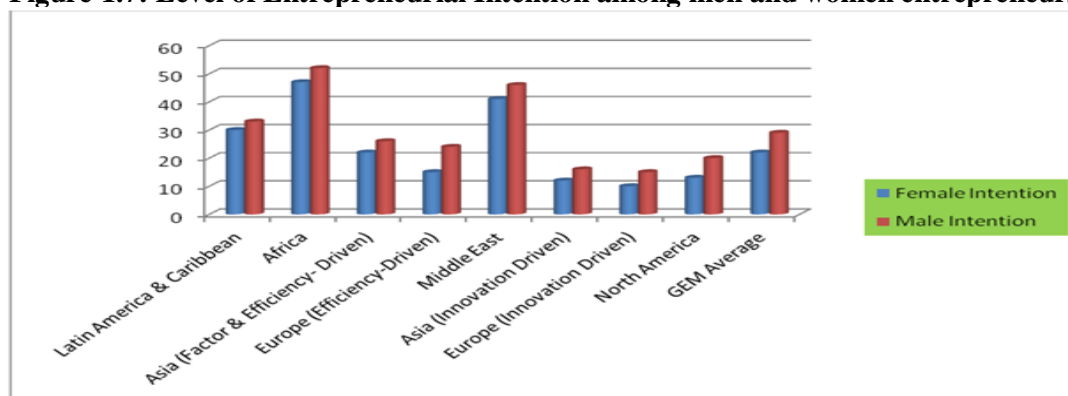
In the above figure 1.6, according to GEM (2007) Report, the gender gap in entrepreneurial activity in high income countries, North America is much higher than lower income countries like Asian and European countries. It is significant that even though the GDP of North American countries are higher still the gender inequality exists in their environment.

The GEM (2010) Report on Women Entrepreneurs (Executive Report) by Kelly, Greene and Litovsky has found that women entrepreneurs tend to have smaller and less diverse network if compared to men entrepreneurs. It is also significant to find that women entrepreneurs are inclined to seek guidance from their family and specially their spouses whereas men on the other hand seek advice from friends and professional advisors.

The Global Entrepreneurship Monitor analysis from 2002 to 2010 finds that start up businesses by women entrepreneurs are less than men and their rate of success is also less. Women started their ventures almost equally and participated in entrepreneurship but did not pace up against increasing amount of male entrepreneurs and this result in large gender gap in entrepreneurial activity.

According to the study it is also significant to find that women are often motivated by necessity to become entrepreneur in Asian countries like India. In a less developed economies like India, women entrepreneurial activity comes out from necessity to a great extent, to some extent more than men entrepreneurs.

Entrepreneurial Intention is one of the important personal (psychological) factors that are being studied by many researchers to understand how intention leads a person to become an entrepreneur. Ajzen's Theory of Planned Behavior model (1991) emphasizes how an individual with different constructs of contextual and internal forces to push or pull the intention to become an entrepreneur or not. The influencing motivating internal factors that push a woman to become an entrepreneur is an important field to study. The GEM Special Report on Women Entrepreneurship of 2015 by Kelley, Brush, Greene, Harrington, Ali and Kew understands the importance of internal factors on women entrepreneurs and makes a comparative study among 83 economies including India. From the survey it is found that if comparing with male, women entrepreneur's intention rate of activity is lower. The level of intention rate of men is much higher than women in North America whereas developing countries like India, Thailand has lower difference on intention if comparing with male entrepreneurs. (Figure 1.7)

Figure-1.7: Level of Entrepreneurial Intention among men and women entrepreneurs


Source: Table 2 in Kelly, Brush, Greene, Herrington, Ali and Kew (2015, p.15).

It is also significant to find from GEM (2015) report that the innovation level is higher in women entrepreneurs than men across all countries. More than half of the women entrepreneurs in Chile and India believe that they offer innovative products or services. The GEM on Women (2016-2017) added in their findings that the overall women entrepreneur participation has increased to 10% and the gender gap has been narrowed by 5%. Also, it is found that there is a greater proportion of success rate if women entrepreneurs work in teams of three or more. Whereas, fear of failure and lack of networking are some of the barriers that creates inequality among women entrepreneurs in India.

DISCUSSION

The purpose of this study was to identify the factors that create gender inequality on women entrepreneurs and how they affect their entrepreneurial activity. From the above findings from different reports and papers, it is clear that the level of entrepreneurial activity of women entrepreneurs is less than men which creates gender-gap and inequality in overall entrepreneurial activity.

In Indian context too, women tends to drop the entrepreneurial activity due to fear of failure and unavailability of networks. Even though they have more innovation levels than men, still, lack of access to capital and technical training makes them lower in speed to continue the entrepreneurial activity like men.

Due to the multiple barriers that exist in India and world over on women entrepreneurial activity, there should be some measures to be implemented by the governing institutions and society which are:

1. There should be more policies to encourage women to start up enterprises. For example, the 'Start Up India' campaign by Government of India that was implement in 2016 is an appreciable effort to encourage women to become entrepreneurs.
2. Technical Training is an important aspect to successfully continue entrepreneurial activity for women. For example, In Malaysia, The Federation of Women Entrepreneurial Associations Malaysia (FEM) provides skill based training integral to running home based businesses and small retail business, these training are complemented with basic IT, book-keeping, communication and language trainings. They also keep tracking the trained women entrepreneurs and monitoring their performances for two years after completion of program GEM Women's Report (2010).
3. Entrepreneurial Networks helps the entrepreneurs to build up more professional relation to expand their business and to sustain the competitive market. From the above findings, it is certain that the level of networking of men is higher than women. Therefore governmental institutions should implement sound measures to provide adequate networks to women like special centre for women entrepreneurs where they can find the information regarding their business needs, plus 24/7 access to internet and backup of data.
4. Courses on entrepreneurship should be compulsory in Business Management Institutes especially to female students with special arrangement of practical knowledge where the students interact with the local entrepreneurs to get encouragement.
5. More research on entrepreneurial intention that motivates women to become entrepreneur should be conducted by institutions so that the push and pull factor that gives barrier or encouragement to women entrepreneurs can be detected.

The importance of the rise of women entrepreneur is vital to diminish the gender gap in entrepreneurial activity. In any economy if the level of entrepreneurial activity of women is sound, the economy of that country will be rich too.

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IMPACT OF CRM IN TELECOM SECTOR

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1.1 INTRODUCTION

Telecommunication is one of the prime support services needed for the rapid growth of any economy. The telecom arrangement of India and the administration was acquainted with change the telecom division by permitting private segment interest for both fundamental and esteem included administrations. At first, the administration chose to permit just a single private player other than the legislature possessed specialist co-op in order to make a duopoly advertise technique. The private players were offered licenses to give cell at first in four metro urban communities and consequently they were offered licenses to work in 19 urban communities separated from the four metro urban communities. After the rise of the private telecom players, customers have different choices to get the best administration from the best specialist organization. Organizations think that its hard to draw in and hold the customers and are focusing more on administration quality and relationship-management with the customers. On a normal, each business burns through multiple times more to procure customers than it does to keep a current customer with itself. In this way, numerous organizations are presently giving careful consideration to their relationships with the current customers to hold them and increment their dedication. In this focused condition, business needs to complete significantly something other than receive these answers for actualize customer relationship management (CRM) rehearses. The developing rivalry among the administration part associations has constrained the telecom business to receive diverse systems to win benefits by fulfilling holding, and pleasing the customers (Agarwal et al, 2009).

1.2 RESEARCH OBJECTIVES

1. To examine the various customer relationship attributes being practiced by telecommunication companies in India.(service quality, brand image, value offers, price perception)
2. To examine the impact of customer relationship attributes on customer satisfaction and loyalty.
3. To study and to understand what customer expects in a relationship with the telecommunication companies.
4. To conduct a comparative study of CRM practices of major telecommunication companies (Airtel, Idea and BSNL)
5. To suggest the measures for analyzing CRM effectiveness

1.3 SIGNIFICANCE OF THE RESEARCH

Due to amplification in competitive pressures and because of increased globalization, organizations around the world have been continuously looking for newer and more sustainable competitive advantages. CRM is one such tool which many organizations have identified and successfully implemented in their businesses to gain an extra edge over their competitors. It is particularly true of services where an extra delight, in the manner of delivery, compensates for lesser tangibility as compared to that of products. This delight can become possible through superior understanding of customers and better relationship management with them.

CRM is an important area of study for academicians and practitioners. A deep understanding of customers and their usage patterns can go a long way in providing them with right set of services and getting maximum revenue from them. Acquiring a new customer can be several times costlier than retaining an existing one. CRM not only helps in getting new as well as repeat customers but it also saves enormous costs for the organizations through retention of important customers.

1.4 RESEARCH SCOPE

The telecom service providers can be further classified into providers of mobile and fixed-line phone services. The mobile phone services segment has shown a steep growth whereas the fixed-line services segment has been declining rapidly in recent years. According to TRAI website (www.traai.gov.in), the fixed-line subscriber base reached its peak of 42.84 million in the year 2004, from a base of 26.65 million in the year 2000. However, the TRAI data also shows

that it has come down to a low of 32.17 million as of March, 2012. Thus, the fixed-line subscriber base has been falling rapidly in the recent years. Also, the yearly growth rate of wireless subscribers for the period March, 2011 to March, 2012 was 13.26% whereas the growth rate was negative for fixed-line subscribers, with the figure for the same period being minus 7.4%.

At the initial stages, it had been envisaged that the fixed-line segment would also be included in the study. However, as is evident from the above data, the fixed-line market has been declining rapidly and focus of the telecom service providers, particularly with reference to their CRM effort, has been clearly on the wireless market in the last few years. Therefore, the scope of the present study has been limited to the segment of mobile phone services only.

1.5 RESEARCH PROBLEM

Since past 13 years, the telecom industry in India has displayed an extraordinary growth in subscriber base. This growth is driven by heavy investment done by public as well as private telecom service operators and tremendous network expansion carried out by them. In Multiplayer Telecom market customer has got wide choice. In case of mobile service if the customer is not satisfied with the delivery of services done by the current service operator he can switch to another service provider as the cost of switching over is too less. Case is also same for other services like wire-line (landline) voice, data, wireless broadband etc. In multiplayer market it is very much important to understand the expectation of customer. If customer's expectations are met, customer is satisfied. Dissatisfaction about the delivery of services provided by the operator may lead to losing of Corporate Customers, which are customers of prime importance. This will be major revenue loss to the Telecom Service Operator. So understanding level of satisfaction is task of prime importance. Telecom Service Operator should be wise enough to measure the customer satisfaction. The corporate customers are difficult to be delighted. They are price conscious. Due to multiplayer scenario corporate customers of one Telecom Service provider are attracted by number of other service providers. Now a day's Customer's expectations from service providers have increased. Earlier the customer was happy with the voice communication only, but presently he is expecting the high-speed internet connectivity. The needs of customers are becoming more and more high technology oriented and world-class infrastructure is needed to satisfy their needs. Here the things get tricky and give rise to problem. The problem of this study is driven by the need to measure customer satisfaction as Customer satisfaction is the key to the customer retention.

2. LITERATURE REVIEW

A number of studies have been undertaken in India and abroad in the domain of CRM. This chapter contains a brief review of some studies covering various sectors of economy, particularly the service sector, bearing direct or indirect relevance to the present study. Besides the studies conducted in telecom sector, studies related to CRM in the context of other service sectors such as banking, retailing, insurance and hospitality have also been reviewed.

Akhtar (2004) have proposed that earlier assumptions regarding business people influence how customers process data in a moving circumstance. Thought posting and review information give extra help to the idea that investigative handling of data happens just when the sales representative is discrepant from desires. This guideline of a regular sales representative has been tried observationally by controlling two variables, level of match (coordinate/befuddle) to the run of the mill businessperson in an item classification and quality (solid/feeble) of the item contentions. The discoveries demonstrate that earlier ideas of shoppers about run of the mill business people might be pivotal for understanding the way toward moving experiences. The examination all in all recommends that subjects take part in progressively efficient or investigative handling when the businessperson experienced is discrepant from the sales representative mapping in memory.

Amulya and Anand (2012) have proposed that numerous advertisers – especially those in the administration division – rely upon informal (WOM) for referrals. The customary example overview philosophy utilized in past WOM look into does not elucidate the relational idea of casual correspondence. The creators have proposed arrange examination as an elective strategy for research on referral conduct. Inspecting, information gathering, and investigative parts of referral arrange examination have been depicted when all is said in done terms. A contextual investigation has been outlined which, notwithstanding yielding intriguing illustrative data about an administration advertiser's referral arrange, presents a trial of the quality of-ties theory in affecting referral streams. The investigation presumes that organize ponder is troublesome and tedious, yet the tolerance and cost put resources into it can yield striking experiences. The affirmation/disconfirmation worldview is generally acknowledged as a perspective of the procedure by which customers create sentiments of fulfillment or disappointment.

Baksi et al (2012) have thought about disconfirmation models of customer fulfillment utilizing three elective principles of execution. Causal displaying procedures have been utilized for the correlation. Pre-and post-measures have been gotten from subjects in three distinctive use circumstances. The disconfirmation worldview has been bolstered. The examination has recommended that best brand standard and item standard are extra gauges utilized for assessing central brand execution.

Banwet et al (2000) have recommended that mind boggling, exceptionally immaterial administrations, for example, extra security comprise generally of belief properties. Family unit heads, matured 25 through 44, have been browsed a broadly agent buyer board. Fulfillment has been estimated for the three measurements in the model, in particular, contact individual, center administration, and foundation. The examination has inferred that streamlined understandings of relationship impacts ought to be relinquished for better models of relationship advancement and esteem assurance.

Baran et al (2008) have built up a monetary model of guarded promoting procedure for protestation management based on Hirschman's leave voice hypothesis. In spite of the fact that numerous organizations endeavor to lessen the quantity of customer dissensions about their items, this goal is observed to be sketchy. Rather, investigation proposes grumblings from unsatisfied customers ought to be expanded subject to certain cost limitations. The creators have appeared cautious promoting (e.g., protestation management) can bring down the aggregate advertising use by generously diminishing the expense of hostile showcasing (e.g. publicizing). The funds in hostile showcasing are regularly sufficiently high to counterbalance the extra expenses related with repaying whining customers, regardless of whether pay surpasses the item's overall revenue. Taking everything into account, observational proof recommends that an unsatisfied customer, once influenced to remain, is more faithful and in this way more profitable than previously. Liberal grievance management is probably going to create positive customer informal interchanges, and buyer protestations can be helpful wellsprings of structure thoughts and quality control.

Berry (1983) in his paper finishes up with a dialog of potential uses of the scale. Escalating rivalry and quick deregulation have driven many administration and retail organizations to look for gainful approaches to separate themselves. Conveying better administration quality shows up than be an essential for progress, if not survival, of such organizations during the 1980s and past. Without target measures, a proper methodology for evaluating the nature of a company's administration is to gauge the shoppers' view of value. The paper has been partitioned into five areas. The principal area of the paper delimits the space of the administration quality develop and portrays the age of scale things. The second segment introduces the information gathering and scale-filtration systems, while the third segment gives an assessment of the scale's dependability and factor structure. The following area manages evaluation of the scale's legitimacy. The last segment talks about potential utilizations of the scale.

Bolton (2004) have expanded customer fulfillment writing by hypothetically and experimentally looking at the impact of apparent execution. They have examined how elective conceptualizations of correlation benchmarks and disconfirmation catch the fulfillment arrangement process. The creators have investigated conceivable various correlation forms in fulfillment development. The recommendations have been tried with the assistance of a 2-desire by 2-item factorial test, that unequivocally took into account estimation and estimation of elective model determinations. The examination gives solid hypothetical and exact help for expanding the desire and disconfirmation model of shopper fulfillment/disappointment, in particular, Basant et al (1997) has explored the customer benefit in Indian Telecoms utilizing information from two field reviews directed by the National Institute of Telecom Management in the years 1974 and 1984. The trial of theory in this investigation included the examination of the 1974 information with the 1984 information. The investigation has bound itself to information on Bombay city dependent on an example of 603 customers. The administrations rendered by business telecoms have been separated into two classes, the customary and non-conventional administrations. The 1974 overview was restricted to Mumbai where 90 branches were chosen from 22 business telecoms out of 700 planned business telecoms. The 1984 overview was directed in 12 urban areas and 8 state capitals utilizing a blend of sent polls and meeting plans. The investigation has closed, that an unfit statement that customer administrations have crumbled in the managing an account industry in the post nationalization stage, is exactly illogical. Another end is that the saving money industry has turned out to be progressively mindful of its own confinements and has taken a few measures to wind up more customer-arranged.

Couldwell (1999) have created and tried a model of measuring the effectiveness of CRM that looks at the development at the same time crosswise over three interfaces of the customer conveyance process: supervisor worker, worker job, and worker customer. The creators have analyzed the attitudinal and social reactions of customer-contact representatives that can impact customers' impression of service quality, the relationships among these reactions, and three formal service quality control instruments (strengthening, conduct based worker assessment, and management promise to benefit quality). The discoveries have demonstrated that chiefs who are resolved to benefit quality are bound to enable their representatives and use conduct based assessment. Nonetheless, the utilization of strengthening has both positive and negative outcomes in the management of telecom workers. The creators have seen that a portion of the negative outcomes are relieved by the constructive

outcomes of conduct based representative assessment. To expand customers' view of service quality, supervisors must enhance workers' self-viability and occupation fulfillment, and lessen representatives' job struggle and uncertainty.

3. METHODOLOGY

In order to develop a successful research paper, research methodology plays a critical role. Besides that, research methodology helps the researcher to convey a successful Different factor of the research methodology is discussed below:

3.1 RESEARCH APPROACH

There are two kinds of approaches recycled to conduct an effective research paper, for example, inductive and deductive research approach. In the case of secondary research analysis, researcher mainly applies inductive research approach. The researcher applies the deductive research approach to contrasting the primary information. The researcher uses the deductive research approach for conducting this research paper.

3.2 RESEARCH DESIGN

In order to provide a contextual framework to the research paper, most of the researcher use research design that includes three parts, for example, an exploratory, explanatory and descriptive. Exploratory and explanatory research design is mainly utilized in the qualitative research paper. The researcher uses a descriptive research design for developing this research paper.

3.3 RESEARCH PHILOSOPHY

The research philosophy is separated into three parts, such as realism, interprets and positivism. Most of the researchers apply the realism research philosophy for evaluating statistical components from organizational documents and interprets research philosophy is used for analyzing interpretation of managers and leaders of an organization. The researcher uses positivism philosophy to effectively compare and contrast the respondent's opinion.

3.4 RESEARCH METHOD

There are two types of research methods are used by many researchers, for example, quantitative and qualitative research method. The researcher applies qualitative research method to analyze secondary data. Most of the researchers use primary data analysis to conduct a quantitative research paper. This research paper includes opinions of telecomworkers as primary data and the researcher uses the quantitative research method for developing this research paper.

3.5 DATA COLLECTION METHOD

The data collection procedures comprises two parts, for example, the primary and secondary data collection method. The researcher can collect the primary information from field survey and telephonic survey. The researcher requires few research instruments like questionnaire, database and answer sheet to gather the primary information from telecomworkers. The secondary data is considered as existing research information done by other researchers including newspaper, books, article, journals, web, documents, publications, invoices and magazines. In this research paper, the researcher develops a questionnaire for collecting primary information from the respondents or telecom workers.

3.6 SAMPLE SIZE

The researcher cannot take interviews from all telecom employees. As a solution to that, the researcher selects a certain group of people who will take part in the interview. This sort of people is called as 'sample size' of a research paper. Lastly, the researcher selects 50 telecom workers for conducting a field survey.

3.7 SAMPLING METHOD

The sampling method is an important research method that includes two segments, probability and non-probability sampling method. The researcher applies a non-probability sampling method for collecting primary information from telecomworkers.

3.8 RESEARCH LIMITATION

In most of the circumstances, the researcher faces many problems which are notified as research limitation. Incomplete market research is one of the significant research limitations where a respondent leaves the interview in middle due to lack of time. Finance is a core research limitation because a proper research paper includes expensive research instruments for measuring information. Lack of secondary data is another limitation of any research paper.

3.9 ETHICAL CONSIDERATION

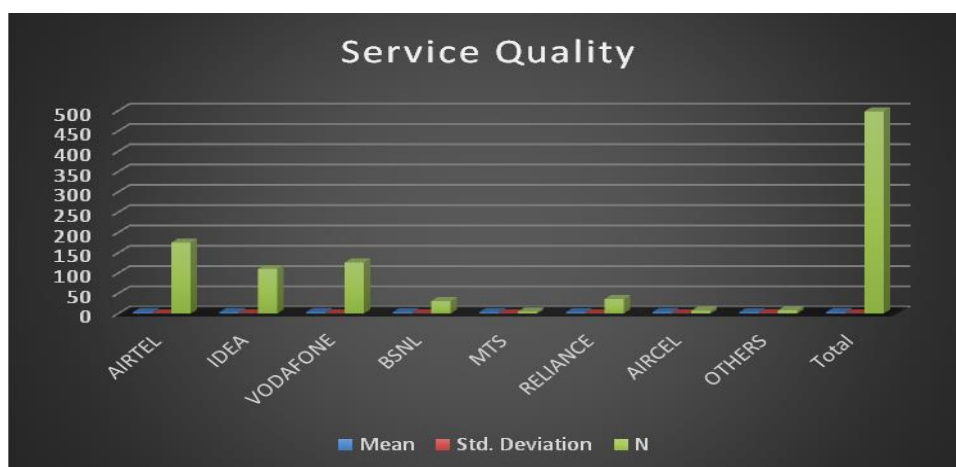
The researcher needs to follow ethics during the data collection process. First of all, the researcher should not vigor any person to complete the interview. The researcher should not disclose the personal information of the people with anyone. The examiner should accurately measure the collected information without any threats or pressure. It is the ethical duty of the researcher to preserve the collected information into a secured hard drive in computers.

4. FINDINGS & ANALYSIS

The relevant findings of the survey process of the research are:

1 Service Quality

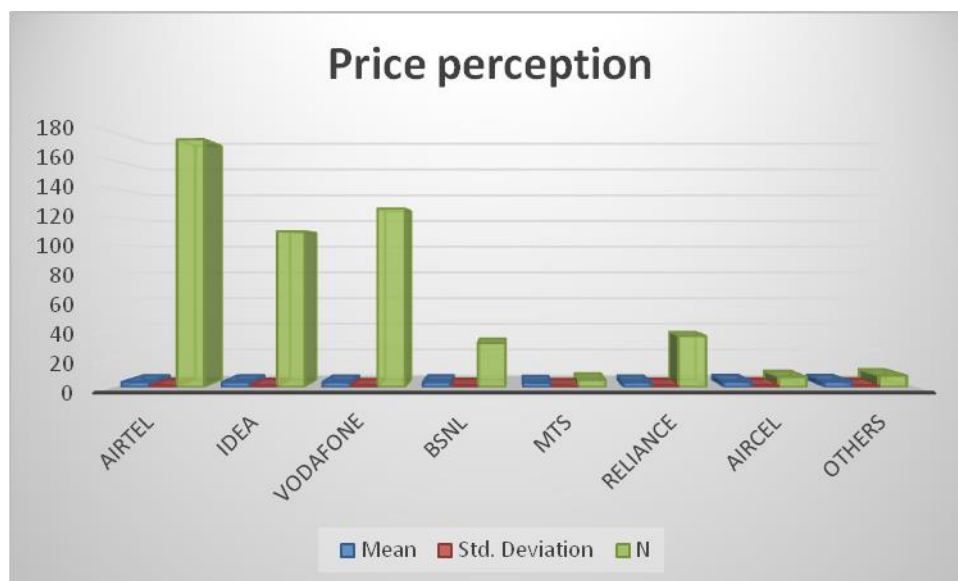
CONNECTION NAME	Mean	Std. Deviation	N
AIRTEL	3.66	0.641	175
IDEA	3.73	0.692	110
VODAFONE	3.74	0.634	126
BSNL	3.52	0.762	31
MTS	3.85	0.978	5
RELIANCE	3.62	0.895	36
AIRCEL	4	0.661	7
OTHERS	3.41	1.133	8
Total	3.69	0.692	498



According to the above chart, the researcher selected 498 customers from different telecom sectors, such as Airtel, Idea, Vodafone, BSNL, MTS, Reliance, Aircel, and Others. In this way, more than 175 customers believed that Airtel network provide the best quality of service than other networks. 110 customers said that service quality of IDEA is best. In addition, 126 customers preferred Vodafone, 31 Customers selected BSNL, 5 customers selected MTS, 36 customers chosen Reliance, 7 customers selected Aircel network, as well as 8 respondents selected others. According to this quantitative data analysis, the researcher assumed that the greatest number of customers accepted service quality of Airtel Network is best than other telecom sectors in India.

2 Price Perception

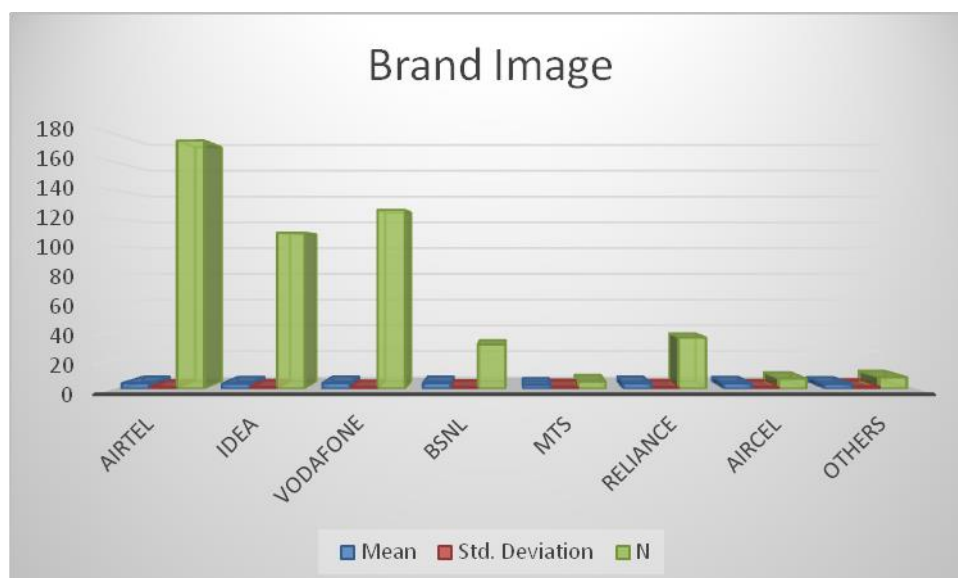
CONNECTION NAME	Mean	Std. Deviation	N
AIRTEL	3.45	0.859	175
IDEA	3.47	0.833	110
VODAFONE	3.34	0.772	126
BSNL	3.45	0.925	31
MTS	3.1	0.742	5
RELIANCE	3.28	0.914	36
AIRCEL	3.71	1.113	7
OTHERS	3.69	1.067	8
Total	3.42	0.845	498



According to the above chart, the researcher selected 498 customers from different telecom sectors, such as Airtel, Idea, Vodafone, BSNL, MTS, Reliance, Aircel, and Others. In this way, more than 175 customers believed that Airtel network offer to all customers at the reasonable cost for their service than other networks. 110 customers said that price perception of IDEA is best. In addition, 126 customers preferred Vodafone, 31 Customers selected BSNL, 5 customers selected MTS, 36 customers chosen Reliance, 7 customers selected Aircel network, as well as 8 respondents selected others. According to this quantitative data analysis, the researcher assumed that the greatest number of customers accepted price perception of Airtel Network is suitable than other telecom sectors in India.

3 Brand Image

CONNECTION NAME	Mean	Std. Deviation	N
AIRTEL	3.72	0.963	175
IDEA	3.53	1.068	110
VODAFONE	3.89	0.758	126
BSNL	3.84	0.841	31
MTS	2.6	1.294	5
RELIANCE	3.68	1.129	36
AIRCEL	3.57	1.058	7
OTHERS	3.31	1.58	8
Total	3.71	0.973	498



According the above chart, the researcher selected 498 customers from different telecom sectors, such as Airtel, Idea, Vodafone, BSNL, MTS, Reliance, Aircel, and Others. In this way, more than 175 customers believed that the brand value of Airtel network is higher than other networks. 110 customers said that brand image of IDEA is the best. In addition, 126 customers preferred Vodafone, 31 Customers selected BSNL, 5 customers selected MTS, 36 customers chosen Reliance, 7 customers selected Aircel network, as well as 8 respondents selected others. According to this quantitative data analysis, the researcher recognized that the largest number of customers accepted brand image of Airtel Network is higher than other telecom sectors of India.

4 Value offer

CONNECTION NAME	Mean	Std. Deviation	N
AIRTEL	3.52	0.725	175
IDEA	3.49	0.762	110
VODAFONE	3.59	0.587	126
BSNL	3.58	0.607	31
MTS	3	1	5
RELIANCE	3.44	0.791	36
AIRCEL	3.93	0.535	7
OTHERS	3.38	1.302	8
Total	3.53	0.712	498



According to the above chart, value is seen in all the five dimensions, such as Tariff, value added service, Network coverage, brand image, and customer services. In this way, more than 175 customers believed that the Airtel network provide more value offers to every customer than other telecom sectors. On the other hand, 110 customers said that IDEA is the best. In addition, 126 customers preferred Vodafone, 31 Customers selected BSNL, 5 customers selected MTS, 36 customers chosen Reliance, 7 customers selected Aircel network, as well as 8 respondents selected others. According to this quantitative data analysis, the researcher recognized that the largest number of customers selected and also satisfied with the Airtel Network compare than other telecom sectors of India.

5. CONCLUSIONS

The various CRM tools available in the market have been compared on the basis of some identified parameters and a comparison chart for comparing the same has been prepared which helps organizations in gaining advantages of applying CRM. Association should fuse the best CRM apparatuses to expel the inadequacies in their organizations. We have demonstrated that fruitful usage of CRM device in the association can enhance the relationship of the customer with the organization, which is the interest of the present business condition. We found that choice of a right device for a firm out of various CRM instruments accessible in the market for powerful CRM relies on the technique utilized in the firm and the objectives of the organizations should have been accomplished through the usage of the devices. The distinctive highlights of the operational CRM which are fundamental for consistent collaboration and successful relationship with the customer have been found. The

executives in the enterprise will be able to distinguish between the operational and a CRM clearly taking advantage of our findings. The successful implementation of operational CRM in the organization can be improved if the suggested parameters of distinction are taken into account, which is the demand of the present business environment for effective CRM. We hope that this differentiation would enhance the decision making business approach in all service oriented organization (Agustin et al, 2005).

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INTELLIGENT CONTROL FOR INDUSTRIAL DRIVES

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ABSTRACT

The paper discusses about the controlling and monitoring of the multi motor drive by using Supervisory Control and Data Acquisition System (SCADA) and Variable frequency drive (VFD). The SCADA is used to monitor the operation of each motor from a distant place by using RS485 for long distance communication. By this process complexity of monitoring and control can be reduced. The paper also helps to supervise of all motors by single monitor. Variable frequency drive is used to vary the speed and torque of the motor according to application hence by this design the entire Industrial system is controlled and monitored in a single window system.

Keywords: Induction motor, Supervisory Control and Data Acquisition System, Variable frequency drive

I. INTRODUCTION OF INDUSTRIAL DRIVES

The paper aims at building an efficient and automatic power survey system, which is capable of monitoring and control the electrical parameters of high voltage devices, which are present in real time industrial environment. The system makes use of RS485 based communication which is suitable of transferring data over longer distances. The paper describes the basic control method for an AC induction motor (ACIM). Industrial drives consist of electrical loads like as an electrical motor and transformers. In this system induction motor is used. The industrial drives are designed suitable software SCADA. The SCADA consists of the command or coding it can be operated by program. The communication will be passing through SCADA to VFD using the RS232 to RS485 cable. This cable can be transmitting the data to the SCADA to VFD. This cable can be transmitting the data up to 4000 feet along. The VFD is variable frequency drive it can be controlled the motor performance like as motor speed by using the variable frequency.

There are three general categories of electric drives DC motor drives, Eddy current drives and AC motor drives. Each of these general types can be further divided into numerous variations. Electric drives generally include both an electric motor and a speed control unit or system. The term drive is often applied to the controller without the motor. In the early days of electric drive technology, electromechanical control systems were used. Several types of DC motors are described in the electric motor article.

An Eddy current drive consists of a fixed speed motor and an eddy current clutch. The clutch contains a fixed speed rotor and an adjustable speed rotor separated by a small air gap. A direct current in a field coil produces a magnetic field that determines the torque transmitted from the input rotor to the output rotor. The controller provides closed loop speed regulation by varied. Such drives are therefore generally less efficient than AC/DC-AC conversion based drives. The motor develops the torque required by the load and operates at full speed. AC drives are AC motor speed control systems.

A slip-controlled wound-rotor induction motor (WRIM) drive controls speed by varying motor slip via rotor slip rings either by electronically recovering slip power fed back to the stator bus or by varying the resistance of external resistors in the rotor circuit. Along with eddy current drives, resistance-based WRIM drives have lost popularity because they are less efficient than AC/DC-AC-based WRIM drives and are used only in special situations. Slip energy recovery systems return energy to the WRIM's stator bus, converting slip energy and feeding it back to the stator supply. Such recovered energy would otherwise be wasted as heat in resistance-based WRIM drives.

SCADA is a system which exercises supervisory control of a particular device from a remote location and the human operator is able to monitor and control the device from his computer screen without being physically present near the device. Power Flux Variable Frequency Drive, a three-phase induction motor and workstation (personal computer) has been delivered, configured and integrated together for the monitoring and control of a motor driving a conveyor load. Various control schemes have been used to operate the induction motor in speed and position control modes of operation using SCADA programming developed on the workstation.

A Variable Frequency Drive is used for applications where in speed control is of an essential importance due to load changes where in the speed needs to be increased or decreased accordingly. Traditional methods in existence have addressed this issue, each with their own drawbacks such as high motor starting current, lower power factor, energy losses, etc. To address these problems, VFD provides a flexible approach as compared to traditional methods of speed control especially for certain applications which do not require a constant speed at all times. A variable-frequency drive (VFD) is a type of adjustable-speed drive used in electro-mechanical drive systems control AC motor speed and torque by varying motor input frequency and voltage.

The main differences between these RS232 to RS485 converters units are that whereas others have a terminal screw header, some are isolated some are not, In this have one RS485 port, LED lights for indicating RX (receiver)/TX (transmitter) data flow, some are port-powered and some needs an external power supply, some are industrial strength.

II. DESIGN OF VFD DRIVE FOR A 3-PHASE INDUCTION MOTOR

A Variable Frequency Drive is used for controlling the speed of a three-phase induction motor with variable load attached to the motor. It certainly leads to the best performance and high efficiency of the induction motor. In recent years, a major issue that is threatening Tamil Nadu for the past two years is the shortage of electricity. In such case, the unwanted energy should be saved. As a result, the implementation of VFD helps in saving a large amount of energy by reducing the sudden jerks happening at the starting of the motor. Supervisory Control And Data Acquisition (SCADA) are two new approaches to control a Variable Frequency Drive (VFD) whose output is fed to a three-phase induction motor and driving a conveyor belt.

The conveyor belt has three sensors are inputs which senses a passing object and carries out the necessary instructions programmed in ladder logic programming of the PLC through the medium of a personal computer (PC). The SCADA software installed in the PC in turn enables the human operator to control the entire operation away from the plant and just by using the virtual inputs designated on his computer screen. The results have been verified with a validating experiment. Normally motor is controlled in manual. For each and every equipment speed control is provided. The process of every equipment is monitored by sensor. The motor can be controlled over a small distance. So by using sensors, it used to cover over a long distance

III. BLOCK DIAGRAM

The system can be monitoring and control of industrial drives by using SCADA and VFD method. The AC power supply is given to system. Using the SCADA software, motor speed can be control. A variable frequency drive is a type of adjustable-speed drive used in electromechanical drive systems to control AC motor speed and torque by varying motor input frequency. In this system induction motor is used. The RS232 to RS485 converter cable used to interface SCADA and variable frequency drive.

SCADA

SCADA is a system which exercises supervisory control of a particular device from a remote location and the human operator is able to monitor and control the device from his computer screen without being physically present near the device. A three-phase induction motor and workstation (personal computer) has been delivered, configured and integrated together for the monitoring and control of a motor driving a conveyor load. Various control schemes have been used to operate the induction motor in speed and position control modes of operation using SCADA programming developed on the workstation. Show the real time control set up which was configured and tested for the experiment.

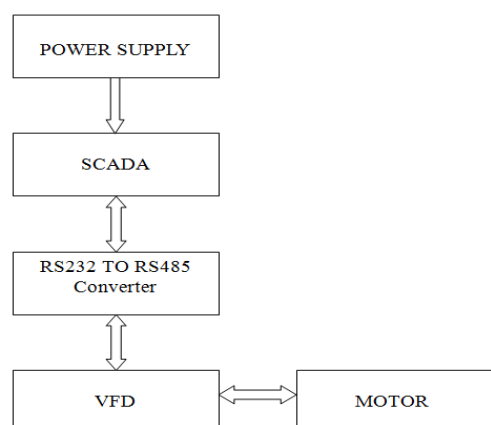


Figure-1: Block Diagram of the Industrial Drives

RS232 To RS485 Interfacing cable

The RS232 to RS485 converters are perfect for applications that don't require isolation or port-powered capability. All models include Automatic Send Data Control, eliminating the need for software modification. The RS-485 is the recommended standard by the Electronic Industries Association (EIA) that specifies the electrical characteristics of generators and receivers that may be employed for the interchange of binary signals in multipoint interconnection of digital equipments. When implemented within the guidelines, multiple generators and receivers may be attached to a common interconnecting cable. An interchange system includes one or more generators connected by a balanced interconnecting cable to one or more receivers and terminating resistors.

Variable Frequency Drive (VFD)

A variable frequency drive (VFD) is a type of adjustable-speed drive used in electro-mechanical drive systems to control AC motor speed and torque by varying motor input frequency. Speed, torque, and horsepower are three inter-related parameters in motor control. The speed of a motor, measured in revolutions per minute (rpm), defines a motor's ability to spin at a rate per unit time. The torque of a motor, measured in foot-pounds (ft-lb), is a rotational characteristic of the motor that is the algebraic product of force and voltage.

IV. SUPERVISORY CONTROL AND DATA ACQUISITION SYSTEM (SCADA)

SCADA is a system which exercises supervisory control of a particular device from a remote location and the human operator is able to monitor and control the device from his computer screen without being physically present near the device. ASTRA is Supervisory Control and Data Acquisition (SCADA) software used for this system. Because of this software cost is less than compare to any SCADA types. There are thousands of SCADA systems installed and they can be completely different from each other, in terms of their structures but they all have common elements and a common purpose to supervise control and collect data. ASTRA provides effective management, monitoring and control of industrial process. It is a Man-Machine-Interface (MMI) communicating with Loop Controllers, Programmable Logic Controllers (PLCs), I/O devices and other field devices. ASTRA has two constituent Configure Mode and Run Mode. The Configure Mode allows a user to configure the process.

To configure a process, a user need to

1. Start a project with basic settings
2. Create a database
3. Draw a mimic
4. Animate a mimic
5. Insert Data monitoring tools

Run Mode involves the actual data acquisition, processing, monitoring and controlling.

Working of ASTRA

ASTRA has two constituents Configure mode and Run mode. It is the Run mode that is involved in the actual data acquisition, processing, monitoring and controlling. The following figure represents the working of ASTRA as SCADA software in Configure mode.

Creating a Project

For configuring a process need to create a project. Creating a project means creating the directory structure and the required files on your computer.

1. Click Start and select Programs | ASTRA menu option.
2. Select ASTRA Configure program.
3. Select File New Project menu option to start with a new project

Configuring a Project

ASTRA project option can be set at any time after creating a project. Project title, Main window controls and Start up options can be set in the project options. For writing the project level scripts, use the Script Editor option. To set the project configuration.

Saving and Compiling a Project

To save the changes have done in the project

1. Choose the File | Compile and Save menu option
2. Press F7.

It saves the tag database changes, all windows of the project and the project configuration information and compiles the project. The application flashes the errors, if any. If do not save the project using the Save option, the project is saved while closing or quitting it. The following sections describe the details of closing process. If the current project is being running and choose to save it from the Configuration mode, it prompts that it is already running and whether to stop it or not.

Close A Project

1. Choose the File | Close Project menu option

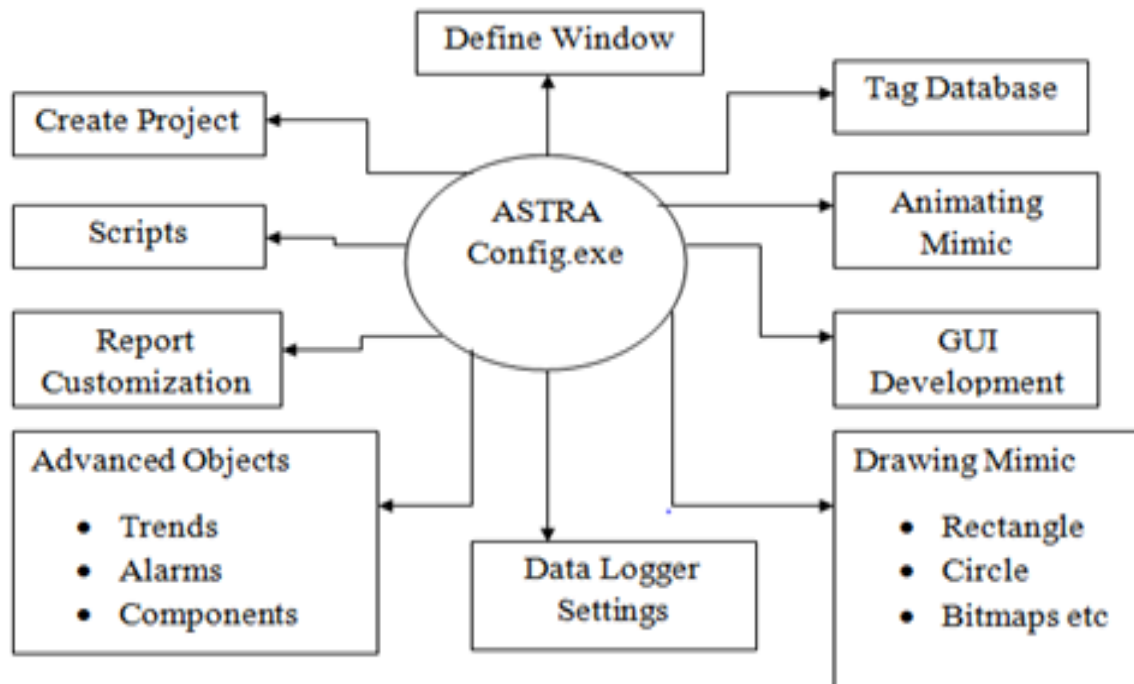


Figure-2: Working of ASTRA as SCADA Software in Configure Mode

2. Press F8.

When choose this option it saves the changes in the tag database, windows and configure information after confirming. It also compiles the project. The errors are flashed, if any. If choose OK in the error box, the errors are ignored and the project is saved and closed. If choose Cancel in the error box, the closing operation is cancelled.

Running a Project

Run the project from Configure mode itself once have the mimics to be tested or run.

1. Choose the File | Run menu option

2. Press F9. The application saves and compiles the project.

It flashes the compilation errors, if any. The application switches over from the Configuration Mode to Run Mode if the compilation is successful or if the errors are chosen to be ignored. If choose to ignore the compilation errors and run the project, the application does not guarantee the smooth running of a project. Will not be able to run properly the features with problems. For example, if define the same hot key for two objects, only the first object will be activated on pressing the hot key.

Quit a Project

Quit the current project and return to the Configure Mode Project menu. Choose the File Quit Project menu option. The application offers to save the changes and saves them after confirming. But this option does not compile the project. Can not run the project in Run Mode if it is not compiled. Hence, it is always better to save or close the project before quitting.

SCADA Output

Using the ASTRA SCADA software the driver can be control. In this system driver denote the induction motor. By varying the motor input frequency output speed can change. This image shown the motor speed and input supply frequency. This induction motor can monitor and control through this software shows the output image of SCADA. The fig. 4 shows the driver and driver control status.

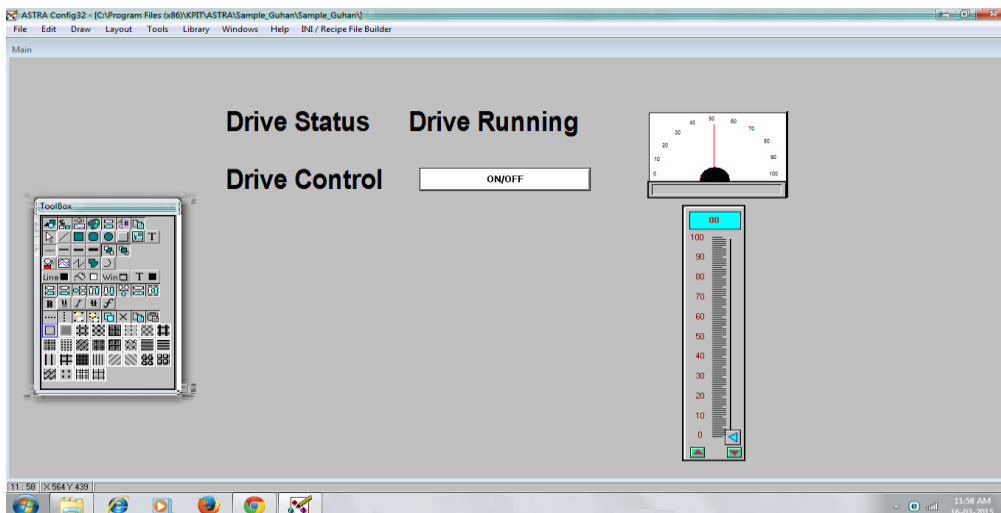


Figure-4: Output Image of SCADA

V. RESULTS



Figure-5: Hardware result

The fig.5 shows the hardware result. In this one indicates the power supply, two indicate the RS232 to RS485 converter, three indicate the induction motor and four indicate the variable frequency drive.

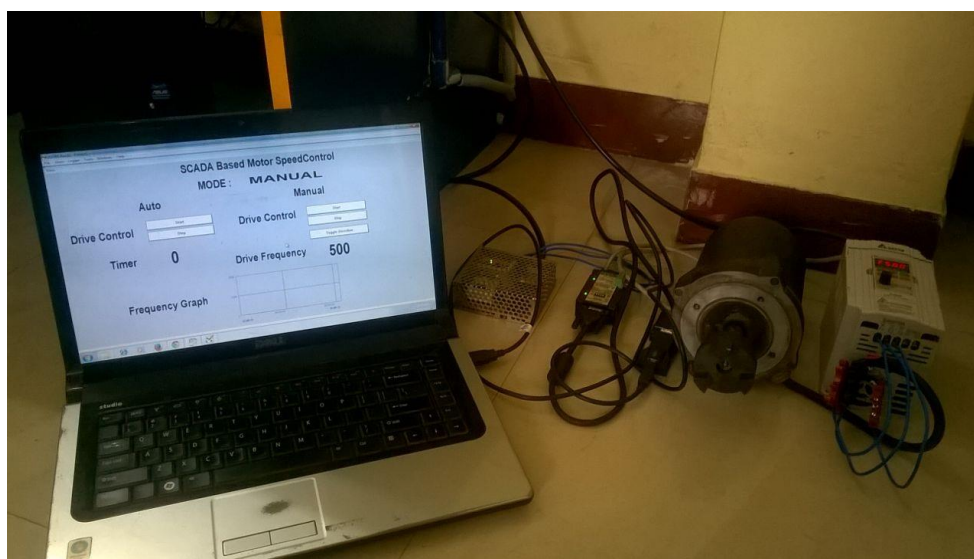


Figure-6: Hardware Result at Starting Time

The fig.6 shows the hardware result operation at starting time. SCADA software installed in pc. After that create a new window. In that window enter the coding in SCADA, after complete the coding compile and run. It is synchronize with VFD through the RS232 to RS485. At the time of starting in PC mode would be change as automatic and timer and drive frequency.

CONCLUSION

The presented work was motivated to develop a scheme to monitor and control a Variable Frequency Drive using SCADA. A 0.75 KW three -phase induction motor was fully automated using a Variable Frequency Drive and RS485 long distance. The drive used in this set-up offered various control modes of motor operation. The configuration and settings to run the motor in two control modes viz., speed and position were done systematically SCADA system. A VFD is very efficient. Typical efficiencies of 97% or more are available at full load. At reduced loads the efficiency drops. Typically, VFDs over 0.5 HP have over 90% efficiency for loads greater than 25% of full load. A complete study and practical hands on the SCADA and the drive operation have imparted a fairly good idea about the industrial automation system.

APPENDIX

Power Range :0.5 HP to 20HP

Voltage Range :0400 V– 440 V, 50Hz, three phase AC Power supply

Speed :1500 rpm

Motor Type :Squirrel cage

Insulation Class A

Mounting :Class B

Protection Class:A

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OPTICAL STUDIES ON ZnSO₄ DOPED MTS SINGLE CRYSTALSM. Jeyalekshimi¹, T. H. Freeda² and N. Neelakanda Pillai³

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ABSTRACT

Nonlinear optical (NLO) materials play a major role in nonlinear optics and in particular, they have a great impact on information technology and industrial applications. The Optical properties of crystals play important role in photonics and Opto-electronic research. In the present work, Pure and ZnSO₄ doped MTS crystals were grown from aqueous solution by slow evaporation technique using rain water as solvent. Totally ten crystals were grown in identical conditions. All the ten grown crystals were optically characterized by UV-Vis absorption spectra and the Optical band gap energy was determined using Tauc plot. The optical parameters like extinction co-efficient, static dielectric constant, optical complex dielectric constants and conductivity were determined using the available formula. The Cole-Cole plot were drawn between the optical dielectric constants. The band gap is direct allowed band gap and the Cole-Cole plot fit into semi-circle.

Keywords: Tauc plot, optical complex dielectric constant, optical conductivity

1. INTRODUCTION

Efficient non-linear optical crystals are required for laser devices due to technological importance in the fields of Opto-electronics, signal processing, instrumentation and optical communication. Knowledge of optical constants of a material such as optical band gap and extinction coefficient is vital to scrutinize the materials' potential for opto-electronic applications [1]. For optical fabrications; the crystal should be highly transparent in the considerable region of wavelength [2]. In this paper, we discussed the optical properties like refractive index, optical band gap energy, optical conductivity, optical complex dielectric constant, which determined from the UV-Vis spectrum.

II. EXPERIMENTAL DETAILS

Pure and ZnSO₄ doped Single crystals of MTS were grown using Rain water as solvent by slow evaporation technique. Totally ten crystals (1 Pure and 9 doped in the dopant ratio 1:0.002Zn, 1:0.004Zn, 1:0.006Zn, 1:0.008Zn, 1:0.01Zn, 1:0.02Zn, 1:0.04Zn, 1:0.06Zn and 1:0.08Zn) were grown at room temperature. The UV-Vis spectrum was recorded using Perkin Elmer Lambda 35 UV-Vis spectrophotometer in the range 190-1100nm. Transmittance is the ratio of radiant power transmitted (P) by a sample to the radiant power incident (P₀) on the sample. It is given by

$$T = P/P_0 \quad \text{But } P = P_0 e^{-\alpha t}$$

$$T = e^{-\alpha t}$$

Where t is the thickness and α is the optical absorption coefficient.

The absorption coefficient (α) can be calculated from the measured absorbance (A) and the thickness of the crystal, using the relation [3, 4].

$$\alpha = 2.303 \frac{A}{t}$$

The reflectance of the crystal can be calculated from the transmittance (T) and absorption (A) data using the expression [5].

$$R = 1 - (T + A)$$

The refractive index (n) can be determined from the reflectance data, using the formula [6]

$$n = \frac{1 + \sqrt{R}}{1 - \sqrt{R}}$$

The optical band gap energy E_g, can be determined from the Tauc law [7]

$$\alpha h\nu = A (h\nu - E_g)^n \quad \text{[8]}$$

Where the value of E_g and n correspond to the energy and nature of particular optical transition with absorption coefficient α . For allowed direct, allowed indirect, The optical conductivity is one of the powerful tools for studying the electronic states in materials. forbidden direct and forbidden indirect transitions, the value of n corresponds to 1/2, 2, 3/2, and 3 respectively [8]. To determine the possible transitions $(\alpha h\nu)^n$ versus $h\nu$ were plotted and the corresponding band gap were obtained by extrapolating the straight portion of the graph on $(\alpha h\nu)^n$ axis to zero. [9] The direct transition is a first-order process with larger values of the absorption constant than for indirect transitions, which is the second order process [10]. The term "optical conductivity" means the electrical conductivity in the presence of an alternating electric field. The term "optical" here covers the entire frequency range, and is not restricted only to the visible region of the spectrum. The optical conductivity σ is obtained using the relation [11]

$$\sigma = \frac{\alpha n c}{4\pi}$$

Where 'c' is the velocity of light in space, 'n' is the refractive index and ' α ' is the absorption coefficient. Extinction co-efficient is the fraction of light lost due to scattering and absorption per unit distance in a particular medium. In electromagnetic terms, the extinction coefficient can be explained as the decay (or) damping of the amplitude of the incident electric and magnetic fields. The extinction co efficient can be obtained from the following equation [10]

$$k = \frac{\alpha \lambda}{4\pi}$$

The real (ϵ_r) and imaginary ϵ_i part of optical complex dielectric constants can be determined using the relation [12]

$$\epsilon_r = n^2 - k^2$$

$$\epsilon_i = 2nk$$

Where 'n' is the refractive index of the crystal

The static refractive index n_0 can be determined by extrapolating the curve drawn between wavelength along X-axis and refractive index along Y-axis to $n \rightarrow \infty$. The optical free space dielectric constant ϵ_0 is given by [9],

$$\epsilon_0 = n_0^2$$

The real σ_r and imaginary σ_i components of optical conductivity are described as [13]

$$\sigma_r = \omega \epsilon_i \epsilon_0 \quad (12) \text{ -- and}$$

$$\sigma_i = \omega \epsilon_r \epsilon_0$$

Where $\omega \rightarrow 2\pi f$ ($f \rightarrow$ frequency of incident photon), ϵ_0 is the free space dielectric constant. A widely used graphical representation of frequency-dependent complex dielectric functions are known as Cole-Cole plot [17]

III. RESULTS AND DISCUSSION

The crystal grown in the present study are transparent, hard and stable. The crystals of high dopant concentration are found to be harder than the pure MTS crystal. The photograph of the grown crystals is shown in figure 1.



Figure-1. Photograph of grown crystals

The plot between $(\alpha h\nu)^2$ and photon energy for the doped crystal(1:0.006Zn)is shown in the figure 2 for illustration. The plots that satisfy the widest linearity of data determine the dominant transitions. According to the criterion, direct allowed transition dominate in the present case. The optical band gap is almost constant for doped crystals, which is around 5eV.This, implies that the dopant concentration has no influence on the band gap energy.

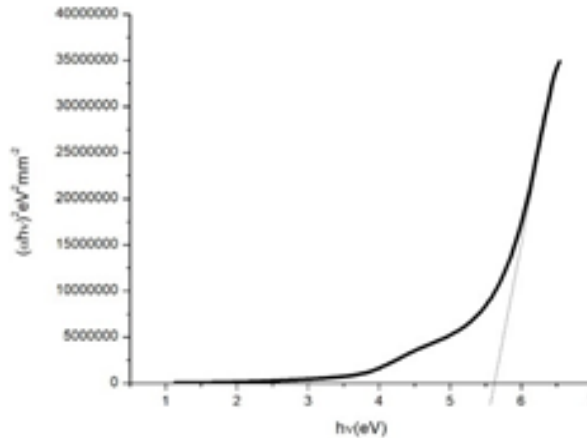


Figure-2: Tauc plot for 1:0.006Zn crystal

The band gap energy (E_g), static refractive index (n_0) and static dielectric constant (ϵ_0) values for all the grown crystals provided in the table 1.

Table 1: Band gap energy (E_g), static refractive index (n_0) and static dielectric constant (ϵ_0) for all the grown crystals

System	Optical band gap, E_g	Static refractive index, n_0	Static dielectric constant, ϵ_0
Pure MTS	5.284	2.588	6.6977
1:0.002Zn	5.402	2.396	5.7408
1:0.004Zn	5.342	2.697	7.2738
1:0.006Zn	5.625	2.766	7.6508
1: 0.008Zn	5.430	2.509	6.2950
1: 0.01Zn	5.191	2.747	7.5433
1: 0.02Zn	5.371	2.597	6.7444
1: 0.04Zn	4.380	2.595	6.7340
1: 0.06Zn	6.332	2.637	6.9538
1: 0.08Zn	5.191	2.425	5.8806

The optical conductivity obtained in the present study is in the range 1010Hz to 1012 Hz. The optical frequency is found to be almost constant at in the photon energy range 4 eV to 5 eV. Above 6 eV it increases rapidly.

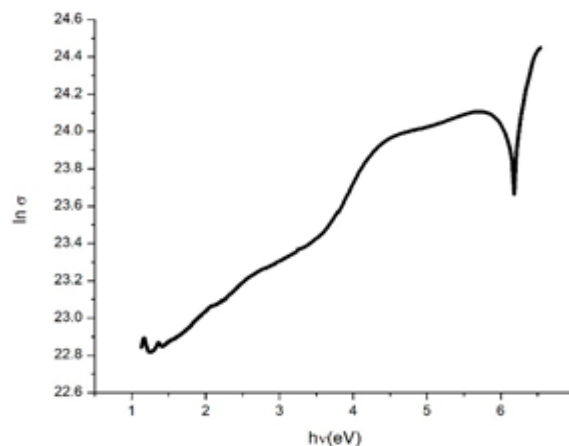


Figure-3: Variation of $\ln \sigma$ with photon energy for the sample 1:006Zn

The plot between extinction co-efficient and photon energy is given in the figure 4,exhibits that the extinction co-efficient decreases with energy shows inverse dependence in the photon energy upto 4 eV and starts increasing after 4eV.And then increases rapidly at above 5eV(= E_g)

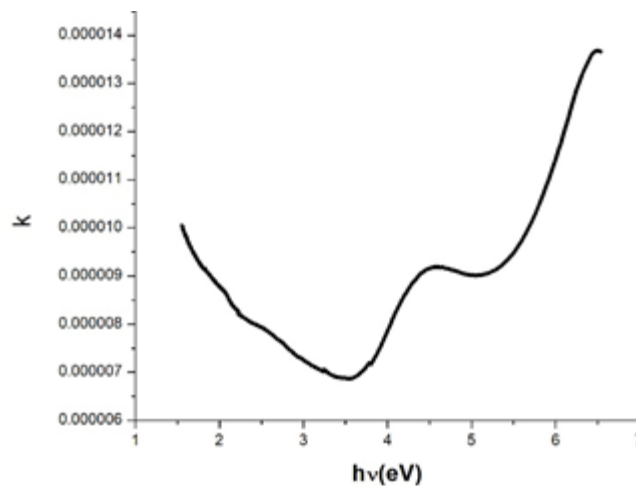


Figure-4: Variation of extinction co-efficient with photon energy for 1:0.004Zn crystal

The n_0 and ϵ_0 values show non-linear variation with dopant concentration. The variation of refractive index with incident wavelength of 1:0.008Zn is shown in figure 5 for illustration

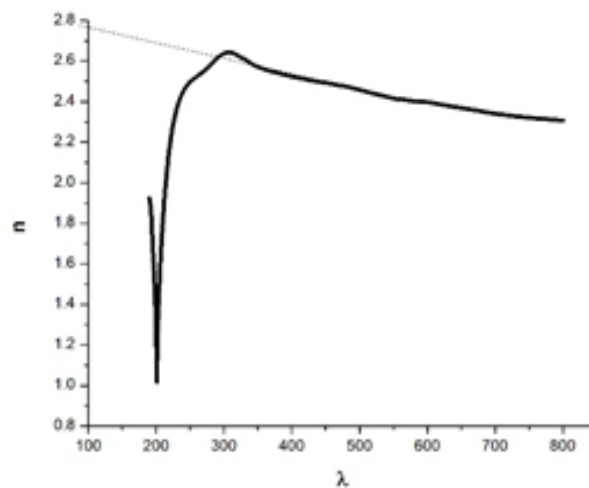


Figure-5: The variation of refractive index with incident wavelength of 1:0.006Zn crystal The Cole-Cole plot drawn between ϵ_r and ϵ_i fit into semi circle as we expected

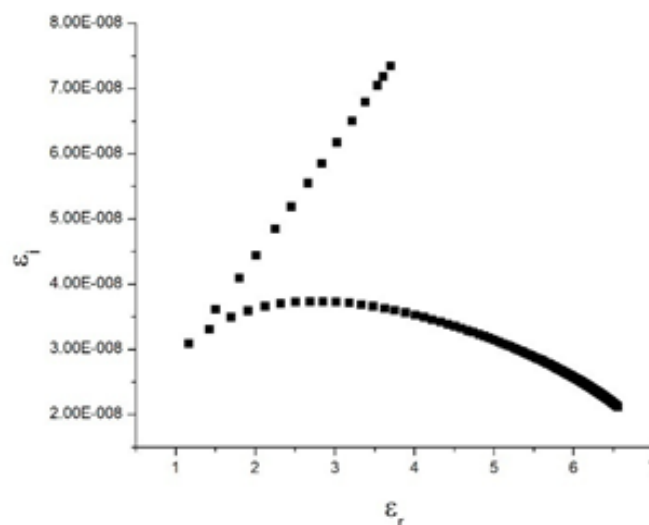


Figure-7: Variation of ϵ_r with ϵ_i for 1:0.008Zn crystal

IV. CONCLUSION

The Tauc plot shows that the electronic transition is direct allowed transition. The optical conductivity becomes constant at the band gap energy. The extinction co-efficient decreases with photon energy up to E_g afterwards it increases rapidly.

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OVERVIEW OF HR ANALYTICS TO MAXIMIZE HUMAN CAPITAL INVESTMENT

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ABSTRACT

A digital world where everything is transparent and easily trackable, employees desire for a productive, engaging, and most importantly an enjoyable work experience. The experience that an employee has in his workspace makes the culture of the company. Now, to enhance the culture or the overall experience of an employee, organizations are developing an integrated focus on bringing together all the workplace, HR, and management practices that affect people's experiences on the job.

As being a competitive market development day by day it's very difficult to enhance sustainable growth for the firms' side. The increasing globalization of the job market combined with an ever increasing shortage of skilful staffs and advances in technology have resulted in large scale changes to the recruitment practices throughout the world through the use of HR Analytics.

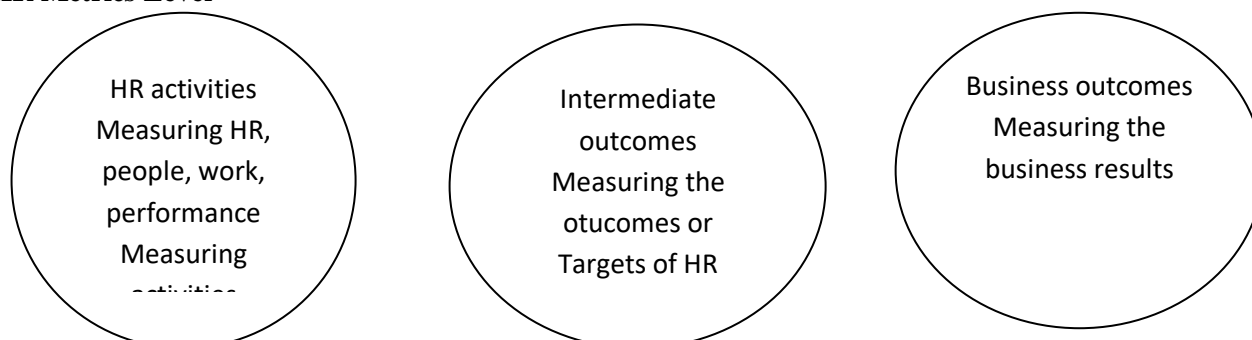
The aim of this paper was to find out what HR analytics holds the promise of both elevating the status of the HR profession and serving as a source of competitive advantage for organizations that have put it to good use for service industry that can go a long way to make India for human capital investment.

Keywords: HR analytics, competitive advantage, Human capital Investment

INTRODUCTION

Today in the world, global competition is the basic element to define firms' strategies as a result industrial economy has been experienced to pass toward to knowledge economy. As being a competitive market development day by day it's very difficult to enhance sustainable growth for the firms' side. All researchers and practitioners are aware of the advantages and disadvantages of a competitive work environment and try to find ways for adapting to competitive conditions. Human resource management literature has generally focused on the constructs of commitment, job satisfaction, and organizational effectiveness. The fit between persons and organizations, and persons and jobs is a neglected area. However, when one considers the intended goals of HRM practices, a sense of fit may be suggested as an expected target. Thus, it seems worth studying whether the positive views of employees about HRM practices makes a difference in terms of their fit with the organization and the jobs that they undertake. Previous studies have revealed that person-organization fit has significant effects on organizational commitment, performance, positive work attitudes, turnover intention, and the like. But the antecedents of person-organization fit have not been studied as frequent as the outcomes of person organization fit. Among the few antecedents that have been studied, organizational entry and socialization can be mentioned. The present study aims to make a contribution to the literature by examining the perceived sufficiency of HRM practices as an antecedent of person-organization fit.

HR Analytics-HR analytics demonstrates the causal relationship between the activities exacted by an HR department and the business outcomes that result from this activity. Once this causal relationship is discovered, HR analytics professionals will devise and implement a strategic plan to assist the business in attaining better outcomes. Although human resources analytics can involve a wide range of activities, there are generally four core functions that manifest within the field. Those core functions are the acquisition, optimization, development, and paying of the employees within a business or organization. To optimize each of these core functions, human resources analytics representatives will work with managers by gaining information from them regarding the issues and problems that pertain to their unique workforce.

HR Metrics Level

LITERATURE REVIEW

Derrik (1980) Analysis of the policies & practices in teaching education covering the principles of critical race theory use as a analytics & explore tools to invade the concept. Vinita (2012) illustrate the use of social media analytics as on the effective assessment too for behavior perspective & higher education Institutions are also utilizing the outcome of the study in terms of recruitment & hiring practices of faculty and staff members. the study further heights the role of social media analytics and developing conceptual framework to understand the importance for behavior assessment . Laurence (2017) states business world is having a buzz of big data & potential of HR analytics is transforming the organizational performance. It has been taken up as an strategic decision by the higher institution to follow the approach of HR analytics for delivering a high Quality for the organization. Reasmusse (2015) starts with supporting the HR analytics can be of huge potential to bring great value of management leaders. HR leaders can strategically use the data informatics in strong decision making the rightful utilizing organizational capital and serving the intuition with evidence. As quoted academic & HR centric approaches being governed by COE – Center of Expertise’s distant from the business. HR is one just one element of this value chain and end to end business analytics are required.

ANALYTICS: TRIED AND TESTED

Predictive analytics can be an amazing tool for companies as it is capable of giving insights into employee benefits, promotions, and talent management, or help in deeper forecasting. For example, analytics can help calculate the efficiency of training courses or to determine which employees will most likely achieve their targets and why. It can give answers to the efficacy of performed CSR initiatives and rank them basis their contribution to corporate culture and employee involvement. There are several leading organizations that have already given a heads up to analytics. For example, Google uses employee performance data to calculate suitable intervention time to help both high- and low-performing employees succeed.

HR analytics is the dawn of the new era for Human resource Management for overcoming its crucial issues and challenges. In order to determine how HR Analytics has transformed the world of Human Resource Management few case studies can be analyzed.

Case I- A recent case study Cornerstone published highlighted a challenge Xerox was facing with their large workforce. They needed to reduce the cost of training their workforce down from \$5,000 per employee and diminish the premature attrition of their employee pool of 50,000 people. By implementing predictive recruiting Xerox was able to identify better applicants. This improved group of new hires were more likely to stay longer with the company and were more technically inclined, which reduce training costs. Business leaders are finding that embedded, predictive HR analytics can reveal keys to information that is unavailable any other way. A tool that helps identify and prioritise the correct business initiatives creates the greatest impact on the efficiency of a company.

Case II- A Case Study Of Techno Inc. (Source: People Fluent Aquire case study) Overview Tenneco, a leading global manufacturer of auto parts, was spinning their wheels with manual organizational reporting and management succession planning processes. They used People fluent’s Org Publisher and Succession solutions to instantly find critical employee data and shorten their succession planning cycle. Challenge With approximately 24,000 employees serving customers from dozens of strategically placed manufacturing and research facilities around the world, Tenneco is the leading supplier of emission and ride control systems for automotive and commercial vehicles. Talent management for such a large and geographically diverse company is a challenge, and the manual processes and spreadsheets used by Tenneco’s human resources department were beginning to strain their resources. Carolyn Royce, Director of Tenneco’s Corporate/Global HR Programs, championed a new project that would streamline two critical HR processes at Tenneco: management succession planning and organizational reporting through org charts. The org chart process at Tenneco was regionally created and maintained and therefore, provided no global visibility as the company grew and focused more on global HR solutions. This time consuming and wholly manual process required each region’s HR team to create separate org charts based on data pulled from an SAP database, converted to a spreadsheet and then imported into an outdated version of Human Concepts software. Because each region had their own org charts, there was no consistency or global visibility

THE SUPPLY SIDE OF HRA

A wide range of supply-side actors are involved in the HRA field, e.g. consulting and technology firms, management gurus, business school professors, conference organizers and professional organizations. These actors offer various types of products and services aimed at helping potential consumers of HRA (i.e. organizations and managers) implement and apply HRA in their organizations.

Consulting firms - Management consulting firms have also had a strong involvement in the HRA field. During the last few years, HRA has become an important practice area for most global management consulting firms. Number of reports have been published by leading consultancies such as McKinsey (Fecheyr-Lippens, Schaninger, & Tanner, 2015), Boston Consulting Group (BCG, 2014), Accenture (Accenture, 2014), KPMG (KPMG, 2015), and Deloitte (Deloitte, 2015, 2016).

Technology firms - Technology firms play important roles in creating software solutions for new management fashions, in particular in relation to more technologically infused management concepts such as Knowledge Management (Klincewicz, 2006) and Customer Relationship Management (Madsen & Johanson, 2016). Therefore, it comes as little surprise that technology firms have played leading roles in the development of the HRA field. In addition, technology firms are commercial actors who have sensed a lucrative market opportunity in relation to HRA. After all, the market for HR related software is massive, estimated at about \$14 billion (Bersin, 2016a).

Professional organizations - Professional organizations have many functions in relation to new management concepts and ideas, e.g. licensing, training, certification, and professional development. In addition, professional organizations monitor and discipline the behavior of their members (Greenwood, Suddaby, & Hinings, 2002). Professional organizations shape what are seen as rational and legitimate management practices. In the context of HR, it has been noted that professional organizations have a key function in creating legitimacy for HR practices (Farndale & Brewster, 2005). Professional organizations have also played an important role in relation to HRA.

Conference organizers - Conferences and seminars are important arenas where new popular management concepts are introduced and discussed (Kieser, 1997). Usually other supply-side actors such as consulting firms, management gurus and software firms actively partake in these conferences and seminars as speakers and exhibitors. It should be noted that several of these conferences have been co-hosted and/or sponsored by well-known technology firms (e.g. IBM) or business schools (e.g. Wharton).

Business media - Different types of business media are influential in the diffusion of management concepts (Alvarez, Mazza, & Pedersen, 2005; Sahlin-Andersson & Engwall, 2002). For example, management books geared toward managers are influential in spreading new management ideas and practices (Furusten, 1999; Røvik, 2002). Just in the last few years, a large number of books about HRA have been published (e.g. Bassi, Carpenter, & McMurrer, 2010; Davenport, Harris, & Morison, 2010; Soundararajan & Singh, 2016).

Business schools - Business schools play an important role in legitimizing and circulating new management concept and ideas (Sahlin-Andersson & Engwall, 2002), by integrating them in courses and educational programs. The network around Harvard Business School has played a role in legitimizing HRA. For example, articles have been published in Harvard Business Review (Davenport, Harris, & Shapiro, 2010) as well as a special Harvard Business Review Report (HBR, 2014). A number of business school professors have been involved in the propagation of HRA, by publishing books and speaking at conferences.

Management gurus - Management gurus are “thought leaders” that are influential in shaping the popularity of new in the HR field there are many thinkers and gurus (HR Magazine, 2016). Jac Fitz-Enz may be considered the main guru in the HRA field. However, other HR thinkers have also established a high profile in relation to HRA. Contributes to the media discourse around HRA. For example, In Europe, Professor Nick Holley at Henley Business School is frequently used by professional organizations as a speaker on HRA (e.g. by HR Norge in Norway). Like Bersin, Holley is actively contributing to the discourse about HRA on social media platforms such as Twitter. Next, we will turn to the role of social media in the rise of HRA.

Social media - In recent years, the Internet and social media have emerged as important channels for the diffusion and dissemination of new management concepts and ideas (Madsen & Slåtten, 2015). There is a number of websites and online blogs about HR issues that are visited and read by HR professionals (Jensen-Eriksen, 2016). Examples of important websites and blogs include HR.com, HRN Blog, and GlobalHRU.com.

The Future of HR Analytics - HR analytics is an evidence-based approach for improving individual and organizational performance by making better decisions on the people side of the business. HR analytics can certainly enhance the credibility of the HR function by improving the effectiveness of HR policies and practices and contributing to the competitive advantage of organizations that develop it as a core competency. As such, HR professionals develop new skills and capabilities so that they can effectively partner with and lead IT and finance on HR analytics initiatives. Along the way, HR professionals will need to address ethical dilemmas. Without a doubt, mastering the art and science of HR analytics takes effort. But it can result in an elevation of

the status of the hr practitioners by helping them to guide their organizations in finding the intersection between more profitable and more enlightened management and development of people. Mastering this effort would represent a win-win for employers and employees, and ultimately the society in which we live and work.

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VARIATION IN RANGE OF COLOURS OBTAINED BY APPLICATION OF NATURAL DYES AND MORDANTS ON SILK FABRIC

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Government Holkar Science College, Indore

ABSTRACT

In present research sources of natural dye as turmeric rhizome (*Curcuma longa*), catechu bark (*Senegalia catechu*) and marigold flower (*Tagetes erecta*) along with biomordants as banana sap (*Musa paradisiaca*), myrobalan (*Terminalia chebula*), alum and pomegranate rind (*Punica granatum*) are used to obtain variation in colour on mulberry silk fabric. These natural dyes and biological mordants has excellent scope in the textile industry. All the natural dye with biomordants not only improved the colour fastness but also gave a variety of shades. The shades of fabric depend on specific dye and its combination with mordant.

Keywords: Mordants, Natural dyes, silk fabric, shades

INTRODUCTION

At present it is a big task to protect our environment from the huge use of chemicals at commercial level in different fields for different purpose. Textile industry is one of them because it uses chemicals for dyeing, printing and releases industrial waste directly or indirectly to the environment which is dangerous for all living beings. Almost all synthetic dyes cause diseases in human beings such as skin allergies, asthma and cancer etc. If textile industry uses natural dyes and biomordants for printing and dyeing instead of synthetic ones it will be ecofriendly for environment. But most of the industries utilize synthetic materials for dyeing and printing on commercial scale. Industries working with natural dyes and biological fixers are rare and their number is negligible in the market. Some textile small scale industries are trying to use the natural dyes with synthetic chemical fixatives. Thus, the partial use of dyeing, printing material also causes environmental pollution as well as hazardous effects on workers and buyers. Natural dyes can be obtained from different sources of plant parts like flower, leaf, bark, stem, rhizome and root etc. Dyeing is the process of imparting colour to a textile material. In present work natural dyes are extracted from turmeric (*Curcuma longa*) rhizome, marigold (*Tagetes erecta*) flowers, catechu (*Senegalia catechu*) barks and applied with biomordants such as alum, pomegranate rind, banana pseudostem sap and myrobalan to dye the fabric. These dyes and biomordants were used to colour the fabric at different temperature and time to obtain different colour shades on fabric.

MATERIAL AND METHOD

Extraction of dye: The samples were collected and prepared in powder form then dissolved in water and left for one day. After a day above dye solution boiled at 80°C to 90°C temperature for 60 minutes and then it was filtered to obtain crude dye stuff. Same process was followed for preparation of biomordant.

SCOURING OF FABRIC

First of all samples of mulberry silk fabric kept in water for one day and washed with tap water and then put in a pot with detergent solution and allowed to boil on 60°C temperature for 30 min. The scouring fabric washed thoroughly with tap water and dried at room temperature.

DYEING

Dyeing of silk was performed at 60°C for 45 minute using fixed amount of each extracts in dyeing pot (Table 1). Dyed samples were extensively washed by cold water to remove any unfixed dyed material and finally dried at ambient temperature.

Table-1: Condition for dyeing on silk fabric










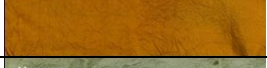

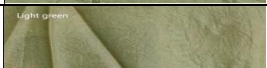
Dye Concentration	Mordant Concentration	Temperature	Time	M:L
20%	20%	60°C	45	1:50

RESULTS AND DISCUSSION

The above process of dyeing was done in combination of natural dyes and biomordants. 3 types of natural dyes extracts were taken in dyeing process such as Turmeric rhizome, Marigold flowers, Catechu bark with 4 different biomordants as Alum, Banana sap, Myrobalan and Pomegranate rind. Different shades of yellow colour were obtained from the dye extracted from turmeric. Similarly shades of brown colour were obtained from crude extract of catechu. Dye extracted from marigold flowers given varying shades of green tinge when applied on fabric in different combinations of mordants. Mordants were used in same ratio for all experiments

of individual dyes, but their results appeared different with variation of mordants as banana sap, alum, myrobalan and pomegranate rinds. The difference in shades of a single dye depends on variety of fixative agents, which have their own contribution to develop varying hues on textile material. Thus, mordant play a very important role in imparting colour to the fabric (Table 2). Turmeric dye resulted in bright yellow colour in combination of banana sap biomordant (pH 7.5). Dark yellow shade was given by turmeric and alum (pH 7.2) combination. On the other hand golden yellow shades were obtained with pomegranate (pH 7.6) and myrobalan (pH 7.4). As far as catechu is concerned the dye has given light to darker shades of brown colour as lightest shades with alum (pH 7.6), golden brown with myrobalan (pH 8.1), dull brown with banana sap (pH 7.1) and dark brown in combination of Pomegranate (pH 7.5). Dye obtained from marigold flowers gave beautiful green to brown shades. Light green shade was appeared on sample in combination of myrobalan (pH 7.4). golden green colour with Pomegranate (pH 7.6), moss green shade with banana sap (pH 7.6) and very different Dijon golden with alum (pH 7.4). Above studies revealed that the pH of dye and mordant changes with combination and usually minimum pH 7.1 to maximum pH 8.1 resulted on mixing of different dyes and mordants. Each mordant changes its pH when mixed with dyes obtained from different sources. Therefore, a very good type of shade card was developed by 3 natural dyes and 4 natural mordants as shown in table 3.

Table-2: Different colours obtained from natural dyes and biomordant combination on silk fabric

Fabric	Dye extracted from natural sources	Mordant	Colour obtained	Colour Shade
Mulberry Silk	Turmeric rhizome	Alum	Dark Yellow	
		Banana Sap	Bright Yellow	
		Myrobalan	Golden Yellow	
		Pomegranate	Dark Golden Yellow	
	Catechu bark	Alum	Light Brown	
		Banana Sap	Dull Brown	
		Myrobalan	Golden Brown	
		Pomegranate	Dark Brown	
	Marigold flowers	Alum	Dijon Green	
		Banana Sap	Moss Green	
		Myrobalan	Light Green	
		Pomegranate	Golden Green	

CONCLUSION

It is revealed by the study that isolated dye from the Turmeric rhizome, marigold flower catechu bark used for dyeing of silk fabric given wide range of soft and light to dark colours by using combination of different biomordants. The process of extraction and dyeing is environment friendly and cause no atmospheric pollution. The investigation also revealed that natural dye can be used with biomordant successfully on silk fabric. All types of natural dyes as well as natural mordants are good for health of human beings and nature as compare to chemical agents generally used on commercial level. Here, it is also important to know the excellent property of studied dyes for their hues, beautiful shade as well as significant harmless contribution to both textile industries and environment. Hence, application of natural colouring agents on textile material gives a better opportunity of creating source of income and self employment without any harm due to their great economic values. Thus, there is scope of more research work in the field of natural dyeing for their use on commercial scale in an ecofriendly manner.

Table-3: Shade card prepared by natural dyes and biomordants on silk fabric

Raw material	Raw material	Raw material
Dark yellow	Light brown	Dijon green
Bright yellow	Dull brown	Moss green
Golden yellow	Golden brown	Light green
Dark Golden yellow	Dark brown	Golden green

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WASTE MANGAEMENT AND RECYCLING USING ARDUINO

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ABSTRACT

The paper mainly based on the waste separate out wet and dry waste by using some different sensors incorporated along the conveyor belt which initially crushed waste is moving. With the emerging population rate in the world the waste as being produced largely at the very faster manner. Usually, the kitchen waste where simply damped in to the damping yard. It is manner facing problem for the municipal corporation to dumped the wastage in the landfills.

So, it is very crucial of some system to manage the waste automatically which the current system. Pieces of glass, paper, metallic materials, and wet waste where separate out from proposed work. The segregated waste where used for the growth of plants and recycling of most of the dry components like paper, glass, etc. The waste in urban and rural areas. Rapid surge in bulk and different solid waste is serious issues due to urbanization and industrialization in some countries. Hence, we proposed to segregate the waste materials collected into wet, dry and metal using ADRIUNO.

Keywords: Waste segregation, moisture sensor, ARDUINO, Wetsensor, servo motor, belt conveyors, LED, UPS, Proximity capacitive sensor.

1.1 INTRODUCTION

Waste management is a vital role in sustainable development in all nations, due to rapid urban and uncontrolled growth rate of population. In modern world the new technology where used in waste management now a days. The ancient days the waste disposal where dumping at the landfill site.

Efficient sorting of waste in major issue in today's society. Selective often helps to improve recycling and reducing the waste in the environment to clean the society. When the waste is segregated into simple way by using the ARDUINO system. However, recently municipal workers collect the waste from the homes in cite sides on dispose of the proper way. Hence device to segregate the collected waste as per proper categories. Automation of the system was done in the mind in the above the ARDUINO thus a tool that provides the control for automated process. In industrial automation is become increasing important manufacturing process by computer system.

1.2 PROBLEM STATEMENT

Fertilizers are essential for the growth of the plants and trees in the world. It takes lot of time to collect the waste and also has high cost to manufacture the fertilizers. But if we use the waste, it is natural fertilizer for the plant and trees.

1.3 PROBLEM CONCEPT

Some of the main causes of pollution include industrial emissions, poor disposal of wastes, mining, deforestation use of fossil fuels and agricultural activities. pollution can affect the air, the land and water bodies throughout the world. The major causes of pollution are sewage, garbage and wastes that contain harmful chemicals and toxins which make the environment polluted and plastics which is one of the major pollutant, they get buried inside the earth it takes so many years to decompose, this causes to reduce the nutrient in the soil.

Here we are going to separate the garbage wastes at many categories and some of the garbage are reused by recycling method and some are modified for certain purposes.

1.4 IDEA

This Paper implements the Waste management using ARDUINO to separating various garbage like Metal, Glasses, Plastics (Polymer, Polystyrene), Paper, Linen By using various high-tech sensors and belt conveyors.

The feature provided by our system will be

- High tech sensors
 - RFID (Radio frequency identification) technology
 - Uninterrupted operation using UPS.
 - Servo motor
 - Eco –friendly
-

1.5 BLOCK DIAGRAM

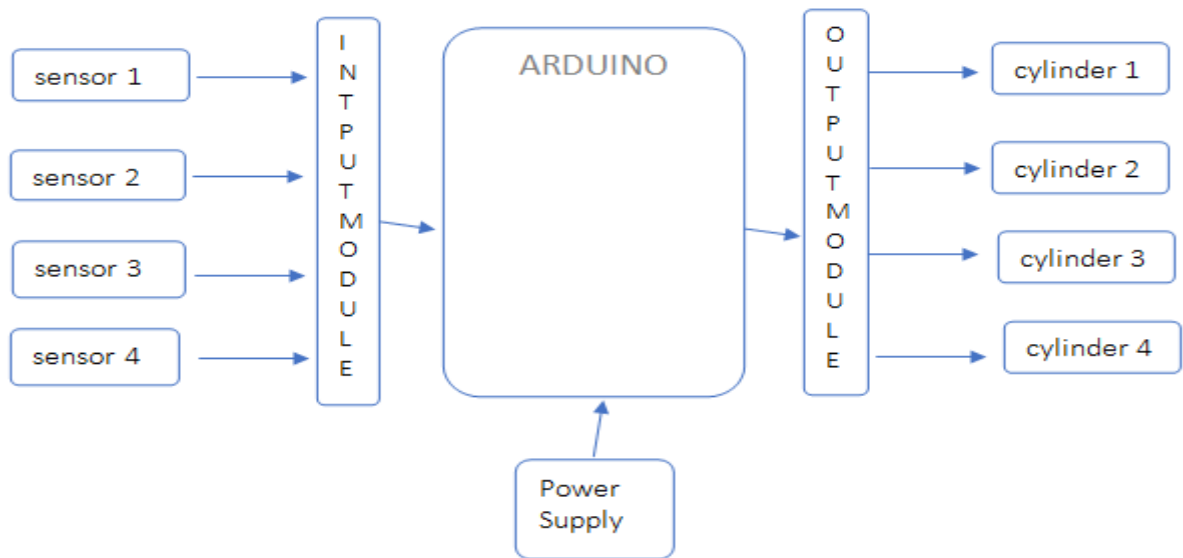


Fig-1.1: Block diagram of ARDUINO board

1.6 COMPONENTS DESCRIPTION

1.6.1 ARDUINO

Arduino is open source electronic prototyping platform enabling users to create interactive electronic objects. Arduino boards it consists of both a physical programmable circuit board and a piece of software or IDE (Integrated Development Environment) that runs in the computer, used to write and upload computer code to the physical board. ARDUINO is micro-controller board based on the AT mega 328(datasheet). It has 14 digital input/output pins which can be used as PWM outputs, 6 Analog inputs, a 16MHz ceramic resonator.

“UNO” means one in Italian and named to mark the upcoming release of ARDUINO 1.0

Developer	Arduino.cc
Type	Single-Board microcontroller
CPU	Atmel AVR(8-bit)
	ARM Cortex-M3(32-bit)
	Intel Quark(x86) (32-bit)
Memory	SRAM

1.6.2 Storage Flash, EEPROM

Arduino is an open source computer hardware and software company. the Arduino community refers to the project and user community that design and utilizes micro-controller based developed boards. These development boards are known as Arduino Modules, which are open-source prototyping flat form. The simplified micro-controller board comes in a variety of development board packages. The ARDUINO IDE, which utilizes the embedded C programming language.



Fig-1.2: ADRUINO

1.6.3 Battery

The Battery is an electric device and it can store the energy, that is used to store current which is produced from the Solar panel and supplied to the corresponding loads. The number of batteries required depend on the load requirement.

1.6.4 DC motor

DC motor convert the electric energy into mechanical energy when the current flows through wires the magnetic field is generated this magnetic field. The interaction of these two forces produces the movement of the shaft and motor develops the motion with the help of some magnets. The larger DC motors are used in propulsion of electrical vehicles, elevator and Belt conveyor.

1.7 SENSORS

1.7.1 Moisture sensors

It measures the volumetric water content in a medium. Indirectly by using some other properties such as electrical resistance and dielectric constant are inter action with neutrons as proxy for the moisture content. The sensor is basically used to separate the organic waste from the dry waste. It is placed between the conveyor belt at beginning. It measures the Conductive of the waste. The relation between the measured property and garbage moisture must be calibrated.



Fig-1.3: Moisture sensor

1.7.2 Inductive sensor

An inductive sensor is a device that uses the principle of electromagnetic induction to detect or measure objects. It is used to detect metallic object that interact with magnetic field.

1.7.3 IR sensor

AN infrared sensor is an electronic instrument that is used to sense certain characteristics of its surrounding, it is capable of measuring the heat being emitted by an object and detecting motion the basic concept of an infrared sensor which is used as obstacle detector is to transmit an infrared signal bounce from the surface of the object.



Fig-1.4: IR SENSOR

1.7.3 Capacitive detector sensor

It is used for detect the non-metallic objects. The oscillate of the object on the target material were close to the sensor face. The capacitance of the capacitor in the face of the sensor is oscillated the circuit to look upon the process in varying the source.

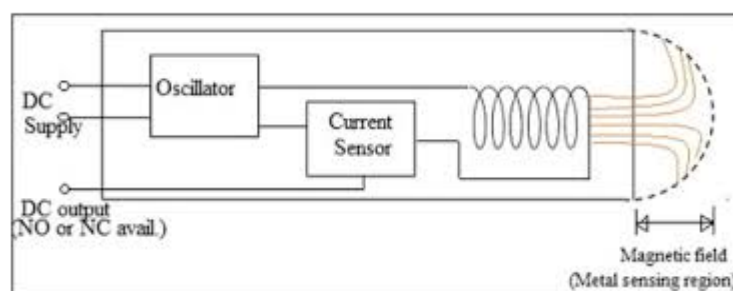


Fig-1.5: Capacitive inductor

1.7.4 Conveyor Belt

It is mainly used to carry the garbage and transport one session to another session. The conveyor system two or more pulleys within the endless loop on the carrying medium. Pulleys are powered moving the belt and material forward.



Fig-1.6: Conveyor Belt

1.8 WORKING PRINCIPLE

The garbage is first collected from various areas, it was poured on the conveyor. First, the wet sensor detects the garbage moisture, if the moisture is high the garbage is dry and continue in the process of separation, if all is set at correct moisture and by using various sensor the garbage is separated as wood, paper, plastic, metallic etc and collected in the separate cylinders. The waste that is stored can be used for some other recycle purpose.

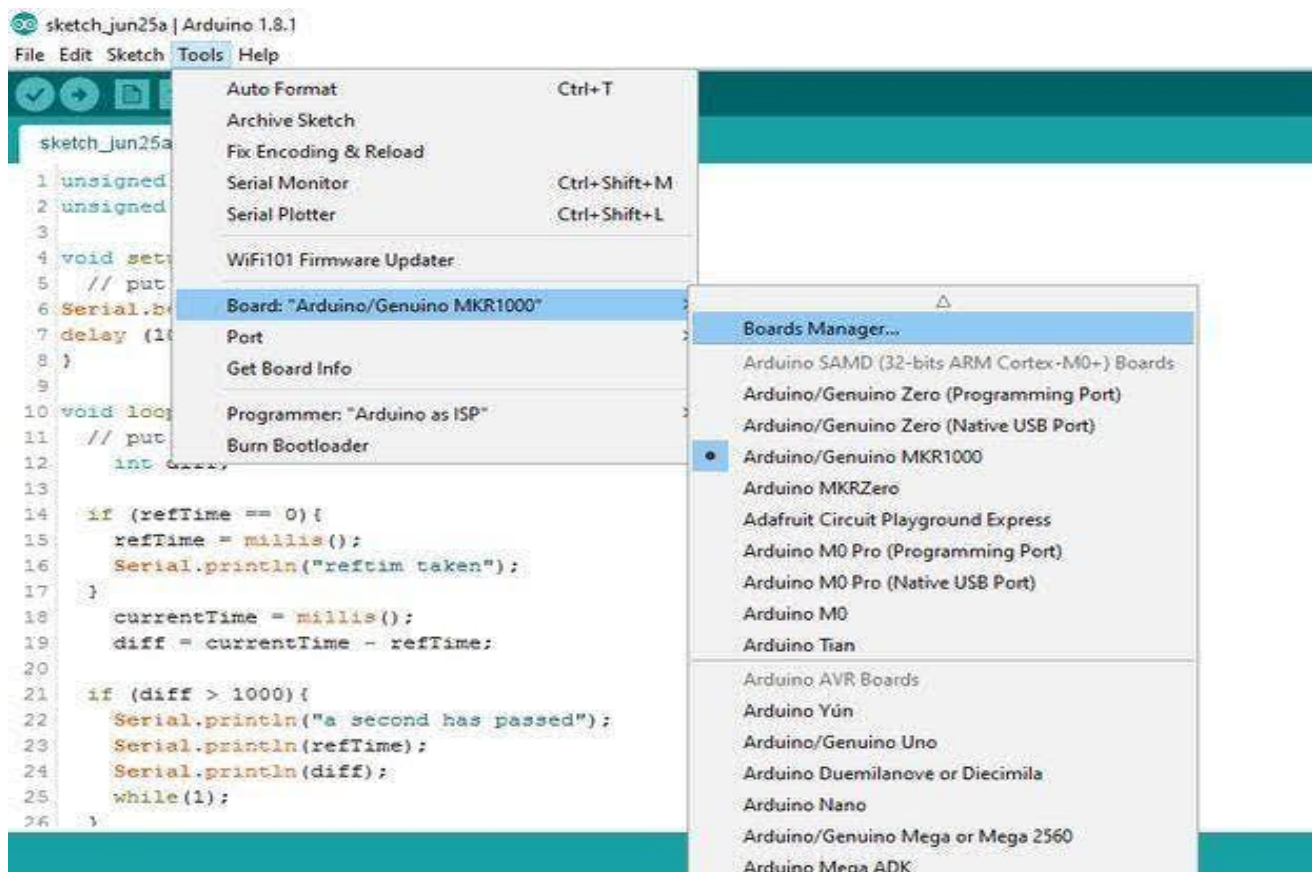


Fig-1.7: Program For the waste management

1.9 FUTURE SCOPE AND CONCLUSION

In this paper, we proposed an automatic waste segregating system using the ARDUINO. The system separates out the wet and dry waste along with few dry components detection and separation.

This system can be implemented at the municipal level or in some small-scale industries to segregate out the metallic, plastic, glass and paper wastes more efficiently at an affordable cost. Use of ARDUINO has added advantages like reduction in manpower with improved accuracy and speed of waste management, also avoiding the risk of working at hazardous places.

In Future, the work can be implemented by making use of an IOT to pick and place certain materials which can be re-used. Also, limit sensors can be placed at the top of each of the collecting bins to unload them when they are full. The use of ARDUINO gives this project a vast scope for future. We can implement additional sensors to detect more objects.

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CHALLENGES ENCOUNTERED BY TRIBAL POPULATION IN THE ERA OF GLOBALIZATION**Sumbl Ahmad Khanday and Ishfaq Majeed**

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ABSTRACT

The Globalization affect the tribal population positively and negatively. Since the arrival of liberalization, privatization and globalization (LPG), has affect the culture, languages and life styles of tribals in India. The areas occupied by tribal population have been subject to various objections due to involuntary displacement. Due to neoliberal economy, the arena of development has turned into unipolar. In the name of up gradation of lifestyle of poor native tribal people, the market forces have created wealth for their benefits at the cost of livelihood and security of tribals. According to the World Bank, development schemes every year unwillingly displace one million people in the developing countries from their land-living and homes (World Bank, 1994). In India alone, between 1951 and 1990 around 21.3 million publics were displaced by development projects. Among this number 8.54 million (40 per cent) were tribal or indigenous people and only 2.12 million (24.8 per cent) were resettled. The areas occupied by native tribal people are facing wrath of not only monetary exploitation but ecological degradation due to extreme extraction of resources. The rehabilitation process for displaced tribals has been in dillydallying phase of implementation. This paper studies the impact of globalization on tribal population, the displacement and uprisings among tribals, and the role of government policies for the upliftment of tribal population in India.

Keyword: Globalization, Tribals, Displacement, Rehabilitation, Government Policies.

I. INTRODUCTION

Tribals are generally called 'Adivasis' implying 'original Inhabitants' of the land. The term 'tribe' originated around the time of Greek and the early formation of the Roman Empire. A Latin term, 'Tribus' has since been transformed to identify a group of persons forming a community and claiming descent from a common ancestor (Fried, 1975). Tribes are the people with special attachments to land, kinship ties, unique culture, and religious beliefs, material possessions that differentiate and separate them from the mainstream. The origin of India's indigenous people officially called Scheduled Tribe (ST) have been traced to races such as the Proto-Australoids who at one time practically covered the whole of India and the Mongolians who are located mostly in Assam and adjoining states in the northeast region. The Negrito strains are also available as indicated by frizzy hair, among the Andamanese and the Kadars of the south-west India (Memoria, 1957).

The genesis of the concept of Scheduled Areas dates back to the Scheduled Districts Act of 1874, in the British colonial period, the Scheduled Areas were retained to enable the tribals enjoy their customary rights without exploitation and to develop and protect their environments. The President of India with his special power declared some indigenous groups of our country as 'Scheduled Tribe' in 1950 under Article 342 of the constitution of India. Characteristics like the tribes' primitive traits, distinctive culture, shyness with the public at large, geographical isolation and social and economic backwardness etc. are considered before a tribe is considered Scheduled Tribe.

II. TRIBAL POPULATION IN INDIA

India has the second largest concentration of tribal population, after that of the African Continent. According to the 2011 Census, there are 24, 94, 54,252 households, of which 2, 14, 67,179 households belong to ST population. Total population in the country is 1,21,05,69,573, out of these 10, 42, 81,034 are classified as ST with 5, 24, 09,823 males and 5, 18, 71,211 females. The decadal growth rate of the tribal population during 2001-2011 is 23.7%, which is higher than India's total decadal growth (17.6%). The tribal population of India constitutes 8.6% of the total population of the country and the majority of them reside in the rural areas (90%). The highest proportion of tribal population resides in north-eastern states, namely; Mizoram (94.4%), Nagaland (86.5%), Meghalaya (86.1%), Arunachal Pradesh (68.8%), Manipur (35.1%), Sikkim (33.8%) and Tripura (31.8%). Apart from the north eastern states, tribal population in Lakshadweep islands comprises of 94.8%. Numerically, the highest tribal concentration is in Madhya Pradesh, which is 14.7% of the total tribal population of India. Maharashtra (10.1%) and Odisha (9.2%) together, add an additional 19.3% tribal population in the country. In contrast, lowest tribal concentration is in UT of Daman and Diu (0.01%). No ST population is recorded in Punjab, Haryana, Chandigarh, Delhi & Pondicherry states/UTs.

The Sex ratio among tribals in India is 990 females for 1000 males; it is higher than the national sex ratio of 943. The Sex ratio among tribals are highest in Goa (1046) and lowest in Jammu and Kashmir (924). The child

sex ratio among tribals in India is 957 females for 1000 males. It is highest in Chhattisgarh (993) and lowest in Lakshadweep (907). The Literacy rate among the tribals (excluding children aged 0-6 years) are 59%; and it is 68.5% among males and 49.4% among females. The Literacy rate in tribal is lower than the national average of about 74%. There is a literacy gap of 19.1% between males and females and it is higher in rural area (19.9%) as compared to the urban areas (12.9%). The Overall literacy rate among tribal is the highest in Lakshadweep (91.7%) and the lowest is Andhra Pradesh (49.2%).

In India, there are around 705 (Census of India, 2011) STs inhabiting in 26 states and 4 union territories. Among them, 75 STs are classified as a particularly vulnerable tribal group (PVTG), among them 25 PVTGs inhabit in Odisha and Andhra Pradesh. The state wise distribution of PVTGs in India is presented in Table 2 (As per census 2001). The Bhils are the most populous tribe in India (1, 26, 89,952) followed by the Gonds (1, 08, 59,422), Santhals (58,38,016), Minas (38,00,002), Naikdas (33,44,954), Oraons (31,42,145), Sugalis (20,77,947), Mundas (19,18,218), Nagas (18,20,965) and Khonds (13,97,384) respectively.

Table-1: Ranking and State wise distribution of Particularly Vulnerable Tribal Groups (PVTG) of India (Census of India, 2001)

S. NO	State	Population	Population wise Ranking
1	Madhya Pradesh & Chhattisgarh	785720	1
2	Maharashtra	408668	2
3	Jharkhan	387358	3
4	Andhra Pradesh	334144	4
5	Tamil Nadu	217937	5
6	Tripura	165103	6
7	Gujarat	106775	7
8	West Bengal	85983	8
9	Rajasthan	76237	9
10	Orissa	68745	10
11	Uttaranchal	47288	11
12	Karnataka	45899	12
13	Kerala	20186	13
14	Bihar	10873	14
15	Uttar Pradesh	5365	15
16	Manipur	1225	16
17	Andaman & Nicobar Island	816	17
	Total	2768322	

III. OBJECTIVES AND METHODOLOGY OF STUDY

- To study the impact of globalization on tribal population in India.
- To study the displacement and uprisings among tribals in India.
- To analyse the role of government policies for the upliftment of tribal population.

The present study is purely based on secondary sources of data. An extensive literature survey has been done. Secondary data include both quantitative and qualitative is collected from different sources, including books, Reports, research papers, newspapers, magazines, and websites is used for the purpose of study.

IV. GLOBALISATION AND TRIBAL POPULATION

The process of economic liberalization, privatization, and globalization that was started in 1991 after the adoption of New Economic Policy (NEP) is clearly designed for the interests of the urban areas and the rich corporations of the country as well from outside. Liberalization, in simple terms, only means allowing the rich corporate to exploit country's resources at rather easy terms unmindful of what happens to the environment and the displaced people who have historically acted at custodians of the lands and surroundings. The British exploitative policies not ended after they left India in 1947. But the West, former colonial powers, cleverly devised the strategies of Globalization and WTO agreements to gain access to natural wealth situated in the remotest corners of the world, through legal international agreements with governments. Now their giant companies can reach anywhere and grab raw materials and feed the lifestyle of the West at the local people all around the world. The truth is that the indigenous people across the globe are being alienated from their lands, natural resources and losing their traditional culture, knowledge and lifestyle. This is what happens when the money power rules the world; not the principles of human justice or equity.

In the Indian context the British colonial regime had robbed the country of its resources and had left it undeveloped and impoverished. The colonialists turned the colonies into suppliers of raw materials and capital for the industrial revolution in Europe and captive markets for its finished products that impoverished the colonies. Newly independent countries, after the World War II, that followed this path were bound to impoverish some of their own communities for the benefit of their middle class since they did not have colonies resulted from technology alone and chose precisely this path. Unfortunately, its result is seen in its impact on most tribes who live in the resource rich backward regions. Their resources have been exploited in the name of national development and people have been displaced in order to acquire land for projects. As a result, India has made economic progress but at the cost of suffering and hardships for the tribals who lived in resource rich regions. In India large-scale displacement of tribals due to land acquisition for development is a challenge (Krishna Tirat, 2011). In recent times the large scale industrialization, privatization and globalization for sake of “development” has emerged as the biggest threat to tribal’s survival. Land alienation of the tribals by the powerful entities has become common phenomena. It is most unfortunate that “*the freedom to live in their own traditional ways*” as guaranteed by the constitution is flouted by those who understand the constitution better. The tribals, their lands, and other resources are now exposed to the exploitative market forces, mostly due to the State and Multi-National Companies (MNCs) sponsored developmental projects to exploit minerals and other natural resources. It is the height of injustice that the tribals whose eco-friendly lifestyle preserved forest, mineral and natural resources for ages are now mercilessly uprooted by “outsiders” who would only make money from the resources for some time, creates few jobs mostly for urban middle class. If all citizens are equal under Indian constitution, why then the helpless tribals are forced to pay the price with their traditional land and lifestyle.

V. IMPACT OF GLOBALIZATION ON TRIBALS

The globalization has left a very deep scar over growth of marginalised people from multiple perspectives. On one hand, they have been crippled by fast growth of industries; on the other hand the benefits of development have not percolated among them. Some of those crucial negativities are as follows:-

Estrangement of Tribals: Land is very important component for tribal development. It occupies their source of livelihood. But the globalization trend has alienated tribals from their mainstay. Over a period of time, the tribal communities have tended to get eroded not only through acquisition for public purpose but even fraudulent motives. The states affected by alienation of land are Andhra Pradesh, Madhya Pradesh, Karnataka and Gujarat. Various studies have pointed out that the lack of political and administrative will continues to be the cause for perpetuation of the problems of land alienation among the tribals.

Dislocation of Tribals: Displacement of tribals from their indigenous land has been one of the significant issues in the era of globalisation. It is estimated that owing to construction of over 1500 major irrigation development projects since independence, over 16 million people were displaced from their villages, of which about 40 per cent belong to tribal population. The displacement has taken place on account of various development projects like irrigation dams, under-ground coal mines, mineral based industries in various parts of the country. Almost all major dam projects in India are intrinsically linked to world capitalism and its obsequious national stooges. Nearly 60 per cent of these large dams are located in central and western India where most of inhabitants are tribal communities. The government and the planners are aware of the eroding resource base and socio-cultural heritage of tribal population through a combination of development interventions, commercial interest, and lack of effective legal protection to tribal and the disruption of life and environment of tribal population owing to unimaginative, insensitive package of relief (Planning Commission, 1990).

Deprivation of Forest Rights: The tribal communities being primitive, is based on forests areas for their survival. Although they live in isolation in forest areas, they are having harmonious relationship with forests and species. But the development of wildlife sanctuaries and eco-parks devastate their habitat and displace their living. During neo-colonialism, the developed countries have continued their dominance over developing countries for regulating their economy. Due to it, the local technology, culture and economy were delegitimized and turned into imperialism. The emergence of community forest management has led to growth of state control over their natural habitat.

Problems of Indebtedness: The global economy has overburdened the tribals with various debts due to inadequate livelihood resources. The lack of education, purchasing power and lack of resources for engaging in gainful activity has led to indebtedness for tribal communities. The indebtedness of tribals pushes them into extreme conditions of poverty and forces them to dispense with their meagre resources. Due to neo-liberal economy, the tribal persons have been pushed into severity of indebtedness as they are unable to continue their

lifestyle based on their traditional notions. Lack of sound policy to support consumption credit to tribals has tended to make them dependent on usurious money-lenders resulting in debt-bondage

Cycle of Poverty: As far as neo-liberal development has advanced, the tribal community has been engulfed into abject poverty. During 1999-2000, the percentage of poverty has been ranging between 45.86 and 41.14. The root cause for all these is the perceived dissatisfaction with the existing conditions and failure to receive benefits and facilities promised to them. Globalization based on individualistic nature, internalises selfishness and consumerism among the primitives. The basis of globalisation is an economy pursuing the highest profit at any cost. Consumerism, the use of goods based on artificially created needs, is its way of ensuring the producer's high profit. Globalisation is also natural resource-intensive. It results in a greater impoverishment of the majority, but the middle class gets its benefits (Walters, 2012). Due to scarcity of resources, the tribes are always out of access of enjoyment of these benefits. According to the International Labour Organisation (ILO), 12 million jobs were lost during the first six years of liberalisation and later. This apparent absence of alternatives increases the sense of helplessness of the tribals who are among the worst victims of globalisation, and legitimises the consumerist society which impoverishes them. The lack of employment opportunity and recession from various industries has worsened the situation in cycle of poverty.

Extinction of Primitive tribal culture: The ethos of globalization has not only impacted the socio-economic conditions of tribal people but their cultural status also. Globalization is nothing but a penetration of cultural life of popular or dominant sections into tribal sections through reordering of values, behaviour, institutions and identity. The transformation, already begun with colonialism and national development is getting intensified with globalisation. Each one is expected to think only of his/her own interests and ignore the damage done to others. More and more of the limited natural, mineral and financial resources are monopolised by a few (Walters, 2012). Due to this cultural subordination, globalization has demolished entire tribal culture and tribal people feel sometimes ashamed of following their own traditions. They have been affected not only in terms of their economic condition but their socio-cultural conditions also.

VI. TRIBAL DISPLACEMENT AND UPRISING IN INDIA

After launching of planned development programmes beginning with 1950-51, the Indian Economy witnessed undertaking of a large number of projects which may be grouped into (i) irrigation and power projects, (ii) industries projects, (iii) mining projects, (iv) forest and wildlife projects, etc. Like several other countries in the world, India also has had its share of several projects displacing people from their habitat, occupations and social organisation.

Displacement of people from traditional habitations causes much trauma to the affected people. Compulsory acquisition of land for construction of dams and roads, quarrying and mining operations, location of industries and reservation of forests for National Parks and environmental reasons forces tribal people to leave their traditional abodes and land. Over the years, governments have successfully created an illusionary perception of "development" related activities to divert attention from the forced eviction of poor tribals. Phrases like "Development Induced Displacement" have been coined to create the illusionary impression that displacement of tribals must be taken for granted whenever "development" takes place. A better and more accurate phrase would be: "Displacement in the Name of Development".

Nearly 85.39 lakh tribals had been displaced until 1990 on account of some mega project or the other, reservation of forests as National Parks etc. Tribals constitute at least 55.16 percent of the total displaced people in the country. Across the country tribals are realizing that the so called "development" activities and also the deployment of security forces to flush out naxals have a common goal: their eviction so that the local minerals and other resources can be exploited to sustain the so-called GDP growth rate of the country. They also realize that the so-called constitutional provisions to safeguards their traditional lifestyle, culture, and identity are too flimsy to count upon. Therefore, the number of protests against compulsory acquisition of land is rising. For example, construction of manufacturing units such as Tata's Nano car in Singur, in which 997 acres of agricultural land was acquired to set up a factory for one of the cheapest cars in Asia, (the project was subsequently shifted to Gujarat) or for developing Special Economic Zone such as in Nandigram or construction of large dams like Sardar Sarovar Dam on the river Narmada, which famously led to a cancellation of grant by World Bank due to protests under the argument that the tribal population was getting displaced under unfair conditions among other reasons such as environmental impact of the project. The effects of displacement spill over to generations in many ways, such as loss of traditional means of employment, change of environment, disrupted community life and relationships, marginalization, a profound psychological trauma and more. In the mid- 1980s, Coal India began to mechanise its mines and transfer employees to other mines instead of giving jobs to displaced persons. In one project alone, the first 5 of the 25 mines under construction in the Upper

Karanpura Valley of Jharkhand are expected to displace 1, 00,000 persons, over 60% of them Dalit's and tribals (Walters, 2012)

The scheduled tribes have been facing many socio-economic and psychological problems since historical times. The large scale land transfers to nontribal culminated in armed tribal uprisings in the late 19th and early 20th centuries. The forest laws since the British time have been curtailing the rights and movement of tribals in forest regions.

Land alienation of tribals and of the poor section of the society, which recently again came to fore shortly before the UP assembly elections after the Bhatta-Parsaul incident in May, 2012 when farmers protesting over rate of compensation for their land taken for a road project in Greater Noida, clashed with the police, is a cruel reality. It also points to the wider fact that the authorities and the governments have no clear policies to safeguard the interests of those who are uprooted from their lands they are generally seen as siding with the rich class. Tribals have paid the highest price of national development because their regions are resource rich: 90 percent of all coal and around 50 percent of the remaining minerals are in their regions. Also the forest, water and other sources abound in their habitat.

The Supreme Court on August 8 2008, allowed POSCO India Pvt Ltd, a subsidiary of Koreabased POSCO, to build its Rs 51,000-crore steel plant in Paradeep in Jagatsinghpur district of Orissa. On the same day, the Supreme Court also allowed Sterlite India Limited, a subsidiary of Britain's Vedanta Resources Plc, to mine bauxite in Niyamgiri hills in Kalahandi district of Orissa considered sacred by Dongria Kondh tribe. The Supreme Court's order has undermined the tribal protests and encouraged further acquisition of lands of the tribals leading to their displacement without proper rehabilitation, destruction of their culture

and posing threats to their survival in the name of development. This is what happens when the money power rules the world; not the principles of human justice or equity. Orissa is extremely rich in minerals, most of which lies in the tribal districts. The hilly terrain and availability of water also makes them suitable for reservoirs and dams. The major dams taken up in Scheduled areas are the Machkund, Salandi, Balimela, Upper Kolab, Indrawati, Mandira etc. The major industrial projects taken up in scheduled areas have been the Raurkela Steel Plant, NALCO's Alumina refinery at Damanjodi, HAL, Sunabeda. Large number of future industrial projects is under implementation or proposed in scheduled areas including the alumina refineries of UAIL in Kashipur and Vedanta at Lanjigarh. The richness of forests and wildlife has also led to increasing number of protected areas (wildlife sanctuaries and National parks) in the scheduled areas of Orissa. Such protected areas have created a major problem as the rights of all inhabitants, in and around these areas in the forest and forest land, are being extinguished, affecting their livelihoods and sometimes leading to displacements.

It is estimated that over 1.5 million people have been displaced due to development projects between 1951 and 1995, of which about 50% had been tribals. Further, less than 25% of the displaced tribals were ever resettled even partially. The casualness with which displacements of tribals have been treated is evident by the fact that out of 13 major dam projects before 1990, no data seems to be available on ST families displaced in 7 projects. Similarly out of 10 major industrial projects, no data on proportion of STs displaced is available for seven projects.

Table-2: Projects and the Displacement of Tribal People

Name of Project*	State	Population facing displacement	Tribal people as percentage of displaced
Karjan	Gujarat	11,600	100
Sardar Sarovar	Gujarat	200,000	57.6
Maheshwar	M.P.	20,000	60
Bodhghat	M.P.	12,700	73.91
Icha	Bihar	30,800	80
Chandil	Bihar	37,600	87.92
Koel Karo	Bihar	66,000	88
Mahi Bajaj Sagar	Rajasthan	38,400	76.28
Polavaram	A.P	150,000	52.90
Maithon & Panchet	Bihar	93,874	56.46
Upper Indravati	Orissa	18,500	89.20.
Pong	H.P.	80,000	56.25
Inchampalli	A.P. – Maharashtra	38,100	76.28

Tultuli	Maharashtra	13,600	51.61
Daman Ganga	Gujarat	8,700	48.70
Bhakra	H.P.	36,000	34.76
Masan Reservoir	Bihar	3,700	31.00
Ukai Reservoir	Gujarat	52,000	18.92

Source: Satyajit Singh, Taming the Waters, OUP, 1997, and Government figures.

VII. POLICIES AND PROGRAMMES FOR TRIBAL DEVELOPMENT IN INDIA

The policies for the tribal development may be classified into the following heads : the policy of isolation, the policy of assimilation and the policy of integration. The policy of isolation, popularized by Dr. Verrier he argued to protect the aborigines by completely isolating them from the rest of India. The tribal people also continued to rise in rebellions for a longer period for asserting their rights to self-governance particularly in relation to their rights over land and forests. The British declared some of the tribal areas as “excluded” and some as “partially excluded”. This policy was adopted by British rulers in the pre - independence period and even after independence this policy was continued for some time. Nationalist politicians and social workers like A.V. Thakkar advocated assimilation policy; G.S. Ghurey is also a protagonist of this policy and whose main objective is a constant assimilation of tribals and a result of constant contact of the tribals with the rest of the Indian population and the efforts of social reforms towards development. The Government of India came to the stand that the tribal population cannot be left to lag behind and get further not isolated, nor can the natural resources in tribal areas be underutilized. For all problems, integration of tribes into the national mainstream is considered to be the solution.

Keeping in view the various policies advocated by different organizations, distinguished personalities and constitutional safeguards, the government of India has formulated different strategies for the tribal development in India during the post-independence period. The government has appointed committees, task Forces and working groups to help in the formulation of strategies for tribal development from time to time. The reports given by experts like Renuka Ray (on development of backward areas), U. N. Dhebar on (scheduled areas) can be termed as classics. Such is the comprehensiveness of these reports that later committees and experts mostly repeated their suggestions for the amelioration of the problems faced by tribals (Misal, 2016). Conclusively, the tribal development policies are aimed to protect and initiate the all-round development of tribes to stay in the society by mingling with others. The tribal have been given special attention for their upliftment by special designed policies, plan-wise allocations, sub-plan wise allocation, forest policy and Nehru’s Panchasheel etc.

A. Constitutional Safeguards For Tribals

In pursuance of the policy of integration, several provisions were made in the Indian constitution which is as under:

- Article 244:** provides for administration of Scheduled Areas in accordance with the Schedule-V of the Constitution and the administration of Tribal Areas. the Fifth Schedule of the Constitution, which embodies a paternalistic interface between the tribal, and the Sixth Schedule whose provisions epitomize devolution of authority in certain spheres for autonomy and self-governance
- Articles 5, 16, 46, 244, 275, 330, 332, 334, 335, and 342:** of Indian Constitution provided specific provisions for the advancement of Scheduled Tribes. There are reservations in educational institutions, services, political bodies, special relaxations in age, qualifications etc. Further, the provisions allowed for the necessary funds for Tribal Development Programmes.
- Article 338:** of the Constitution provides for instituting a Commissioner for Scheduled Castes and Scheduled Tribes. The objective of appointing the Commissioner is to report on the administration of tribal areas in general and the provision of educational and medical facilities, and communications in such regions in particular.
- Article 339:** of the Constitution, the Government of India has set-up the Scheduled Areas and Scheduled Tribes Commission. The report was submitted by the Commission in 1960-61, further specified the policies to be followed towards Scheduled Tribes. The report suggested the following criteria for declaring any area as a Scheduled Area: Preponderance of tribals in the population, Compact areas with reasonable size and marked disparity in the living standards of the people. The Commission suggested that the tribals should be assured that their rights over in the land are safe, and that the Government and society are there to protect them. The report also suggested that, the tribals should be made to realize that change and is indispensable without which development is possible, and that development is intended to secure for him, and his family

greater opportunities of life along with the rest of the people in the country, of which he is an inseparable part.

B. Nehru's Tribal Panchasheel Policy

Nehru's initial idea of the integration of the tribal communities with the rest of the Indian population was clearly expressed in his preface written to Verrier Elwin's book philosophy for North-East Frontier Agency (NEFA). The tenets of his social philosophy such as, gradualism and passive interference of the states were explicit in his policy of integration of the Indian tribes. In addition to these, he forwarded a five-point programme for the very purpose of integration of the tribes with the rest of the Indian society:

1. People should develop along the lines of their own genius and imposing of anything on them should be avoided.
2. Traditional arts and culture of tribals should be encouraged.
3. Tribal rights in land and forests should be respected.
4. A team of their own people should be building up and trained to do the work of administration and development.
5. The index of tribal development should be the quality of their life and not the money spent.

The Government of India formed a Ministry of Tribal Affairs for the first time in 1999 to accelerate tribal development. The Ministry of Tribal Affairs is now coming out with the draft National Policy on Tribals. Based on the feedback from tribal leaders, the concerned States, individuals, organisations in the public and the private sectors, and NGOs, the Ministry will finalise the policy.

C. Rehabilitation Package For Displaced Tribals

The National Rehabilitation and Resettlement Policy (2007) recognises that a majority of Scheduled Tribes continue to live below the poverty line, have poor literacy rates, suffer from malnutrition and disease and are vulnerable to displacement. It also acknowledges that Scheduled Tribes in general are repositories of indigenous knowledge and wisdom in certain aspects. The National Policy aims at addressing each of these problems in a concrete way. It lists out measures to be taken to preserve and promote tribals' cultural heritage. The National Policy, therefore, mandates that the following guidelines be followed when tribals are resettled:

- When displacement becomes inevitable, each scheduled tribe family having land in the earlier settlement shall be given land against land. A minimum of two hectares of cultivable land is considered necessary and viable for a family (comprising man, his wife and unmarried children).
- Tribal families having fishing rights in their original habitat shall be granted fishing rights in the new reservoir or at any other alternative place.
- Reservation benefits enjoyed at the original settlement shall be continued at the resettlement area.
- Additional financial assistance equivalent to nearly one and a half year's minimum agricultural wages for loss of customary rights.
- Tribals are to be resettled close to their natural habitat by treating all the people so displaced as one group to let them retain their ethnic, linguistic and socio-cultural identity and the network of kinship and mutual obligations.
- Free land is to be provided for social and religious congregations.
- If resettlement is possible only away from the district/taluka, then substantively higher benefits in monetary terms shall be given.
- When tribal families are resettled all basic minimum amenities shall be provided at the new sites. They include roads and passages, electricity, drainage and sanitation, safe drinking water, educational and health care facilities, fair price shops, a community hall and a Panchayat Office.

In order to ensure fair compensation and timely and proper rehabilitation of displaced tribal people across the country, adequate provisions in the "Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement (RFCTLARR) Act, 2013" have been made. As per section 41 of the Act, as far as possible, no land is to be acquired in the Scheduled Area. In case acquisition or alienation of any land in the Scheduled Areas, prior consent of Gram Sabha or the Panchayats or the Autonomous District Councils, as the

case may be, is required to be obtained. The Act also lays down procedure and manner of rehabilitation and resettlement (R&R) wherein R&R is an integral part of the land acquisition plan itself. As per the provisions of Section 48 of the RFCTLARR Act, 2013, a national Monitoring Committee is to be set up for reviewing and monitoring the implementation of Rehabilitation and Resettlement Schemes, looking into issues related to displacement of people, payment of compensation, rehabilitation and resettlement, and the status of land acquisition.

D. Some other major strategies for the rehabilitation of tribals

1. Land for all agricultural families
2. Special Employment Guarantee Programme.
3. Special Panchayat status.
4. Homesteads and dwelling houses.
5. Training and other support services.
6. Rehabilitation grant to compensate loss of income/livelihood.
7. Basic amenities infrastructural facilities for resettlement.

VIII. CONCLUSION

Globalization has created a great rift between the mainstream population and marginalized section. On one hand, the multinational companies are increasing their access to tribal land; on the other hand, indigenous tribal communities are getting evicted from their basic rights which lead to their continued poverty. Many of these tribal people are forced to gain status of wandering unemployed workers. If land and other natural resources that belong to the tribal communities are acquired for industrial use or lost to development projects, the people who depend upon such resources become the direct and immediate victims of these projects. Technological development that minimizes the employment of human labour and puts a strain on natural resources does not serve the interests of the poor and marginalized sectors of the population. This situation needs to be regulated and controlled to bestow the benefits of development on the poor and marginalized tribals. Their attachment to their land and homes, community assets and local resources form a natural bond and strengthens their social capital base and allows them to help one another during unforeseen crises and disasters. The various Rehabilitation and Resettlement (R&R) policies at the National and State level are expected to safeguard the interests of the displaced persons but at the ground level they are not practiced in the proper way. Repeated displacement, migration and drastic changes in livelihood patterns have socially and culturally degraded the status of the indigenous people, increasing violence and abuse against them.

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COMMODITIES FUTURES MARKET IN INDIA IN THE ICT ERA: THE WAY AHEAD

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ABSTRACT

Ever since the initiation of the financial sector deregulation measures of the Government of India since the early 1990s, there have been many changes in the commodities futures market in India. As part of the financial sector reforms, the Government has been permitting more and more commodities for futures trading. From just six minor commodities in 1998, the total number of commodities rose to 69 by 2002. Further, in April 2003 the Government took a bold decision to permit all commodities for futures trading. There has been quick and encouraging response from the market. The fast advances in ICT (Information and Communication Technology) and the adoption of electronic trading has given another dimension to this growth momentum. With active encouragement of the Government, a few corporates evinced interest in setting up demutualized corporate exchanges NMCEs (i.e. Nation-wide Multi-Commodity Exchanges) with electronic trading systems and modern governance practices. Sensing the threat of competition, the existing exchanges hitherto functioning locally are following the suit by adopting expensive on-line trading systems. Further, the interest shown by other agencies like warehouses, financial institutions etc. has been so encouraging that some of them are even promoting nation-wide exchanges. In 2015, the erstwhile market regulator FMC has merged with SEBI. SEBI has been the regulator for the market since then. As of 2018, about 50 commodities are traded in the three exchanges viz. MCX, NCDEX, and NMCE. This paper seeks to study the prospects of commodity futures market in today's 'Digital India' with the advent of ICT-based electronic (online) trading.

Keywords: *Financial Sector Reforms, Commodity Futures, ICT, Electronic trading, NMCE, SEBI.*

1. INTRODUCTION

Financial sector reforms occupy a very prominent place in the current public policy choice facing the developing nations. In view of the recent events in East Asia and also the growing globalization pressures worldwide, it may be seen that financial sector reforms have got a cardinal role to play in maintaining sound macro-economic fundamentals of any economy, particularly the emerging economies. The quantity and quality of capital inflows to the developing economies are largely dependent on the development of their financial systems. Consequently, the emerging economies in particular, are under increased surveillance by international financial institutions as well as rating agencies. Largely in tune with the international developments, India also adopted various financial sector reform measures through a strategy of Liberalization, Privatization and Globalization ("LPG"). This LPG Strategy was put into action when Dr. Manmohan Singh, the then Union Finance Minister, ushered in the New Economic Policy (NEP) in July 1991. The initial phase of financial sector reforms were primarily focused at progressive liberalization of interest rate and directed credit, along with deregulation in the real sector. The earlier perspective of looking into the financial system as a part of Public Finance, rather than an independent system allocating resources in the economy, underwent a change. Accordingly, the strength of the financial system is now considered as a litmus test for the integration of Indian economy into the global financial system.

For strengthening our financial system one way is to develop a sound incentive system for better decision-making – a system that can motivate the people and the organizations concerned to collect and use accurate and timely information on macro and micro-economic trends. International developments like East Asian crisis of 1997 and the global economic meltdown of 2007 point to the fact that financial sector liberalization measures should be accompanied by stringent regulation and supervision of the financial sector including effective systems for reward or punishment for the key players. Such a cautious approach is required to be followed for minimizing the risk of financial crisis and also macro-economic instability. India could tide over the crisis of 2007. Now, it seems that agenda for our current phase of financial sector reforms (2017-2022 period and afterwards) in today's 'Digital India' should be based on embracing the fast advances in ICT (Information and Communication Technology) to make the commodities market more dynamic, transparent, and also efficient.

2. OBJECTIVES OF THE PAPER

- (i) To make an overview of the impact of financial sector reforms on Indian capital market;
- (ii) To trace the growth of Commodity futures market and the impact of ICT on the market;
- (iii) To study the prospects of the Commodity futures market and make suitable suggestions.

3. METHODOLOGY AND DATA SOURCES

The study is descriptive analytical and is primarily based on the secondary data available from authentic sources like the reports of the Government and the Securities Exchange Board of India (SEBI), and also the publications of the Reserve Bank of India (RBI), Indian Banks Association (IBA), and Indian Institute of Banking & Finance (IIBF).

4. FINANCIAL SECTOR REFORMS AND CAPITAL MARKETS IN INDIA

Capital market reforms have been an important component of the financial sector reforms. In India, capital markets were relatively large at the end of 1980's in the absence of a liberalized banking system. However, the prevalent market procedures were rather crude and primitive. There was lack of transparency in trading. Further, trading was limited to a few cities dominated by big brokers. It was difficult in determining the correct market price during a day. The regulatory authority was Controller of Capital Issues (CCI) and it was giving permission for Initial Public Offerings (IPOs) and was fixing the price at which new equity could be issued. In respect of Secondary Market also the situation was not encouraging. Its activities were poorly regulated and the checks on stock exchanges and brokers were ineffective. Further, the accounting and disclosure standards were inadequate making it difficult to determine the true financial health of a firm. Another major weakness of the capital market in the pre-reforms era was the high transaction costs, reflecting monopoly of the Bombay Stock Exchange (BSE) with limited number of dealers and high cost of accessing the market through sub-brokers. The system of delivery was miserably slow and moreover the same was ill-equipped to handle crisis arising out of bankruptcy, counterfeit shares etc. The domestic capital market was closed to portfolio investment from abroad. The mutual fund industry remained as monopoly of UTI till 1987-'88 and the same was opened to private players only in 1993-'94. This weakness resulted in the absence of liquidity, limited volumes of business, and the level of activity was low also.

The beginning of the capital market reforms was in 1992; and the same was partly because of the momentum of the general economic reforms and partly as a consequence of the 'Securities scam' of the 1992. One important milestone in the history of Indian capital market was the establishment of Securities and Exchange Board of India (SEBI). SEBI was formed in 1988 as a non-statutory body and it was elevated to a full-fledged regulatory authority with statutory powers in 1992. After assuming all statutory powers, SEBI has evolved a sound regulatory mechanism with rules and regulations governing stock exchanges, brokers, merchant bankers and mutual funds. It has brought out comprehensive guidelines for regulation of takeovers, insider trading and other activities. SEBI has sought to make the governing structure of capital markets more broad-based and also to bring in professionalism and transparency in its activities. The regulatory framework chalked out by SEBI is aimed at making Indian capital market more efficient, liquid and investor friendly. Another important milestone in the reforms in the capital market was in 1993 when Foreign Institutional Investors (FIIs) were allowed to participate in Indian capital market. Further, Indian companies were allowed to raise capital abroad through issue of Global Depository Receipts (GDRs). The foreign investment in Indian stocks through FIIs and GDRs has resulted in linking India's domestic capital market with world markets which in turn has important implications for macro-economic management.

Yet another very important milestone in the history of Indian capital market was the establishment of National Stock Exchange (NSE) in 1995. Set up of NSE was the first step in reforming the securities market through improved technology and introduction of best practices in management. Before the setting up of NSE, trading on the stock exchanges in India used to take place through open outcry without the use of information technology for immediate matching or recording of trades. This was time consuming and inefficient. The physical trading practice imposed limits on the volume of trading; and hence the speed at which new information was incorporated into prices. The unscrupulous operators used to manipulate the market with the above information asymmetry using practices like "Gala" whereby while the highest price of the day is charged for "buy" transactions only the lowest price of the day is given for "sell" deals). To avoid this NSE introduced Screen Based Trading System (SBTS) where a member can punch into the computer the quantities of shares and the price at which he wants to transact. The transaction is executed as soon as the quote punched by the trading member finds a matching sale or buy quote from counterparty. SBTS electronically matches the buyer and the seller in an order-driven system or finds the customer the best available in a quote-driven system. So, SBTS cuts down on time, cost and risk of error, and on the chances of fraud. Also, it allows distant participants to trade with each other, improving the liquidity of the markets. With the advent of electronic trading by NSE and later by the BSE, transaction costs have reduced and there is better 'Price Discovery'. Today India has emerged as a market wherein almost the entire trading activity (near 100 percent) takes place digitally i.e. by way of electronic order matching.

The erstwhile settlement system on Indian stock exchanges was also inefficient and highly risk-prone because of the substantial time elapsed before trades were settled. The transfer of ownership would take much more than the two months' time as stipulated by Companies Act. Further, a significant proportion of transactions would end up as bad delivery due to faulty compliance of paper work. Moreover, theft, forgery, mutilation of certificates and other irregularities were rampant. In order to avoid the problems as noted above, the Depositories Act, 1996 was enacted. This Act provides for the setting up of Depositories that deal in various securities. Here, the basic objective is that of ensuring free transferability of securities with speed, accuracy and security. The Act ensures this by (i) enabling free transferability of securities of public limited companies subject to some exceptions; (ii) enabling dematerialization of the securities in the depository mode; and (iii) ensuring the maintenance of ownership records in book entry form. And, two depositories (NSDL and CDSL) started providing instantaneous transfer of securities in the electronic mode. Accordingly, the volume of trading with 'demat' shares has increased substantially over the last few years. This would solve the problem of counterfeit shares, lead to improvement in the settlement process and reduce the transaction costs. However, problems remain in areas like quality of information on companies, accounting and auditing norms, lengthy processes and regulations on underwriting, listings on multiple exchanges and sales to retail investors, appropriate changes in the regulation of venture capital companies for facilitating increased finance to small companies etc.

Rolling settlement has been introduced in secondary market for some stocks. However, the scope of rolling settlement needs to be expanded further substantially. Otherwise the rolling settlement stocks may find decline in trading volumes. Further, until sufficient volume of stocks move into rolling settlement and trading through the depository trading, liquidity could actually reduce. Rolling settlement can reduce the market risks and can substantially improve the market liquidity; though this would require strict margin requirements and greater use of depository.

5. COMMODITY FUTURES MARKET IN INDIA: THE IMPACT OF ELECTRONIC TRADING

A futures contract, where the underlying asset is a commodity is referred to as a commodity futures contract. According to the types of the commodities, commodities contracts can be classified into three major groups as follows:

- (i) **Agricultural Commodities:** This in turn can be subdivided into (i) grains futures (eg. red beans, corn, wheat, soyabeans, soyabean meal etc.), (ii) soft commodities futures (eg. cocoa, coffee, dried cocoon, cotton yarn, raw-sugar etc.) and (iii) meat futures which include animal products like live cattle, live hogs, pork bellies, eggs, poultry products etc.
- (ii) **Metallurgical Commodities:** These include genuine metals and petro products. The metals are often reclassified as (i) Precious, and (ii) Industrial metals.
- (iii) **Energy Commodities:** These consist of petroleum products like heating oil, crude oil, gasoline oil and propane.

India being an agricultural country, trading in commodities is not new. Commodities markets in India are said to date back to Kautilya's Arthashastra itself. As such, the institution of formal commodity futures market is as old as in USA and UK. As early as in 1875 commodity futures in India began under the aegis of the Bombay Cotton Traders Association; and organized futures trading for cotton commenced in 1922 by East India Cotton Association. After independence the Government enacted the Forward Contracts (Regulation) Act, 1952 under which commodities trading in the form of forward contract is permitted. Accordingly, Forward Markets Commission (FMC) a statutory body created by the Act regulated such trading in commodities. Trading in a number of commodities was started. However, certain experiences of the Indian economy in the early 1960s led to a paradigm shift in the policy approach to futures markets. The draughts and wars induced scarcity in many commodities during those days. It was believed that futures trading could work against the national interests by helping hoarding of commodities and thereby accentuating the scarcity of commodities. Accordingly, except for pepper, turmeric, castor seed and linseed futures trading was banned in the early sixties. Afterwards, in 1977 futures trading in castor seed and linseed was also suspended. Consequently, many of these Commodity Exchanges became inactive.

The increasing needs of the producers and traders in various commodities for proper risk management and price discovery tools, as well as the liberalized policy being followed by the Government of India towards commodities markets, necessitated setting in place a market mechanism to perform these functions. Accordingly, the Government of India had appointed several committees towards this objective of studying the various issues confronting the forward / futures markets, like, the Shroff Committee (1950), Dantwala Committee (1966), Khusro Committee (1979) and Kabra Committee (1993). The Khusro Committee recommended starting futures

trading in potato and gur in 1980s and to resume castor seed futures in 1985. The Kabra Committee recommended resumption of futures trading in a number of commodities, like, basmati rice, cotton, raw jute, oil seeds, castor oil and bullion.

Based on the recommendations of Kabra Committee the Government has been giving special thrust to initiatives for development of the commodity markets in the last few years. Thus, after about four decades of slump season (ie. since the early 60s when the trading in commodities was banned), there has been a resurgence in the commodity futures market. The Government's decision to set up Nation-wide Multi-Commodity Exchanges (NMCEs) in the year 2002 was indeed a turning point in the above direction. NMCEs were expected to perform two functions viz. (i) Price Discovery (ii) Price Risk Management. Further they were expected to have a national reach and also to offer trading platforms for all the commodities permitted under the Forward Contracts (Regulation) Act, 1952. The Government has given permission to three NMCEs in 2003. Further, Government of India notification on April 1, 2003 has permitted futures trading in almost all commodities (Specified Commodities)(ie.94 commodities, including 27 items of oilseeds, oil and cake). Presently, the Government is considering the feasibility of inclusion of such commodities as onion, chillies etc. also under the above Specified Commodities list. The above paradigm shift in respect of commodity trading in India is, in a way, at an opportune time since global commodity cycle is on the upswing. According to Max Faber, the reputed commodity expert, we are in the decade of the commodity with a "copper-bottomed" boom phase. The changing profile of the market is shown in Table I.

Table-I: Changing profile of commodity futures market in India, and its current status.

Participation	2000	2004	Latest Status (as of 2018)
Stake holders (actual users)	Absent	High (3 NMCEs)	i) There are 3 exchanges i.e. MCX, NCDEX and NMCE ii) MCX has the highest trading iii) About 50 commodities are available for trading iv) Commodity derivatives contracts are traded in correspondence with foreign exchanges. v) Hedgers, speculators and arbitrageurs are the major participants. vi) SEBI is the regulator now (erstwhile FMC merged with SEBI in 2015)
Institutional brokers	Low	Medium	
Banks	Absent	Low (No trading allowed)	
Financial Institutions	Absent	Absent	
FII's	Absent	Absent (not allowed)	
Companies / Corporations	Absent	Low	
Practices			
Independent clearing	Low	Low	
Electronic trading	Absent	Medium	
Settlement Guarantee Fund	Absent	Medium	
Warehouse receipt	Absent	Medium	

Source: (i) *Chartered Secretary*; XXXIV (8), p.1083; and (ii) Data from www.geogith.com

6. PROSPECTS OF COMMODITY FUTURES MARKET IN INDIA

In tune with the above favorable policy initiative by the government, there has been showing a very encouraging response from the market; like, formation of modern institutions that are supported by some of the "best" practices like electronic trading and clearing, nation-wide interconnectivity etc. The projections made by industry experts regarding the commodity derivatives trading show tremendous potential for this sector. This in turn facilitates not only the trading but also opportunities for value-added services in terms of quality warehousing, gradation and certification services, financial intermediation, modern marketing practices, frontier technology-based clearing and settlement etc. Once this market attains depth and volume (liquidity), the age old complaint that Indian commodity derivatives markets are not meeting the basic objectives of price discovery (backwardation being very common) and risk management may gradually disappear.

With liberalization and globalization accepted worldwide as the development 'mantras', there has been growing trade integration with other parts of the world. With the reducing controls and support mechanisms domestically, alternative tools of risk management are increasingly being called for. A study was conducted by the World Bank-UNCTAD team (1996), which tested the question "*Can Futures Markets Help Price Risk in India's Liberalized Agriculture ?*" and this study came out in the affirmative. Thus, there exists excellent prospects for the commodity derivatives markets in the current economic and political scenario; and if these markets rightfully play their economic rationale – viz. (i) Price discovery and (ii) Price Risk Management – the national economy in general and commodity sector in particular can derive tremendous benefits. However, various impediments and obstacles in the path of development of commodities futures market also deserve consideration. These are mainly as follows:

- (i) There is a need for setting up a modern, legal and institutional framework for promoting integrity in commodity trading
- (ii) Better transparency in the trading activities needs to be promoted.
- (iii) Regulator of the market which was weak and dormant for because of being inactive for the last four decades needs to be strengthened further.
- (iv) Delivery based settlement as mandatorily provided by the FCR Act should be encouraged.
- (v) The image of warehouses as that meant for physical markets only, needs to be changed in tune with the needs of futures markets. The use of warehouse receipts is to be improved.
- (vi) Concerted efforts for information dissemination are required. So, the commodity exchanges and the regulator (SEBI) have to be equipped with the modern equipments and practices.
- (vii) Awareness generation is at the core of the success of futures markets. Information asymmetry is to be removed. So, conscious efforts are required in this direction.

India's position as the producer of most of the commodities is amongst the top five and she is a major consumer of bullion and energy products. However, considering the various handicaps as discussed above, it may be noticed that a number of reforms and initiatives are still needed in promoting India as a major futures trading hub. These are mainly as follows:

- ❑ The barriers to free movement of commodities have to be removed and market integration has to be ensured for constituting a National Common Market. This requires that all states are brought around for a common cause. Many restrictions imposed by APMC Act, Monopoly Procurement, MSP, Interstate movement controls, entry taxes etc. need to be suitably modified or amended.
- ❑ Availability of warehousing facilities in terms of quality, gradation, standardization and institutional facilities for achieving these have to be ensured.
- ❑ Negotiable Warehouse Receipt system needs to be promoted which in turn can bring in tremendous improvements in which transactions in commodities are currently being undertaken. Warehouse receipts would be traveling from place to place rather than the physical commodity. This can facilitate substantial cost reduction to the benefit of the economy. It would encourage futures market transactions by making deliveries easier and cost-effective without any risk. A dematerialized negotiable warehouse receipt can further accelerate the pace of change in this area.
- ❑ Differential taxes, duties, cess etc. in various states as well as differential treatment of speculative losses from other business incomes have to be eliminated. While the introduction of VAT may result in reduced heterogeneity of tax regimes in various states. Further, in view of the positive role of speculation in derivatives market, necessary amendments in Income Tax Act need to be made in order to eliminate differential treatment of speculative loss.
- ❑ Institutionalization of coordination between various regulators such as the RBI, SEBI, DCA and DEA is required. This is because, the policy framework for market participation by various players are not uniform. For instance banks, FIs and FIIs are not permitted to trade in commodity markets whereas their exposure in the securities is permitted.

7. CONCLUDING REMARKS

After more than hundred years of inception, commodity exchanges in India are still in their nascent stage. However, given the current favourable macro-economic, political and regulatory environment in India, Commodities Futures offer tremendous scope for the benefit of the economy as a whole as well as the commodity in particular. There exists huge untapped potential in this market considering the fact that the position of India in respect of most of the commodities is amongst the top five. The Government as well as the regulator should take necessary actions to improve the physical markets, to modify the fiscal policies and to ensure more regulatory co-ordination. Let's hope that India will emerge as one of the most dynamic commodity futures trading hub in the near future.

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JUVENILE JUSTICE SYSTEM-ISSUES AND CHALLENGES

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ABSTRACT

The children are to be considered as the future of the world, therefore uttermost care has to be taken of the children and provide them with all the facilities required for their proper growth and development so that they become a good citizen of the state. This research paper is about the children's in conflicts with law known as delinquent children about their rights as child and the Juvenile Justice System which is prevailing in the state. The number of heinous crimes committed by the children between the ages of 16 to 18 years is increasing day by day. Recently nearly about two third of the heinous crimes were committed by juvenile, who were reported to be in between the age of 16 to 18. There has been amendment made in the legislations as to try the juveniles committing heinous crimes as adult and punished as an adult in those cases, by having these provisions cannot remedy the problem of decreasing the number of juvenile delinquent instead there needs to be such a solution where there will an opportunity given to the juvenile to come out of it and provide the facility to the children that would help them in being a good citizen. Just simply giving the punishments like an adult is no solution to the problem existing in the society. Many a times the reasons of children committing various crimes is poverty, illiteracy or mental condition of the child due to a lack of appropriate and accessible community behavioural health services, frustrated families frequently resort to the juvenile justice system as they struggle to manage their child's escalating emotional difficulties. Instead of focusing on giving more punishment rather the social and economic conditions and the rights of the children assured by the constitution of India is to be implemented in the effective manner in order to reduce the number of crimes committed by the juveniles and more importance is to be given to reformation and rehabilitation of the children by applying retributive theory. So that the greatest assets of the nation are protected and provided with proper direction to get them back on the proper track of living the life as a good citizen which will in return help in overall development of the nation. The study is basically reasons of more and more juvenile committing the crimes and regarding the juvenile justice system in India as newly enacted legislations are deviating from the aim and object of laws relating to juveniles. India has contradicted its own thinking in the newly enacted legislations relating to juvenile justice system.

INTRODUCTION

The children are to be considered as the future of the state. The children should be given the full opportunity and facility to grow and develop their personality and become the good citizen of the state. They should be provided education and should also be endowed with skills required in order to be a good member of the society. Every state should provide to all the children whether rich or poor and neglected as well as delinquent's education as the basic facilities required having their proper growth and development, this will help in return to reduce inequality and assures the proper social justice to even these kinds of children. Giving proper education and also opportunity to learn skills will help the children earn livelihood and live a life as a respected citizen of the nation. As the growing number of children in contradiction to law are majorly because of the poverty. To some extent there can be reduction of number of juvenile offenders. At present in today's society the number of children involved in the area of committing various Crimes is more. No child is born criminal, the surrounding circumstances and the society play an important role in developing the child. It is analyzed that the tender age of a child is to be moulded in the right manner in the correct direction. During that age the children do not understand what is correct and what is wrong. The number of children committing the criminal offences is increasing in number every day.

There are cases relating to young generation the youths involved in the crimes are almost reported daily in the newspaper which is the serious issue and corner for the state. The number of causes that the youths are involved in criminal activities are lack of possessing money, as money is needed to them for silly reasons to name few buying cell phones of high prize, purchasing fancy bikes, meeting the expectations of the opposite sex those who are involved in love affair etc. In some cases it is not possible to know the exact reason behind children committing the crimes. It is necessary to keep in mind that children who commit these types of crimes often do so as part of a cry for help, due to a history of abuse and neglect either at the hands of the family or at the hands of the society.

Reasons for child getting converted into delinquent: The unfortunate and unhealthy surroundings, negligence of basic needs, wrong company and other abuses are the main causes of the children getting converted into a delinquent. As stated earlier children are innocent they don't have capacity to understand the difference between

good and bad act. They will get moulded and do things and follow others as they are seeing and learning from others in their surroundings.

Not only children in rural but also in the urban and metro cities, highly-educated are committing crimes. The problem of juvenile delinquency is matter of concern for the whole country. The issue of youth in crimes is an area of important concern in the context of the fact that crime rates have been steadily increasing especially amongst the children of the tender age. Children are the backbone of any nation; hence it becomes the responsibility of not only the nation but also of the citizens to direct them in right direction.

As per the recent statistics Mumbai ranks second in crimes committed by the juveniles. A study states that in 2018 the Mumbai crime branch arrested 17 years old boy for sodomising a boy who was 12 years old another incident in which 16 years boy was arrested in the matter of raping a 15 years old relative and impregnating her. There were nearly about 100 of such cases reported across the city of Mumbai which were relating to sexual offense by minors.

According to data collected and shared by the National Crime Records Bureau there were about 946 cases reported in the year 2016. The cases included various kinds of offences committed by the juveniles such as thefts, assaults sexual harassment, kidnapping and stalking. The report further states that as to 24 juveniles out of total were arrested for assault on women, 11 for sexual harassment, 15 for stalking and 18 for kidnapping. The data also states that 16 minors were arrested for committing unnatural offences.

Delhi ranks first and Pune is the third.

In Mumbai 251 cases reported were of crime of theft committed by the juveniles. Almost 26% of total crimes were committed by minors. In most of the theft cases, the police has stated the juveniles were part of a group and they were influenced by the adults to commit the crime. Few of them were misguided and lured into the world of crime. They were being sent to juvenile homes for the reform and rehabilitation.

Amongst the states Maharashtra is ranked second after Madhya Pradesh and Bihar is ranked third for the number of juveniles committing various kinds of offences, Now- a- days the number of criminal cases committed by children under the age of 16 years has increased.

OBJECTIVE OF THE STUDY

The main aim and the object of this research are to study the amended provisions of Juvenile Justice Act and suggest some remedies and to study and analyze the effectiveness of legislative provisions with regards to the juveniles along with the effect of recent amendments made.

REVIEW OF RELATED LITERATURE

Asimov his article states that delinquent offenses are generally the violations of legislative provision enacted as statutes. They are also applicable to the adult's criminal justice system. Juvenile justice is relating to the criminal laws that are relating to the children who commit offences or does an acts that are criminal in nature and they are unable to understand that whether what they are doing is proper or not. The children here are meant to say that the person not attained the age of 18 years. And to them the Juvenile Justice legislations are applicable. The object of having separate laws for children offenders is to have rehabilitation of child rather than punishing them.

Bhowmick, the researcher has tried to analyze about the modern societies, which are facing the problem of juvenile delinquency, which is one of the major social concerns. It is an important issue that has caused great concern to the social scientists and the reformers of different advanced societies in the world. In the recent years, the criminology as a special branch of contemporary social sciences has been analyzed.

Chassin, this researcher has concentrated on the prevalence of substance use disorders mostly found amongst the young offenders particularly in the juvenile justice system and in turn the efforts of the juvenile justice system in providing treatment for such kinds of disorders. It is necessary to diagnose and treat such disorders because these disorders are associated with offending which is continuing and with also a broad range of negative effects. These negative effects are; poor psychological outcome, poor occupational outcome, poor educational outcome, violence, very risky sexual behaviour, smoking, drinking, drugs etc.

Grisso the article written by this author is stating about struggle of the juvenile justice system to find out what best can be done towards the needs of the children and how in the better way to respond towards the requirements of the growing children. This will in return help in protecting and safeguarding the welfare of the young children at their tender age, it will also help in reduction of the number of children re-committing the offensive acts and the consequences crime committed by youths will come down in the society or the

community. What majorly attract the attention of the juvenile justice system is the mental disorders in the child and that is because of their involvement in such a bad company behaviour people that automatically attracts the attention of the juvenile justice system. The reach states mainly the children arrested for their delinquencies did not have any serious kind of mental disorder.

Tiwari in his article stated that 'Child' plays the Vital role in the development of the nation in future; they are regarded as future of the state. The overall development and prosperity of any nation depends upon the 'Child' and they are known as vulnerable group in the society and that is why they are more prone to exploitation by anti-social elements in the society. The reason for loss of ethical moral and overall intellectual growth in a child is negligence, abuse and is involved in criminal activity. In recent years most of crimes committed by the juvenile are assault on outraging the modesty of a woman and rape and the worst part is that maximum juveniles committing this crime were in the age group 16-18. The character of the child majorly depends on the environment at home and in the neighbourhood. Children living in the slums are more prone to doing the acts that are in contradiction to law and which are mainly criminal in nature. The study states that the lower strata of children as well as children belonging to high income group are prone to doing criminal activities. It is found that, it is the circumstances that force the child to commit an offence such as to name a few broken families, cultural conflicts, poverty and many more. It is necessary that the reformatory theory should be adopted instead of punishing the juveniles for the offence they have committed.

RESEARCH METHODOLOGY

Method: Case study method

Data Collection: The collected data has been analyzed and results show that the major problem relating to Juvenile Justice System in India.

Sources of Data: The study utilized the secondary data.

Secondary Data

- a. Text Books written by various authors
- b. Articles printed and published in various Journals
- c. Articles from newspapers
- d. Cases Studied

Legislative Provisions

To deal with the matters relating to child delinquents, we have legislative enactments such as The Juvenile Justice (Care and Protection of children) Act, 2000.

According to this act the definition of the word child or juvenile is a person who has not completed eighteen years of his or her age. Juvenile in conflict with Law means a juvenile who has though committed an offence and who has not yet completed his or her eighteenth year of age. On the other hand, Child in need of care and protection means a child who is found without any home or who is found begging or a street child or a working child, it can also be stated as a neglected children. Juvenile Delinquency means a minor who is involved in anti-social behaviour. A behaviour that is punishable under the criminal laws of the state, if the person were an adult, but now is punished by special laws pertaining only to minors.

Further the said Act very clearly states that anything done by a child above the age of seven years and under the age of twelve years shall not amount to offence. The interpretation of this provision is that a person who has not attained sufficient maturity level of understanding so as to judge the nature and consequences of his act what he is doing at that very point of time of committing the crime does not amount to commission of any offence by such person. Here meaning of the person is a child or a juvenile.

All the children who have committed any kind of crime are tried not under Indian Penal Code as an adult, but under The Juvenile Justice (Care and Protection of children) Act, 2000. Recently there was an amendment made to this enactment, where the legislatures have modified the interpretation of the word child earlier it was a person below 18 years which now they have reduced to 16 years and have mentioned in the amended legislative provision that the juveniles between the age of 16 to 18 years if have committed any kind of heinous crimes then they are to be treated as adults, but the matter is to be decided by the Juvenile Justice Board that will decide whether the child is guilty or not and if found guilty, they shall be sent to the children's home. Hence it is to state that juvenile will be tried as adults but cannot be sentenced or punished as adults if is not having knowledge about the nature of act done by him, this like a good defence and the child will be sheltered and

protected. If the child has a sufficient knowledge about the act and has done the act intentionally with guilty mind then in those cases according to Indian Penal Code. The IPC has this cardinal principal.

Cases

Nirbhaya, Delhi Gang Rape Case. In this case the issue of debate was that the child involved in committing the crime was just six months short to attain the age of 18 years. The latest Act governing Juvenile Justice system is The Juvenile Justice (Care and Protection of Children) act, 2000. This act was enacted with main aim to provide the protection to the children.

Thereafter the involvement of the accused in this kind of heinous crime of rape has led the Indian legislators to enact the new laws which was known as Juvenile Justice (Care and Protection) Act, 2015. This Act had replaced the earlier laws existing relating to juveniles. One of the remarkable changes was that the juvenile under age group of 16 to 18 years should be tried as an adult.

The main aim of The Juvenile Justice Act, 2015 was to consolidate the various laws relating to children that are found in conflict with law as well as the children, who are in need of care and protection.

The most important subjects of the act are as follows:

The first question is about the claiming of juvenility. It is to be decided by Juvenile Justice Board as stated in the Act. The board while deciding on the question of claiming juvenility has to take into consideration Rule 12 of the Juvenile Justice Rules, 2007.

In the case of Kulai Ibrahim v/s State of Coimbatore. It was observed by the court that the accused has a right to question about the juvenility as only during the trial period but can also even after the disposal of the case as per stated in section 9 of Juvenile Justice Act, 2015.

In the case of Deoki Nandan Dayma V/S State of Uttar Pradesh the court had held that the entry stated in the register maintained by the school stating the date of birth of student admitted can be admissible as evidence in court for determining the age of the accused whether is a juvenile or not.

Juvenile Justice System in India is giving special treatment and protection to juvenile delinquency. The meaning of the word Juvenile Delinquency is the youth under the age of 18 years, who has committed any crime. Almost everyone knows about the present fact that there is a constant increase in rate of juvenile crimes and this is a reason there has been issue of age determination. As the determination of the age is to be considered one of the important factor to find out the maturity level of the accused. There was great debate going on whether the juvenile can be tried as an adult or not? The newly amended act itself states that no juvenile offender who comes under the meaning of the word child with conflict with law as mentioned in sub – section 13 of Section 2 of the Act shall not be tried as adult and shall sent to Child Care Centre or any Rehabilitation Centre(till the offender attain the age of 21 years and then he or she may shifted to the jail or prison). Hence it is concluded that the current Juvenile laws in India, considers age determination as main thing to decide as whether the offender falls under the purview of Juvenile Justice Act or not.

The Act mentions that, the maximum period for which the juvenile offenders can be punished is to the extent of three years and the same punishment is valid for heinous crime as well. In case of an adult offender, the maximum punishment that can be given is upto 7 years imprisonment, life imprisonment or death penalty. But, the Act, in case of juvenile offenders believes in reformatory theory and in rehabilitation rather than giving punishment. The different types of reformatory punishments as per the act includes: – Sending the juvenile to Rehabilitation Centers , Juvenile Schools or making them involve in various program headed by government or NGO's which would help the children to develop in the correct way and become a good citizen of the nation.

As far as the present scenario is concerned, there is no requirement to give such a minor this kind of an reformatory punishment for the heinous and harsh offence committed by them, just because the reason being that considering their age determination or Age factor . Offence like Rape is a Rape, one can't just walk away from being punished taking a plea of age factor or mental incapacity or mental unfitness, this is a great injustice done to the victim of such kind of heinous offence.

Although there is clause put up in the new laws enacted that the child committing the crime between the age of 16 to 18 year to be tried like a adult but subject to that the child knows and has capacity to understand and has knowledge of the nature of the act committed by him then can only be made to be tried as an adult this is a limitation because of which there no change in the anti social behaviour of the youth. Juvenile offenders feel that committing heinous crime is no issue as they will get away hardly any or no punishment in the name of reformation. India by adopting such kind reformatory theory of punishment to the juvenile in conflict with law ,

is giving an undue opportunity and advantage to juvenile to perpetuate their ability to commit any kind of crime without facing any harsh consequences of the same. Reformation is said to be considered good but not always. If law is talking about reforming the juvenile offenders so that they can have a better life in future then law should also take care with regards to the rights of the victim. Justice must be given to the victim. The theory of reformation is helping juvenile to reform but it is not helping the victim at all to get justice for the wrong done to him.

The present juvenile system in India is created on believe that juvenile offenders can be reformed and rehabilitated, sending them to bars or prisons will go to reaffirm their status and identity as "criminals". Now the question arises is that there is no guarantee that juvenile offenders will get reformed and will not show their anti-social behavior again.

The act is totaling focusing on the reformation rather than penalization. Penalization will definitely create a deterrent effect on the juvenile and increasing rate of crime by juvenile will slow down.

CONCLUSION

Day by day increase in number of juvenile committing various kinds of offences in India in very concerning issue and need to be focused upon. Although government has laid various legislation and rules to stop the incidents of juvenile crimes but the present laws on juveniles is not creating a deterrent effect on the juveniles and thus the results are not fruitful and legislative intent is not accomplishing. The present laws are required to be amended to some extent as to give proper justice to the victims of the criminal acts committed by the juveniles. The punishment must be such that will create a sense of fear among the children committing offences. So that the child would think ten times before committing any offence more over controlled is to on the people who are inducing these children to commit the offence by giving them a more strict punishment. And also the economic condition of the people should be looked upon so utter most importance to be given to the subject matter like eradicating poverty this also good bring a reduce in the number of juvenile cases to some extent. Looking at growing number of incidents and juveniles becoming criminals this issue needs to be given urgent look at and find out the various ways to reduce the number of juveniles in conflict with law. This in return would help the growth and development of the nation because as rightly said today's child is the future of the nation.

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A STUDY OF CONSUMER PREFERENCE TOWARDS MOBILE WALLET AND UPI

Dr. Suchita Shukla¹ and Chirag Malhotra²Assistant Professor¹ and Student², STEP - HBTI, Kanpur**ABSTRACT**

Today's world is engrossed with digital technology and trends, from daily bread to business, home to office implementation of electronic gadgets have become the part and parcel of the life. Dealing of financial issues with liquid cash is conquered with virtual cash. All the basic payment transactions of daily life can be completed on a single click in other words mobile payment system (i.e.) "MOBILE WALLET" "UPI" apps, has changed the worlds payments system by providing multiple digital services right from utility payment to e-tailing. In India, the growing adoption of Smartphone's and mobile internet has given a boost to the mobile wallet industry in India. Players like Paytm, Mobikwik, Freecharge, Oxigen, etc have taken Charge towards the payment system. There are currently about 25 mobile wallets and UPI apps payment gateways in INDIA out of which payment system gateways are licensed by RBI as payment bank.

This study provides the insights of the consumer's behavior and preferences towards M-wallets and UPI apps. Findings reveal that security, necessity, time, satisfaction of the services used are the factors which attract the consumers towards M-wallets and UPI apps as they feel that it saves time and has made their life easier. Moreover the study identified the hurdles that consumers face when they want to adopt M-wallet and UPI apps as their mode of payment, the study witnessed that security issue is the prime concern of the respondents.

M-wallets and UPI apps play a significant role in day to day life with the increase in the use of smart phones and access to internet.

INTRODUCTION

The term payment is as old as human civilization, since then the payment industry has undergone a drastic transition from barter system to virtual payments(mobile wallets). With the advent of the industrial revolution in the 18th century, banking system was adopted as standard payment and as a monetary regulating body. This led to the development of other modes like loans, savings a/c, withdrawals etc.

After the success of banking system, our cash based society evolved through internet; this led to building up of various electronic payment systems like Debit card, Credit card, E-cheques and is now pushing into the digital frontier of virtual wallet (mobile platform). MOBILE TECHNOLOGY has paved a way through which people and businesses buy and sell the goods and services. With this advancement in technology, things around us have drastically changed. As smart phones have become more affordable & prevalent, it caters to mans comfort & conveniences i.e. ordering food, online shopping, booking movie tickets etc.

With the introduction of digital wallets in early 90's pioneered by Sam Pitroda with the vision, underlying the needs of the customers - an easy to use interface, ability to securely transact in the virtual and real world, in came app-based wallets such as Paytm, Mobikwik, Freecharge etc, which has become extremely convenient for a person to make cashless transactions. Mobile wallet is equivalent to physical wallet, it provides a platform for the user to keep money in it as that of a bank account i.e. the user needs to make an account with a mobile wallet provider; money can be loaded to the M-wallet account using a debit card, credit card, bank account etc. The money loaded by the user can be used to pay for goods & services, transfer funds from their mobile wallet through a simple SMS or via Near Field Communications (NFC) or the wallet services that takes in the users payment information and pays the users bills instantly for certain services. RBI has increased the money loading limit from Rs 5,000/- to Rs 1,00,000/- .

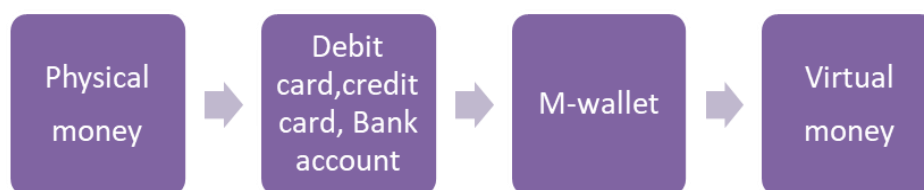
CONVERSION PROCESS (PHYSICAL MONEY TO VIRTUAL MONEY):

Fig-1.1 (i)

The advantage of completing an online transaction through mobile wallet is, it does not charge any amount of money on every transaction and saves the customer from the hassle of entering card details and pin number for

each and every transaction. It is easy and convenient for the users, as the user needs to sign in the account and make payment. On the other hand it focuses on online merchants and offline merchant's i.e. the M-wallet provider's act as an intermediary between the merchants and the wallet users.

Traditionally, banks were never very interested in small transactions but with the increasing number of M-wallet providers, banks were scared that their relationship with customer will be upstaged by them, so they launched their own digital wallets (payzapp and pockets) by HDFC bank & ICICI bank.

Before the demonetisation the scenario was witnessing a new payment methodology called the mobile wallet which revolutionized the payment system on a single tap. Therefore the perception of customers changed from "bank-first to payment-first". Players like Paytm, Mobikwik, Freecharge, etc have taken charge towards the payment system. There are currently about 25 mobile wallet payment gateways in INDIA out of which few payment system gateways are licensed by RBI as payment banks.

Before demonetization move in November 2016, cash accounted for 96% of the monetary transactions in the country. The move primarily aimed to curb the black money in the economy and making it a "cashless economy", so that all transactions would be done through cheques, debit & credit cards, m-wallet etc., which will curb the corruption in the country. Also, this drive by Prime Minister "Mr. Narendra Modi" proved not only fruitful for m-wallet companies, but also beneficial for debit and credit card offering banks as well. This lead to lower lending rates and increased supply of money in the economy.

REVIEW OF LITERATURE

UNIFIED PAYMENT INTERFACE (UPI)

Unified Payments Interface (UPI) is a payment system launched by National Payments Corporation of India and regulated by the Reserve Bank of India which facilitates the instant fund transfer between two bank accounts on the mobile platform.

UPI is built over Immediate Payment Service (IMPS) for transferring funds using Virtual Payment Address (a unique ID provided by the bank), Account Number with IFS Code, Mobile Number with MMID (Mobile Money Identifier), Aadhaar Number, or a one-time use Virtual ID.

An MPIN (Mobile banking Personal Identification number) is required to confirm each payment.

The interface allows customers to make payments through a single identifier, like Aadhaar number or virtual address.

UPI is an infrastructure on top of which end-user apps can build and implement the features offered by UPI. According to RBI, UPI envisages a payments architecture that is directly linked to achieving the goals of universal electronic payments, a less-cash society, and financial inclusion, using the latest technology trends.

UPI enables a customer to make payments using his mobile phone as the primary device for payments, including person-to-person, person-to-merchant, and merchant-to-person with the ability to pay someone, as well as 'collect' cash from someone.

How is it unique?

- Immediate money transfer through mobile device round the clock 24*7 and 365 days.
- Single mobile application for accessing different bank accounts
- Single Click 2 Factor Authentication – Aligned with the Regulatory guidelines, yet provides for a very strong feature of seamless single click payment.
- Virtual address of the customer for Pull & Push provides for incremental security with the customer not required to enter the details such as Card no, Account number; IFSC etc.
- Bill Sharing with friends.
- Best answer to Cash on Delivery hassle, running to an ATM or rendering exact amount.
- Merchant Payment with Single Application or In-App Payments.
- Scheduling PUSH and PULL Payments for various purposes.
- Utility Bill Payments, Over the Counter Payments, Barcode (Scan and Pay) based payments.
- Donations, Collections, Disbursements Scalable.

- Raising Complaint from Mobile App directly.

Present study of the product is of recent origin therefore in the past not many studies have been conducted on the topic. Though because of this very reason, this study can be said to be in the category of pioneering work and therefore having great relevance significance too.

Further, As M-wallet and UPI apps are surging on an account of growing online payment transactions in INDIA, this study undertakes to give an insight about M-wallets and payment gateway services. The study helps in understanding the company preference of the users with regard to M-wallets and UPI apps. It helps us to know the kind of services used by the users, which are provided by the M-wallet and UPI apps payment gateway services providers. The study also aims to find the factors influencing the perception of the consumers towards M-wallets and UPI apps.

Sanaz Zarrin Kafsh (2015), made a study on “Developing Consumer Adoption Model on mobile wallet in Canada”, by taking a sample of 530 respondents through convenience sampling.

Ngoc Doan (2014), conducted a study on “**Consumer adoption in Mobile wallet** (A study of consumers in Finland)”, this study was undertaken to understand about the consumer adoption status of mobile wallet with research area limited in Finland

OBJECTIVES OF THE STUDY

The objectives of the project are

1. To find out most preferred Mobile wallet and UPI apps in India.
2. Comparison between various Mobile wallets and challenges faced by them due to UPI apps.
3. To find out reasons which affect the consumers preference towards Mobile wallet and UPI apps

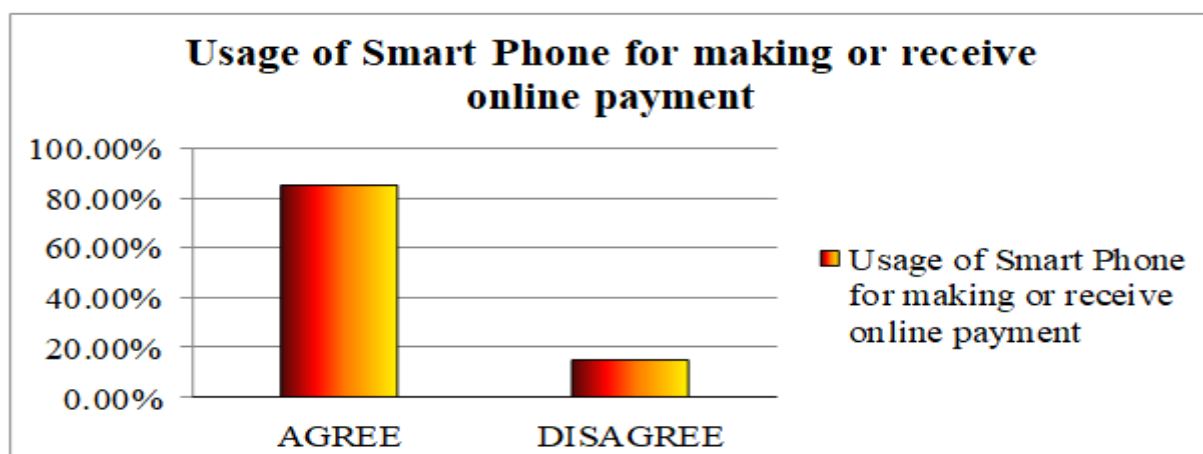
RESEARCH METHODOLOGY

Present study is exploratory in nature, and mainly based on primary data. A questionnaire was prepared and administered to 100 respondents to gauge the awareness of Mobile wallet and UPI apps amongst customer. The study used random sampling method to administer the questionnaire and sample area was Kanpur city. Apart from questionnaire, few responses were also collected through one to one interview with each of sample of respondents. Such responses were thoroughly analyzed and conclusions have been drawn based on both the responses. To encourage and motivate the respondents to take the questionnaire for the purpose of this research, the questionnaire was made to be crisp and to the point and was aimed at getting the required information in the least time. To analyse the responses of the respondents MS-Excel, Pivot Tabl ,Mann-Whitney and One way Anova test are applied and conclusions drawn.

DATA INTERPRETATION AND ANALYSIS

Which of the following statements do you agree with

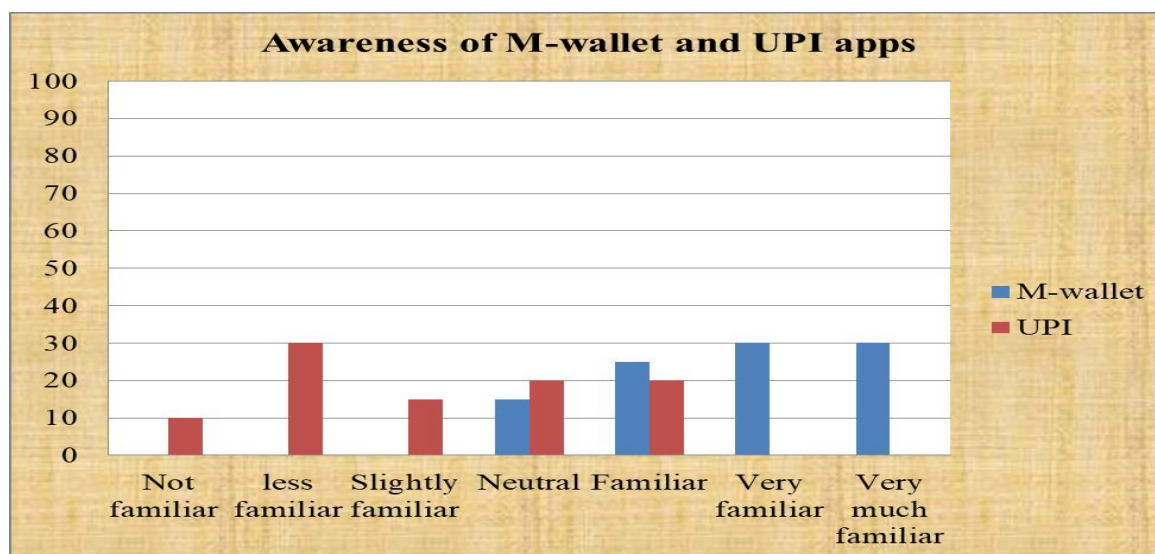
Particulars	Like to make or receive payment via smart phone		Prefer the traditonal mode of payment	
	Responses	% of Responses	Responses	% of Responses
Agree	85	85%	15	15%



The above chart represents 85% of the respondents will like to make or receive payment via smart phone and 15% of the respondents disagree to receive payments or make payments via smart phone. They will prefer traditional way of payment.

13.2 Are you familiar with the digital mode of payment via smart phone i.e. M- wallet and UPI apps? Please rate it accordingly, where 1=not familiar, 2=less familiar, 3=slightly familiar, 4=Neutral, 5=familiar, 6=very familiar, 7=very much familiar

	Not familiar	Less familiar	Slightly familiar	Neutral	familiar	very familiar	Very much familiar
MOBILE WALLET	-	-	-	15%	25%	30%	30%
UPI apps	10%	30%	15%	20%	15%	10%	-



Inferences

The above chart represents that consumers are more familiar with Mobile wallet as compare to UPI apps.

- The above chart represents awareness of Mobile wallet and UPI apps in which only 10% of the respondents are not familiar with UPI apps while 30% of the respondents are less familiar with UPI apps and 15% of the respondents are slightly familiar with UPI apps.
- While 20% neutral respondents are familiar with the UPI apps and 15% of them are familiar with Mobile wallets.
- 25% of respondents are familiar with Mobile wallets and 15% are familiar with the UPI apps and in both the cases of very familiar and very much familiar the respondents are 30% familiar with Mobile wallets while only 10% are very familiar with UPI apps.

To measure the non-parametric values Mann Whitney U test is used which compares the values of the Mobile wallet and UPI apps.

M-wallet	UPI app
4	1
4	1
4	1
4	1
4	1
4	1
4	1
4	1
4	1
4	1
4	1
4	2

122

[illegible]

S1:-

[illegible]

S2:-

[illegible]

Result	Details
Sample 1	
Sum of ranks:	13937.5
Mean of ranks:	139.38
Expected sum of ranks:	10050
Expected mean of ranks:	100.5
U-value:	1112.5

Expected U-value: 5000

Sample 2

Sum of ranks:	6162.5
Mean of ranks:	61.62
Expected sum of ranks:	10050
Expected mean of ranks:	100.5
U-value:	8887.5
Expected U-value:	5000

Sample 1 & 2 Combined

Sum of ranks:	20100
Mean of ranks:	100.5
Standard Deviation:	409.2676

Result 2 - Z-ratio

The Z-Score is 9.49745. The p-value is $< .00001$. The result is significant at $p < .05$.

Success! The value of U is 1112.5

To measure the non-parametric values Kruskal Wallis is used which compares the values of the Mobile wallet and UPI apps.

Hypotheses

The following null and alternative hypotheses will be tested using the Kruskal-Wallis test.

H0: The samples come from identical populations

H1: The samples come from populations with non identical populations

(2) Rejection Region

Alpha = 0.05 $\alpha=0.05$, and the number of degrees of freedom is $df = 2 - 1 = 1$. Therefore, the rejection region for this Chi-Square test is $R = \{\chi^2: \chi^2 > 3.841\}$.

[illegible]

[illegible]

(3) Test Statistics

The H statistic is computed as shown in the following formula:

$$H = \frac{12}{200(200+1)} \cdot \frac{14350^2}{100} + \frac{5750^2}{100} - 3(200+1) = 110.388$$

(4) Decision about the null hypothesis

Using the P-value approach: The p-value is $p = 0$, and since $p = 0 < 0.05$, it is concluded that the null hypothesis is rejected.

It is concluded that the null hypothesis H_0 is rejected. Therefore, there is enough evidence to claim that the not all population medians are equal, at 0.05 significance level.

Therefore Kruskal –Wallis is the best way to analyze the ordinal likert scale data as in this case and results analyzed.

13.3 What is the most important factor which made you choose digital mode of payment via smart phone i.e. M-wallet and UPI apps? (Please rate it accordingly, where 5=most important, 4= moderately important, 3=important, 2=somewhat important, 1=less important

Respondents No.	Offers and discounts	Convenience	Fast execution	Mode of payment	Security
1	1	2	5	3	4
2	2	3	4	1	5
3	3	4	5	1	2
4	1	5	4	2	3
5	3	4	2	1	5
6	2	4	5	1	3
7	4	3	5	1	2
8	3	2	4	1	5
9	4	5	3	1	2
10	5	4	2	1	3
11	4	3	1	2	5
12	2	3	4	1	5
13	3	5	1	2	4
14	5	4	1	2	3
15	1	3	2	5	4
16	1	4	3	2	5
17	2	5	1	3	4
18	4	3	1	2	5
19	5	3	1	2	4
20	3	5	2	1	4
21	2	3	1	4	5
22	1	2	3	4	5
23	4	3	1	2	5
24	3	5	1	2	4
25	1	2	3	4	5
26	1	5	2	3	4
27	1	4	2	3	5
28	2	3	1	4	5
29	3	4	2	1	5
30	4	3	2	1	5
31	1	5	2	3	4
32	5	4	2	1	3
33	4	3	2	1	5
34	3	4	1	2	5
35	2	5	1	3	4
36	1	2	3	4	5
37	1	2	4	3	5
38	3	4	2	1	5
39	4	5	2	1	3
40	5	3	1	2	4
41	1	4	2	3	5
42	3	5	4	2	1
43	4	3	1	2	5
44	2	5	1	3	4
45	1	4	2	3	5
46	2	5	1	3	4
47	3	4	2	1	5

48	4	3	2	1	5
49	5	4	1	2	3
50	1	3	5	2	4
51	4	1	2	3	5
52	3	5	1	2	4
53	2	3	1	4	5
54	1	3	2	4	5
55	2	5	3	1	4
56	1	4	2	3	5
57	1	4	3	2	5
58	4	2	1	3	5
59	1	3	2	4	5
60	3	1	2	4	5
61	5	4	1	2	3
62	2	3	1	4	5
63	4	5	2	1	3
64	1	2	4	3	5
65	3	4	1	2	5
66	4	3	2	1	5
67	1	4	3	2	5
68	3	5	1	2	4
69	5	2	1	3	4
70	1	4	3	2	5
71	2	5	1	3	4
72	3	1	2	4	5
73	4	1	2	3	5
74	1	5	2	3	4
75	5	4	1	2	3
76	1	3	5	2	4
77	3	2	4	1	5
78	4	5	2	1	3
79	1	4	2	3	5
80	2	3	1	4	5
81	5	2	4	3	1
82	4	1	2	3	5
83	3	1	5	2	4
84	1	4	2	3	5
85	4	5	1	2	3
86	3	4	2	1	5
87	1	2	3	4	5
88	5	4	1	2	3
89	1	3	2	4	5
90	2	4	1	3	5
91	3	5	1	2	4
92	2	4	1	5	3
93	4	3	2	1	5
94	1	4	2	3	5
95	3	4	5	1	2
96	1	4	2	3	5
97	2	3	1	4	5
98	3	4	2	1	5
99	4	3	1	5	2
100	2	4	5	1	3

ONE WAY ANOVA :-

Offers and Discounts, Fast Execution, Convenience Mode of Payment by factor Security

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Offers and Discounts	Between Groups	38.283	4	9.571	6.137	.000
	Within Groups	148.157	95	1.560		
	Total	186.440	99			
Fast Execution	Between Groups	20.921	4	5.230	3.625	.009
	Within Groups	137.079	95	1.443		
	Total	158.000	99			
Convenience	Between Groups	31.741	4	7.935	7.758	.000
	Within Groups	97.169	95	1.023		
	Total	128.910	99			
Mode of Payment	Between Groups	9.701	4	2.425	1.959	.107
	Within Groups	117.609	95	1.238		
	Total	127.310	99			

ONE WAY ANOVA:- Offers and Discounts , Fast Execution, Convenience ,Security By factor Mode of Payment

ANOVA						
		Sum of Squares	df	Mean Square	F	Sig.
Offers and Discounts	Between Groups	46.226	4	11.556	7.830	.000
	Within Groups	140.214	95	1.476		
	Total	186.440	99			
Fast Execution	Between Groups	20.103	4	5.026	3.462	.011
	Within Groups	137.897	95	1.452		
	Total	158.000	99			
Convenience	Between Groups	22.617	4	5.654	5.054	.001
	Within Groups	106.293	95	1.119		
	Total	128.910	99			
Security	Between Groups	17.778	4	4.445	4.999	.001
	Within Groups	84.462	95	.889		
	Total	102.240	99			

ONE WAY ANOVA:- Fast Execution, Convenience, Mode of Payment ,Security By factor Offers and Discounts

ANOVA						
		Sum of Squares	df	Mean Square	F	Sig.
Fast Execution	Between Groups	21.095	4	5.274	3.660	.008
	Within Groups	136.905	95	1.441		
	Total	158.000	99			
Convenience	Between Groups	6.319	4	1.580	1.224	.306
	Within Groups	122.591	95	1.290		
	Total	128.910	99			
Mode of Payment	Between Groups	36.347	4	9.087	9.490	.000
	Within Groups	90.963	95	.958		
	Total	127.310	99			
Security	Between Groups	20.710	4	5.178	6.033	.000
	Within Groups	81.530	95	.858		
	Total	102.240	99			

ONE WAY ANOVA:- Convenience, Mode of Payment, Security, Offers and Discounts By factor Fast Execution

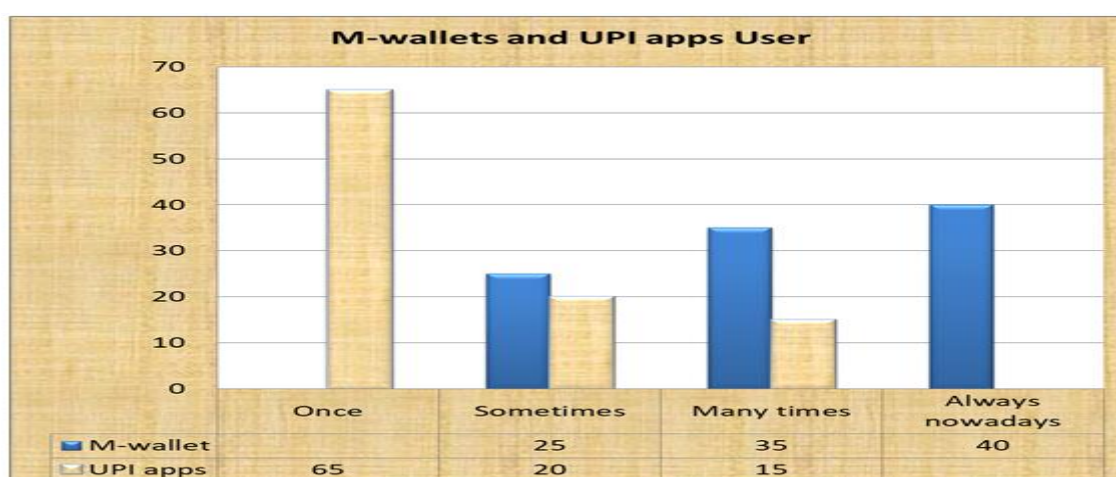
ANOVA						
		Sum of Squares	df	Mean Square	F	Sig.
Convenience	Between Groups	8.572	4	2.143	1.692	.158
	Within Groups	120.338	95	1.267		
	Total	128.910	99			
Mode of Payment	Between Groups	13.816	4	3.454	2.891	.026
	Within Groups	113.494	95	1.195		
	Total	127.310	99			
Security	Between Groups	18.858	4	4.714	5.371	.001
	Within Groups	83.382	95	.878		
	Total	102.240	99			
Offers and Discounts	Between Groups	32.423	4	8.106	5.000	.001
	Within Groups	154.017	95	1.621		
	Total	186.440	99			

ONEWAY ANOVA:- Mode of Payment, Security, Offers and Discounts, Fast Execution By factor Convenience

ANOVA						
		Sum of Squares	df	Mean Square	F	Sig.
Mode of Payment	Between Groups	16.140	4	4.035	3.448	.011
	Within Groups	111.170	95	1.170		
	Total	127.310	99			
Security	Between Groups	16.918	4	4.230	4.709	.002
	Within Groups	85.322	95	.898		
	Total	102.240	99			
Offers and Discounts	Between Groups	7.237	4	1.809	.959	.434
	Within Groups	179.203	95	1.886		
	Total	186.440	99			
Fast Execution	Between Groups	18.871	4	4.718	3.221	.016
	Within Groups	139.129	95	1.465		
	Total	158.000	99			

13.4 How often do you use Mobile wallet and UPI apps?

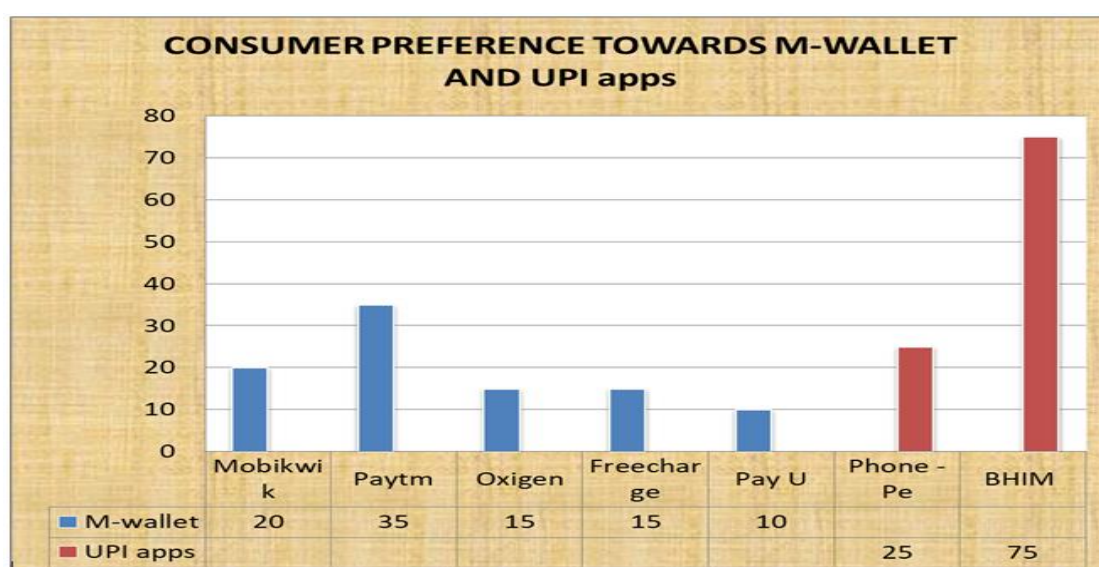
Mobile wallets and UPI apps User	Once	Sometimes	Many times	Always nowadays
MOBILE WALLET	-	25	35 %	40 %
UPI apps	60%	20%	15%	-



The above chart represents that how frequently the respondents uses Mobile wallet and UPI apps in 65% are the users of UPI apps have used once only whereas there 20% and 25% respondents have used sometimes and many times respectively. As compare UPI apps the Users of Mobile wallet are more frequent as there are 25% and 35% users who have preferred Mobile wallet sometimes and many times respectively and 40% are the users who preferred wallets always nowadays.

13.5 Which of these mobile wallets and UPI apps do you mostly prefer?

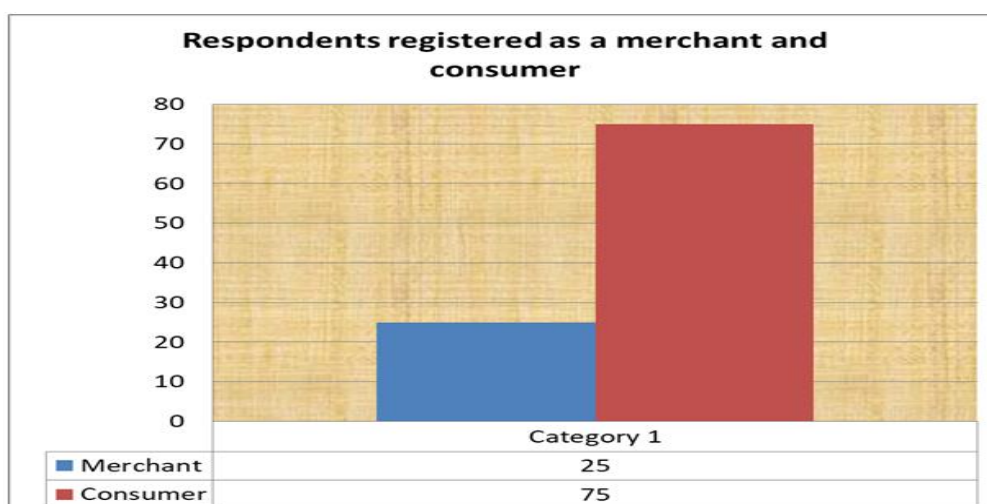
Consumer Preference Towards Mobile wallet and UPI apps							
	Mobikwik	Paytm	Oxigen	Freecharge	Pay U	Phone pe	BHIM UPI app
MOBILE WALLET	20 %	35 %	15 %	15 %	10 %	-	-
UPI apps	-	-	-	-		25 %	75%



The above chart represents that the respondents preference towards Mobile wallet and UPI apps. 75% are the users of UPI apps preferred BHIM UPI apps whereas there are 25% respondents preferred Phone-pe. As compare UPI apps the Users of Mobile wallet of which 35 % of them preferred Paytm, 20% preferred Mobikwik while in the case of freecharge and Oxigen preferred same 15%. There are 10% who preferred Pay U.

13.6 Are you registered as a merchant or customer?

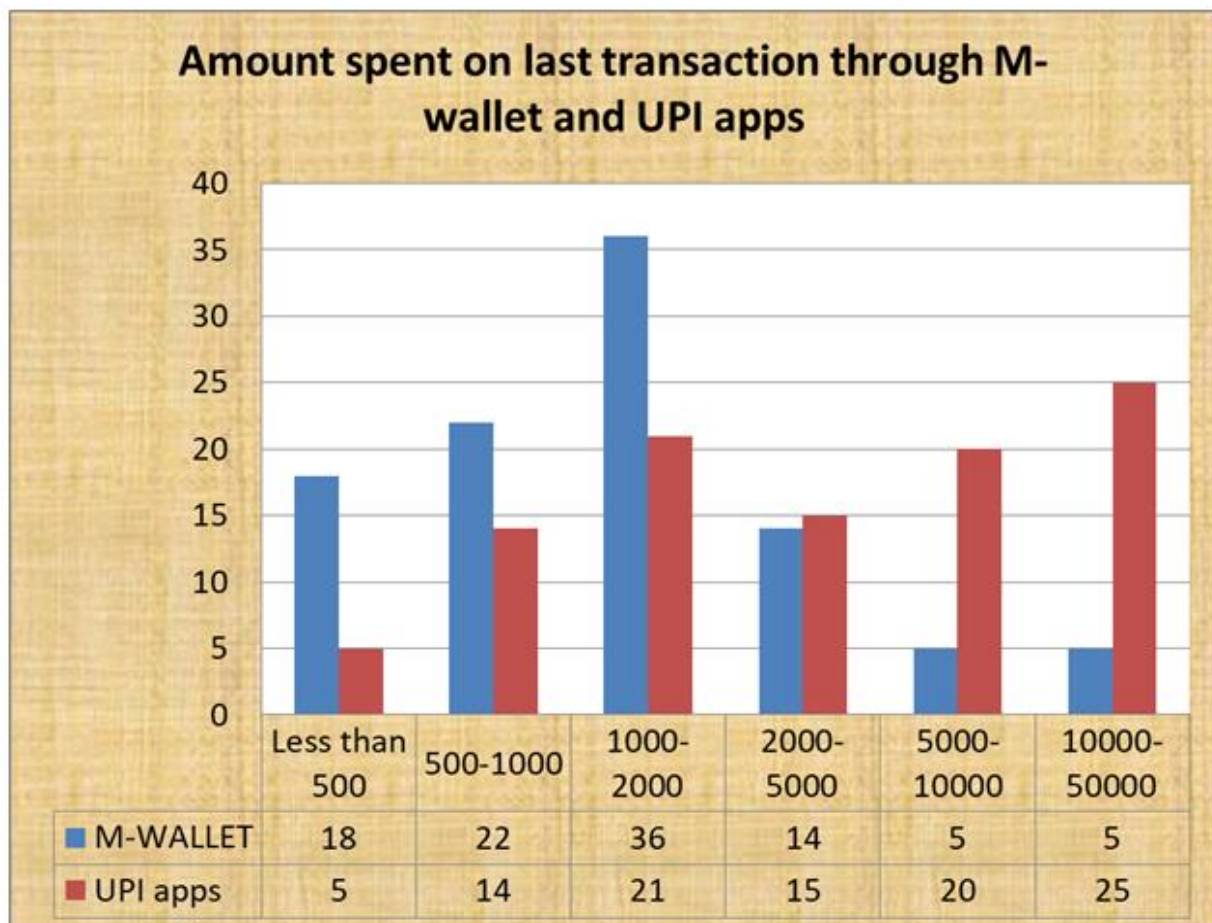
Particulars	Merchant		Consumer	
	Responses	% of Responses	Responses	% of Responses
Agree	25	25%	75	75%



The above chart represents that how much percentage of respondents are registered as a merchant and consumer out of which 25% of the respondents are registered as a verified merchant and 75% of the respondents are consumer.

13.7 How much amount have you spent on your last transaction via mobile wallet or UPI app?

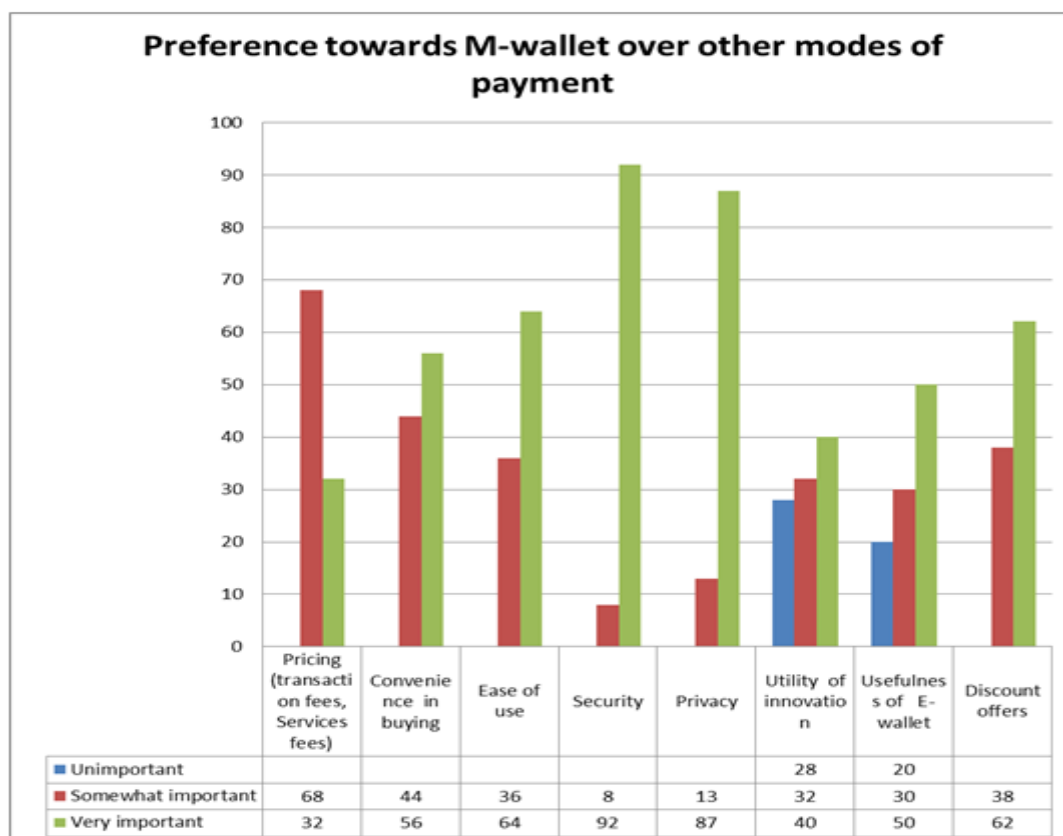
Amount spent last on last transaction through	Less than 500	500-1000	1000-2000	2000-5000	5000-10000	10000-50000
MOBILE WALLET	18%	22%	36%	14%	5%	5 %
UPI apps	5%	14%	21%	15%	20%	25 %



The above chart represents that how much percentage of respondents spent how much money on the last transactions through Mobile wallets and UPI apps.

How much these factors made you prefer mobile wallet over the other modes of payment i.e. cash, debit cards and credit cards?

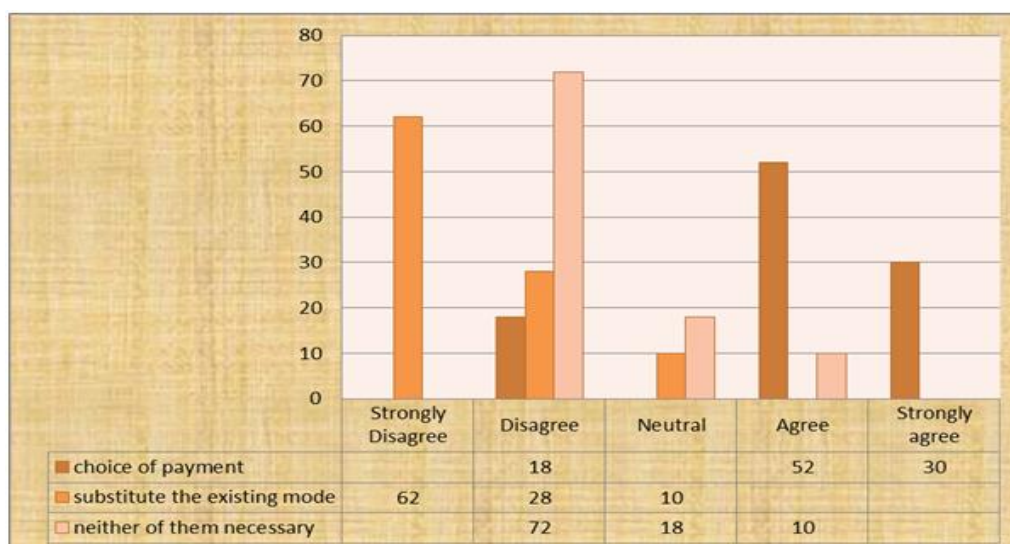
Factors		Unimportant	Somewhat Important	Very Important
A	Pricing (transaction fees, Services fees)		68 %	32 %
B	Convenience in buying		44 %	56 %
C	Ease of use		36 %	64 %
D	Security		8 %	92 %
E	Privacy		13 %	87 %
F	Utility of innovation	28 %	32 %	40 %
G	Usefulness of Mobile wallet	20	30 %	50%
H	Discount offers		38 %	62 %



The above chart represents that how much the factors like Pricing, convenience in buying, ease of use, security, privacy, utility of innovation, Usefulness of Mobile wallet and discount offers etc. are unimportant, somewhat important and very important which made respondents to prefer the use Mobile wallet and UPI apps.

To what extent do you agree with the following statements?

Factors		Strongly Disagree	Disagree	Neutral	Agree	Strongly agree
A	Mobile wallet and UPI app can be an choice of payment Mode		18 %		52 %	30 %
B	Mobile wallet and UPI app can substitute the existing mode of payment	62 %	28 %	10 %		
C	Neither of them is necessary		72 %	18 %	10 %	



The above chart represents that whether they give more preference to Mobile wallet and UPI apps over the other modes of payment and how much of them is against or in favour of digital transactions.

Purpose for which Mobile wallets are used. Give them remarks accordingly:-

4 = satisfied 5= highly satisfied 3 = neutral 1 = dissatisfied 2= strongly dissatisfied

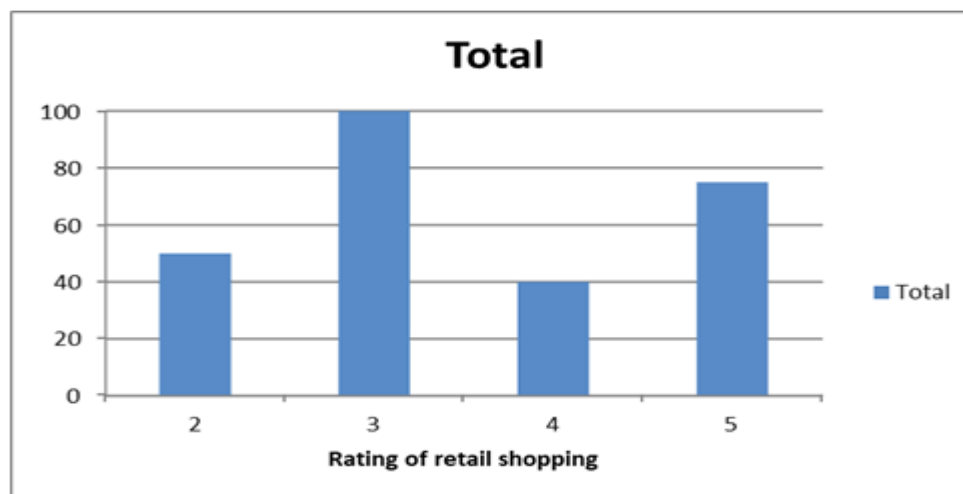
Reasons for usage of Mobile wallet		5	4	3	2	1
A	Online shopping	40 %	48 %	12 %		
B	Retail shopping	15 %	10 %	50 %	25 %	
C	Booking movie tickets	65 %	20 %	15 %		
D	For paying bills	70 %	17 %	13 %		
E	Transfer to bank			80 %	15 %	5 %
F	Recharge	68 %	25 %	7 %		
G	Gifts	18 %	30 %	52 %		
H	Transfer to any wallet			72 %	18 %	10 %
I	Transfer from one bank a/c to another bank a/c	20 %	5 %	70 %	5 %	
J	Directly linked with the bank a/c	15 %	10 %	65 %	10 %	
K	Need to add money	15 %	10 %	75 %		
L	Safe and secure	68 %	22 %	5 %	5 %	

1. Rating of online shopping



The above chart represents rating of online shopping in which 12% respondents marked 3, 48% respondents marked 4 and 40% respondents marked 5.

2. Rating of retail shopping



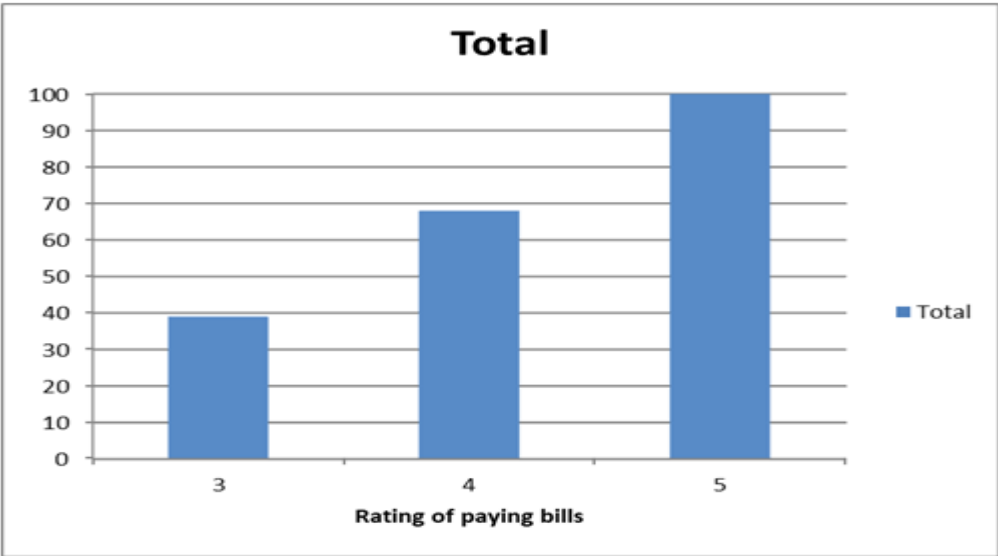
The above chart represents rating of retail shopping in which 15% respondents marked 5, 10% respondents marked 4 and 50% respondents marked 3 and 25% respondents marked 2.

3. Rating of booking movie tickets



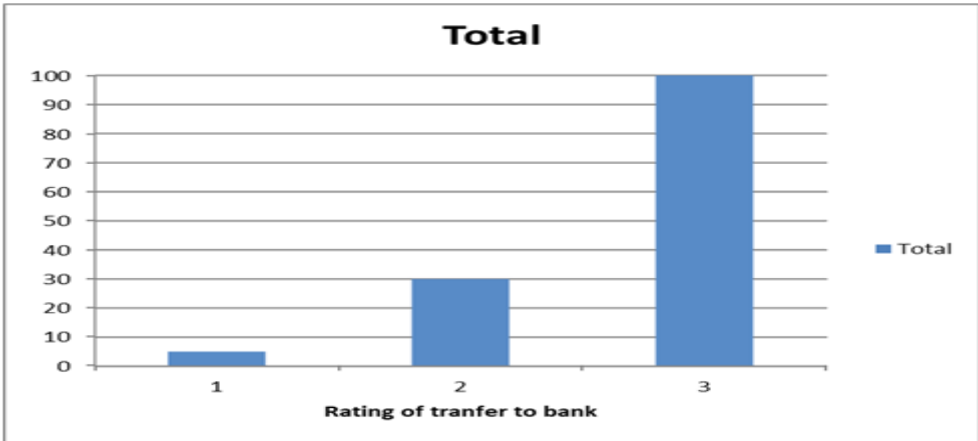
The above chart represents rating of booking movie tickets in which 15% respondents marked 3, 20% respondents marked 4 and 65% respondents marked 5.

4. Rating of paying bills



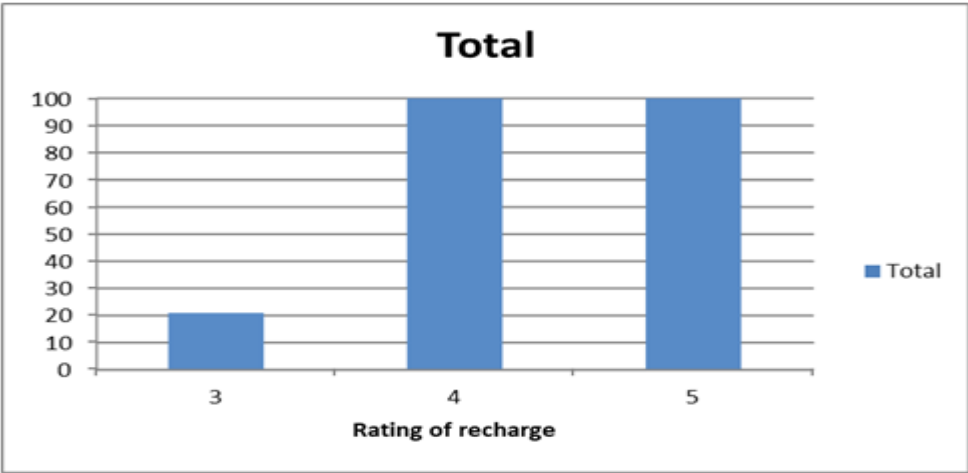
The above chart represents rating of paying bills in which 13% respondents marked 3, 17% respondents marked 4 and 70% respondents marked 5.

5. Rating of transfer to bank



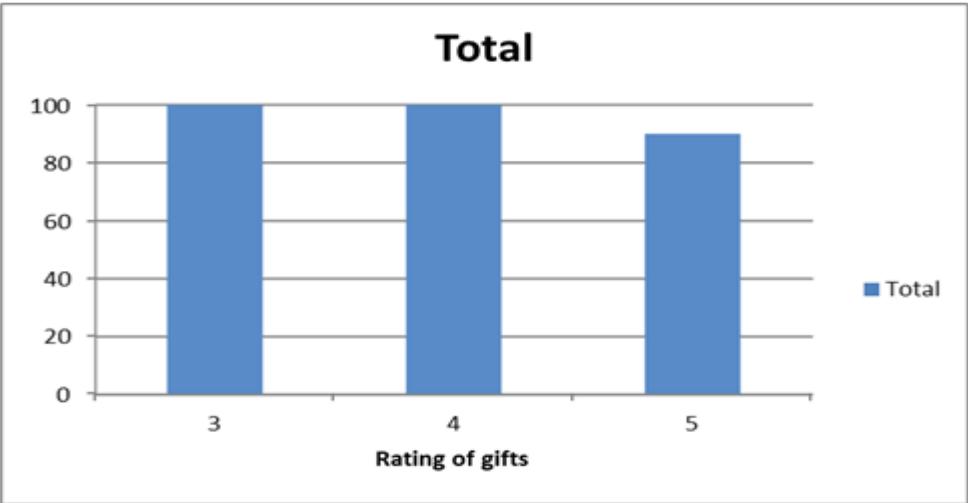
The above chart represents rating of transfer to bank in which 80% respondents marked 3, 15% respondents marked 2 and 5% respondents marked 1.

6. Sum of recharge



The above chart represents rating of recharge in which 7% respondents marked 03, 25% respondents marked 4 and 68% respondents marked 5.

7. Rating of gifts



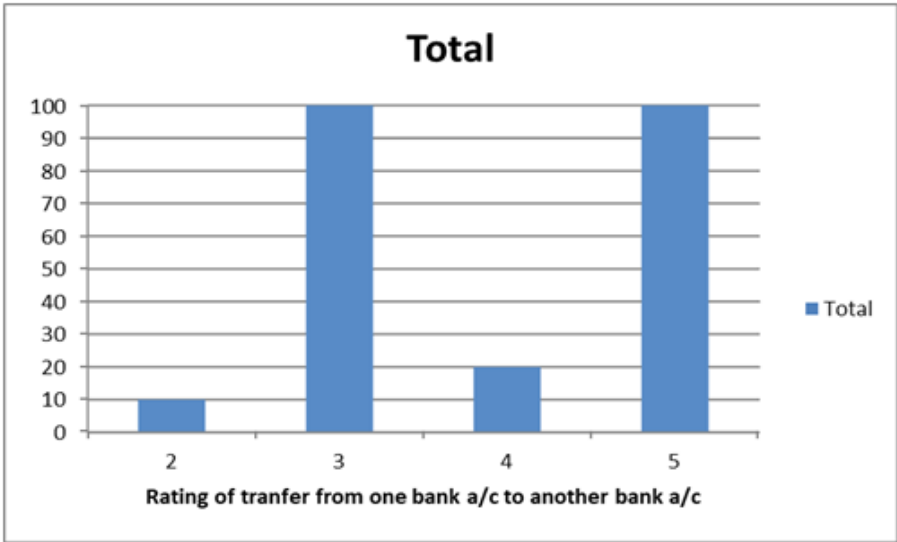
The above chart represents rating of sum of gifts in which 52% respondents marked 3, 30% respondents marked 4 and 18% respondents marked 5.

8. Rating of transfer to any wallet



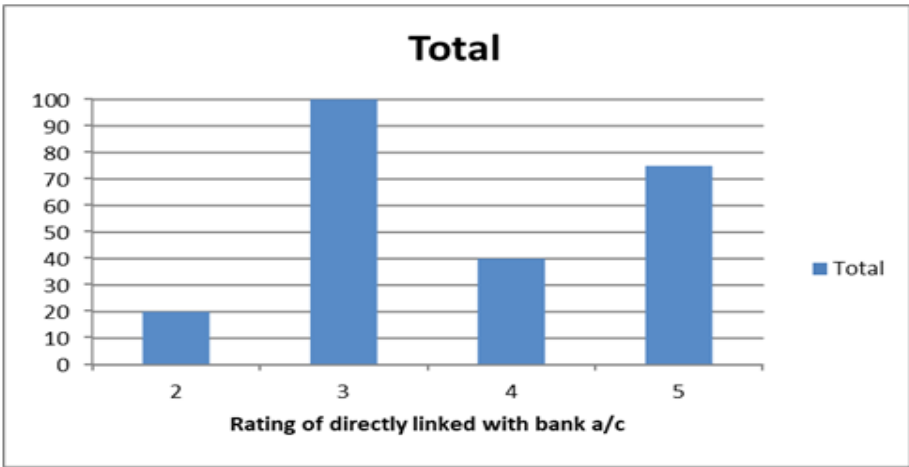
The above chart represents rating of transfer to any wallet in which 72% respondents marked 3, 18% respondents marked 2 and 10% respondents marked 1.

9. Transfer from one bank a/c to another bank a/c



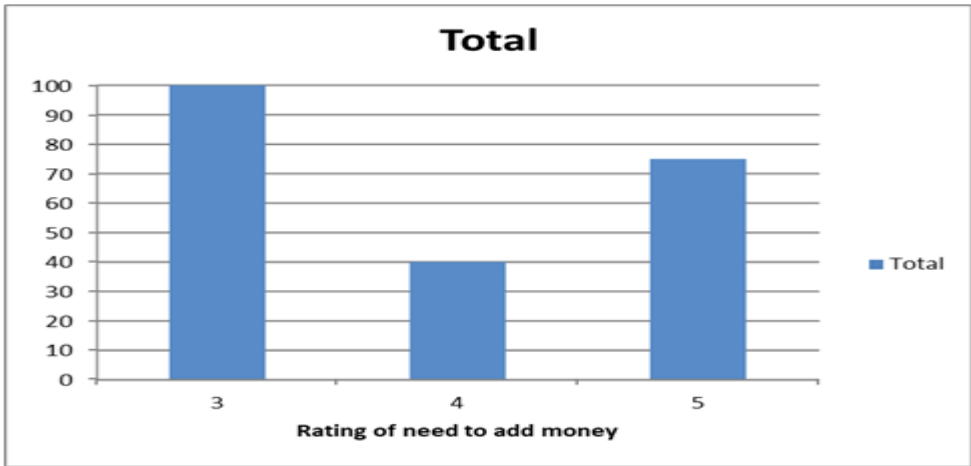
The above chart represents rating of transfer from one bank a/c to another bank a/c in which 70% respondents marked 3, 5% respondents marked 4 and 20% respondents marked 5 and 5% respondents marked 2.

10. Sum of directly linked with the bank a/c



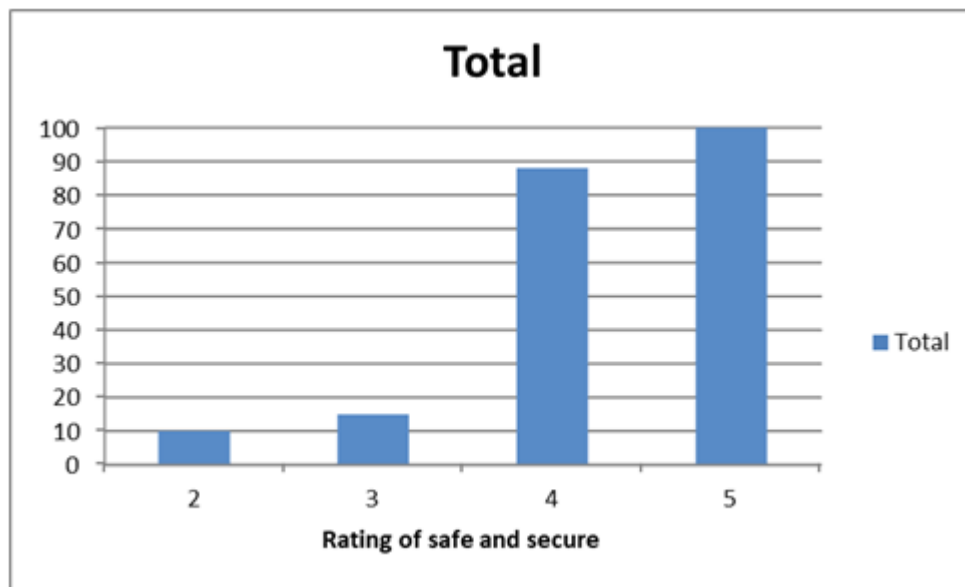
The above chart represents sum of directly linked with bank a/c In which 65% respondents marked 3, 10% respondents marked 4 and 15% respondents marked 5 and 10% respondents marked 2.

11. Need to add money



The above chart represents rating of need to add money In which 75% respondents marked 3, 10% respondents marked 4 and 15% respondents marked 5.

12. Safe and secure



The above chart represents rating of online shopping in which 5% respondents marked 3, 22% respondents marked 4 and 68% respondents marked 5 and 5% respondents marked 2.

FINDINGS

- Majority of the respondents use their smart phones for completing a monetary transaction.
- Most of the respondents prefer using Debit Card followed by M-wallet.
- The respondent's awareness about mobile wallet payment gateway services is high.
- Majority of the respondents are aware and prefer using Paytm, Mobikwik followed by Freecharge.
- The respondents prefer using M-wallets for Recharge purpose followed by Online Shopping and also for Food/Movie tickets.
- The Availability, Convenience, Service acceptance, Security and Reward points/gifts are the major factors which influences most of the respondents to use M-wallets. Majority of the respondents feel that M-wallet saves time and has made life easier. Most of the respondents feel that M-wallet can be used as an alternative mode of payment which can substitute the physical payment system.
- Majority of the respondents have reduced their traditional payment due to M-wallets.
- Most of the respondents use M-wallet frequently.
- A large number of the respondents are satisfied with the service provided by them whereas a few number of the respondents are highly satisfied with the service used.
- Majority of the respondents have not come across any obstacle while using M-wallet and major problem faced by some of the users is network server issue.
- As most of the respondents are satisfied with the service provided, majority of the respondents prefer to continue using M-wallet.
- Quite a few number of respondents use UPI apps , the major reason being is lack of awareness about it.
- As security is a major issue, most of the respondents fear of M-wallet provider sharing the confidential information with other companies, misuse of information if phone stolen, rise in the number of cyber crimes and virus being installed on the phone.
- The willingness to use the services is very high if the problems are addressed.

- Based on the age and gender of the respondents, Majority of the male and female respondents prefer using Paytm, Mobikwik who fall into the age group of 18-30. M-wallet is affected by demographics as it has been seen in the study that more males are making online payments via M-wallets than UPI apps.
- Majority of the respondents prefer using Paytm, Mobikwik for recharge purpose who fall into age group of 18-30 and 31-50.
- Majority of the respondents prefer using Paytm, Mobikwik for bill payment who fall into the age group of 18-30 and 31-50.
- Majority of the respondents prefer using Paytm, Mobikwik for food and movie tickets who fall into age group of 18-30 and 31-50.
- Majority of the respondents prefer using Paytm, Mobikwik for Online Shopping who fall into age group of 18-30 followed by free charge and respondents who fall into age group of 31-50 prefer using Paytm only.
- Majority of the respondents prefer using Paytm to transfer money who are in the age group of 18-30 followed by Mobikwik, respondents who fall into age group of 31-50 prefer using Paytm only and respondents who fall into age group of 51-64 prefer using other wallets.
- Security, convenience, fast execution, offers and discounts and services used are the factors which influence the preferences of the respondents.

CONCLUSION

The future of mobile payments in INDIA depends largely on the payment bank license which is to be provided by RBI so that the consumers will get confidence in using the wallet services.

All the Mobile wallet providers need to meet the guidelines stipulated by RBI, so as to acquire payment bank license.

The awareness of the of M-wallet providers is rising when compared to the preference of usage of services, therefore the reasons for not using M-wallet can be found.

However, security concerns appear to be an important factor depressing the adoption of mobile wallets for payments. Therefore the mobile wallet providers need to address the security and privacy concerns of the users.

Mobile wallet providers can collaborate with the “Telcos” for better and fast network connectivity.

LIMITATIONS OF THE STUDY

1. The sample area and sample size has been limited due to time constraint.
2. Some consumers were not aware of the UPI apps as compared to Mobile wallet.
3. Some respondents are reluctant for their feedbacks & opinions, and authenticity of their statements can't be verified too.
4. All the observation and recommendation will be made on the feedback obtained from survey.
5. The limitations of random sampling are also applicable to this study.

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- <https://www.wikipedia upi apps.in/>

A REPORT ON “A STUDY ON EVALUATION OF MUTUAL FUNDS PERFORMANCE AND INVESTOR BEHAVIOUR**Yogesh Puri¹ and Shivani Shukla²**Assistant Professor¹ and Student², STEP - HBTI, Kanpur

ABSTRACT

The evaluation of financial planning has been increased through decades, which is best seen in customer rise. Now a day's investment of saving has assumed of great importance. According to the study of markets, it is being observed that there are lots of financial instruments available in the markets and some of them are really doing well. In future a proper financial planning is required to invest money in all types of financial products because there is good potential in the market to invest.

In this project the great emphasis is given to the investors mind in respect to investment all types of financial instrument where he can maximize his wealth. The needs and wants of client are taken into consideration. The main objective of this project is to know the awareness of financial instruments among investors and also to know the investing pattern of people in different financial instruments.

The study is done by taking all types of Age, Group, Income class and different levels of people. After analyzing the feedback the conclusion has been made that the Indian Financial Market is having a lots of potential customers. The only thing is to give a proper guidance to the prospective customers in the current scenario.

Keywords: started in India in 1963, SEBI, the regulator of mutual funds in India, source of investments

1.0 INTRODUCTION**MUTUAL FUNDS**

The mutual fund industry in India started in 1963 with the formation of Unit Trust of India, at the initiative of the Government of India and Reserve Bank of India. UTI enjoyed a monopoly in the Indian mutual fund market until 1987, when a host of other government-controlled Indian financial companies established their own funds, including State Bank of India, Canara Bank, and Punjab National Bank. This market was made open to private players in 1993, as a result of the historic constitutional amendments brought forward by the then Congress-led government under the existing regime of Liberalization, Privatization and Globalization (LPG). The first private sector fund to operate in India was Kothari Pioneer, which later merged with Franklin Templeton. In 1996, SEBI, the regulator of mutual funds in India, formulated the Mutual Fund Regulation which is a comprehensive regulatory framework.

Mutual fund investments are sourced both from institutions (companies) and individuals. Since January 2013, institutional investors have moved to investing directly with the mutual funds since doing so saves on the expense ratio incurred. Individual investors are, however, served mostly by Investment advisor and banks. Since 2009, online platforms for investing in Mutual funds have also evolved. There are mutual funds that invest in equity or stocks, and are managed to achieve a range of goals. Some equity mutual funds are designed to generate long-term capital gains through growth or value investing strategies, while others are focused on generating dividend income for shareholders. Indian mutual funds may also invest in bonds and other debt securities with the goal of generating regular interest income.

There are also Indian balanced funds that invest in both equity and debt instruments to create portfolios that offer a degree of stability without completely ignoring the potential for big gains in the stock market. Just like in the American market, the Indian market offers mutual funds that specialize in certain sectors, only invest in government or inflation-protected debt, track a given index or are designed to maximize tax-efficiency.

A Mutual Fund is a trust that pools the savings of a number of investors who share a common financial goal. The money, thus collected, is then invested in capital market instruments such as shares, debentures and other securities. The income earned through these investments and the capital appreciation realised are shared by its unitholders in proportion to the number of units owned by them

2.0 LITERATURE REVIEW

The field of investment has received considerable attention from academic researchers keen on understanding issues like:

- How should risk be measured?

- What is the relationship between risk and return?
- What is the importance of assets allocation?

The following risks are being measured by different risk ratios which help to understand the risk premium and volatility of market.

From the analysis it is clear that risk is directly proportional of return. The greater risk the greater return.

By diversifying our money to different sectors reduces the risk and increases the return.

This whole pooling of money is done by the different Financial Advisors.

Debt Funds are the funds which has less risk with definite return

3.0 OBJECTIVE OF THE RESEARCH:

- To Know the usage & satisfaction level of online and digital investors over offline investors.
- To know whether digitalization is impacting the growth of Mutual Fund Industry.
- To study the cost benefit analysis of online investments over offline investments (Distribution cost of Mutual Fund Industry)
- To know how m-easy, and other online & digital facilities have proved beneficial to investors.
- To know whether B-15 Cities (smaller cities) are contributing in digital & online mode of investing or not.

4.0 RESEARCH METHODOLOGY

Research methodology is a way to systematically solve the research problem. It may be understood as a science of studying how research is done scientifically. In it we study the various steps that are generally adopted by a researcher in studying his research problem along with the logic behind them. It is necessary for the researcher to know not only the research methods or techniques but also the methodology.

4.1 Research Approach:

To find out the Preference of the investors for Asset Management of company, and to get insight knowledge about mutual funds.

4.2 Research instrument

A questionnaire was constructed for my survey. It consists of set of questions to be filled by various respondents.

4.3 Type of questions:

Close ended questions.

4.4 Sample size 50

Area: kanpur

4.5 Research Design

The following research design and techniques has been used to carry research:

- Qualitative research
- Quantitative research
- Indirect research (used in need)

4.6 Sample Design

Data has been presented with the help of bar graphs, pie charts, etc.

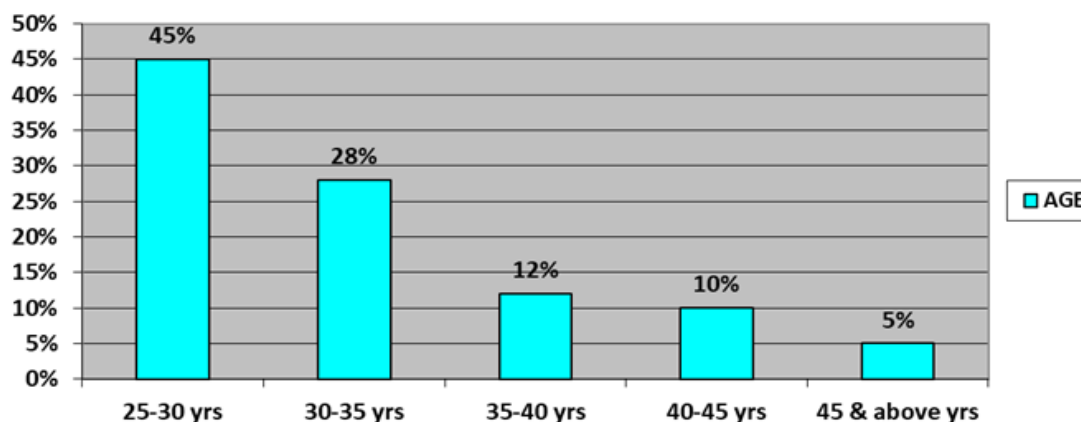
4.7 Questionnaire design

To evaluate consumer's feedback on mutual funds. This research should be carried on the basis of following factors:

- Investor annual income
- Primary goal of investment
- Knowledge about mutual funds
- Investment horizon

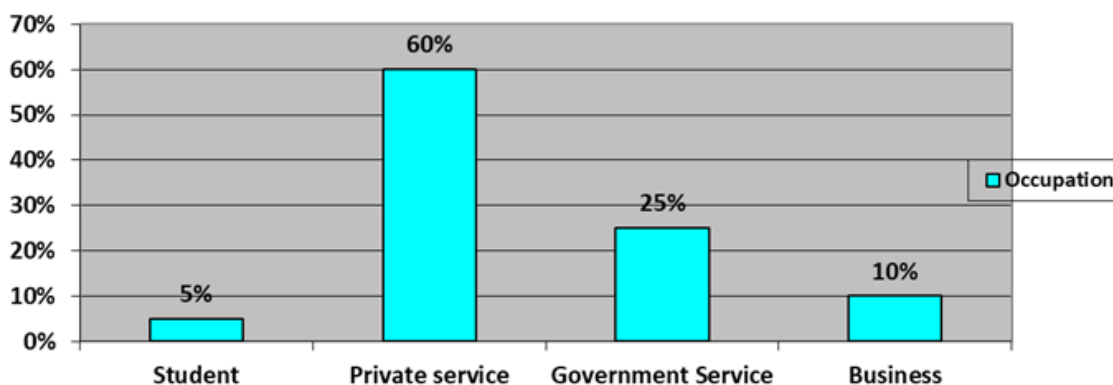
ANALYSIS AND INTERPRETATION OF DATA

AGE GROUP



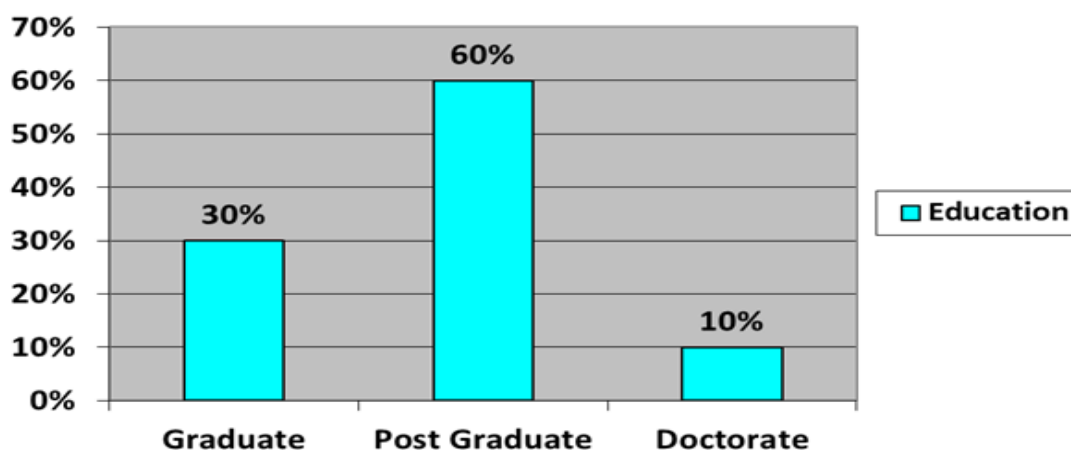
INTERPRETATION- A survey has been done on 50 investors - we categorized the respondents according to their ages and after the survey we found 45% respondents comes under 25-30 yrs which will represent current scenario of youngster, at what extent they are aware of mutual fund companies and to know whether they are tech savy or not. 28% , 12%,10% and 5% comes under 30-35 yrs ,35-40 yrs, 40-45 yrs and 45 & above yrs interval which will tell us the earlier approach by the investors.

OCCUPATION



INTERPRETATION- As we all already aware that our Private Service sector is proportionatly high now a days and people are getting more into it so therefore such affect can also be seen in survey that 60% respondents are doing private service and remaining 40% are students, businessmen, and Government Service.

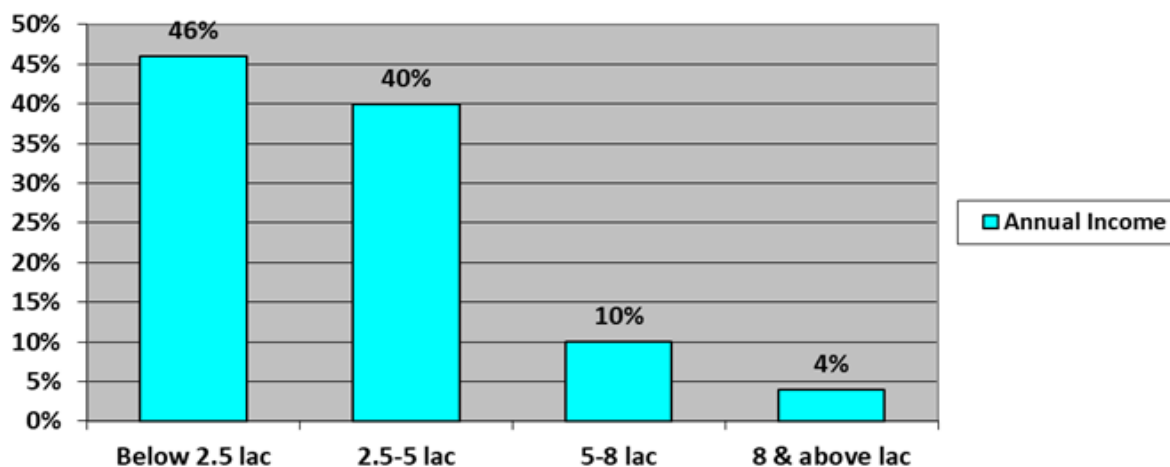
EDUCATION



INTERPRETATION- Almost 60% respondents are qualified as Post Graduate where as 30% were completed their Graduation and remaining 10% has done Doctorate. As the proportion of qualified respondents is high , we

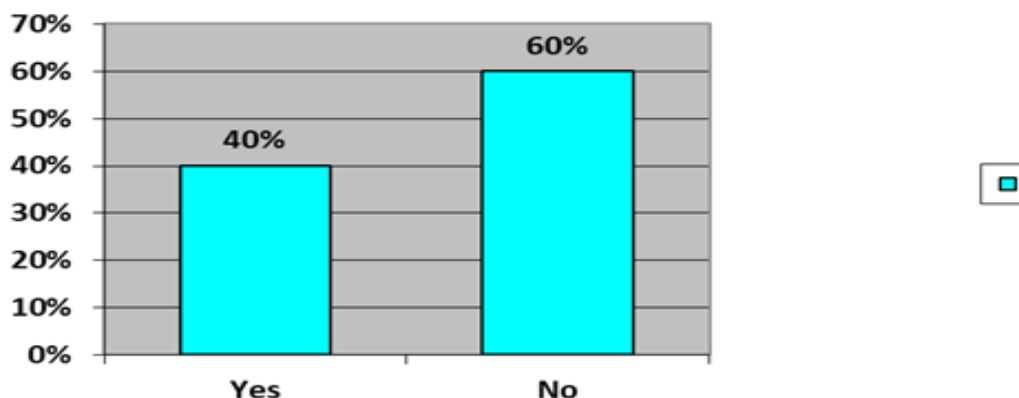
will get more appropriate responses cause they have knowledge of the Financial product and services in the market .

ANNUAL INCOME



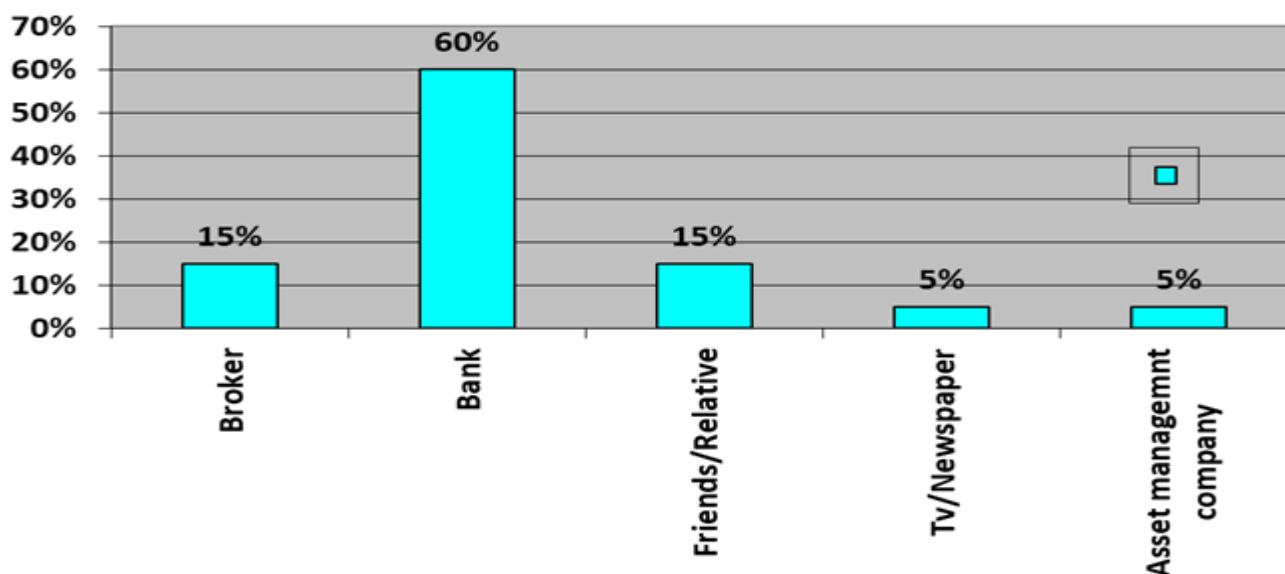
INTERPRETATION- This question will help out in knowing the fact that how much money they earn and subsequently they invest in financial instruments. As you can see 46% respondent are earning below rs 2.5 lac , 40% are earning rs 2.5- 5 lac , 10% are earning rs 5-8 lac and rest 4% are earning above rs 8 lac.

Q1. Are you aware of Mutual Funds?



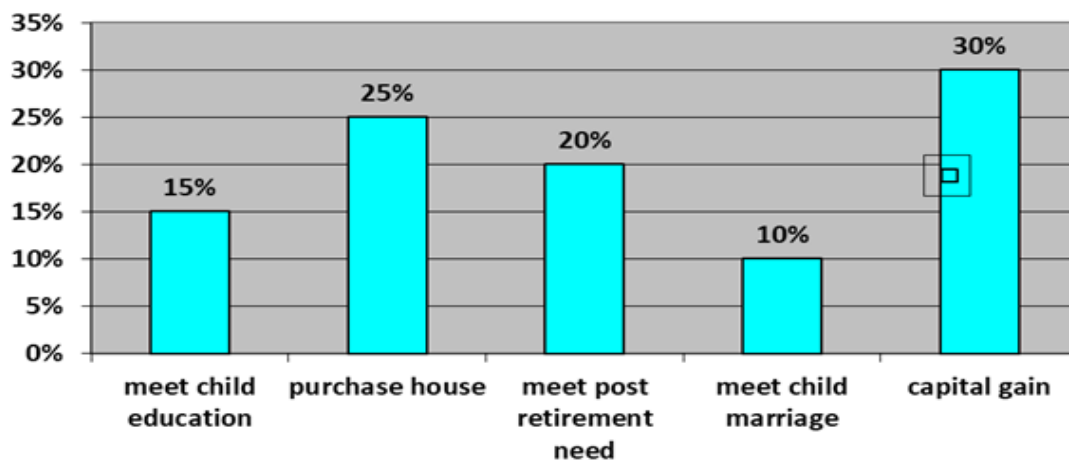
INTERPRETATION- Around 40% of the respondents invest in mutual funds whereas 60% still invest in other investment options the less investment is due to lack of knowledge .The mutual fund company must spread awareness among the people to get more investment.

Q2. From which source you came to know about mutual fund?



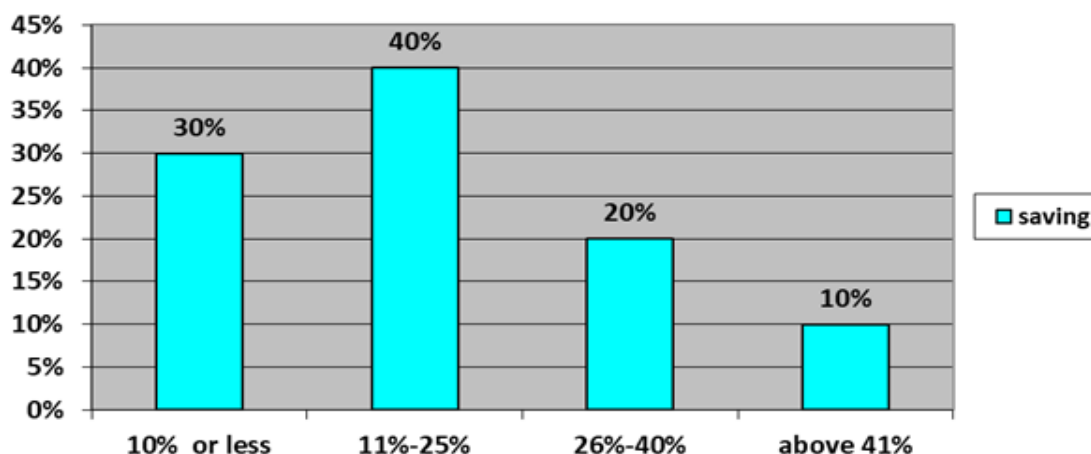
INTERPRETATION- Around 60% of the respondents came to know about mutual fund from bank and rest 40% came to know from friends, relative , broker, asset management company and tv/newspaper.

Q3. What is the primary goal of your investment?



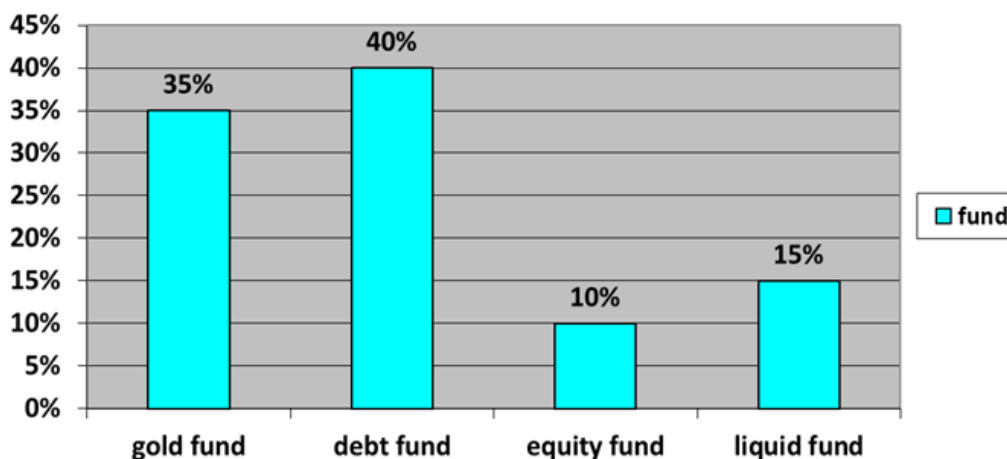
INTERPRETATION- According to the current scenario, the 30% respondent invest in mutual fund to get capital gain ,then 25% to buy a house and rest 45% invest in mutual fund to meet there child education/marriage and post retirement need.

Q4. What percent of your income do you save per year?



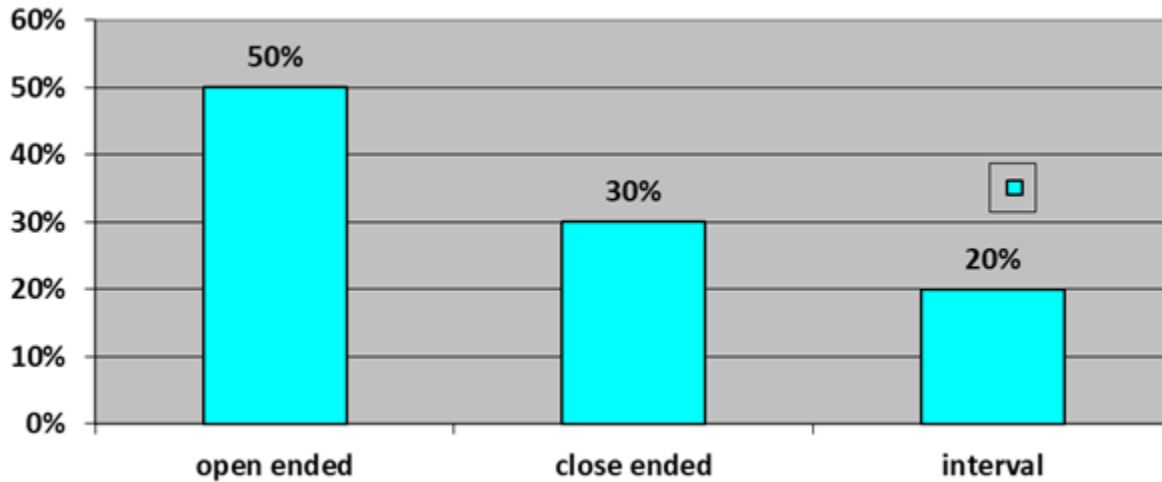
INTERPRETATION- 40% respondents prefer saving income per year 11%-25%, 30% respondent try to save 10% orless saving in a year ,20% respondent try to save 26%-40% in a year of there income which is earned by them and rest 10% are those respondent who try to save from there income 41%.

Q5. In which type of mutual funds do you prefer to invest?



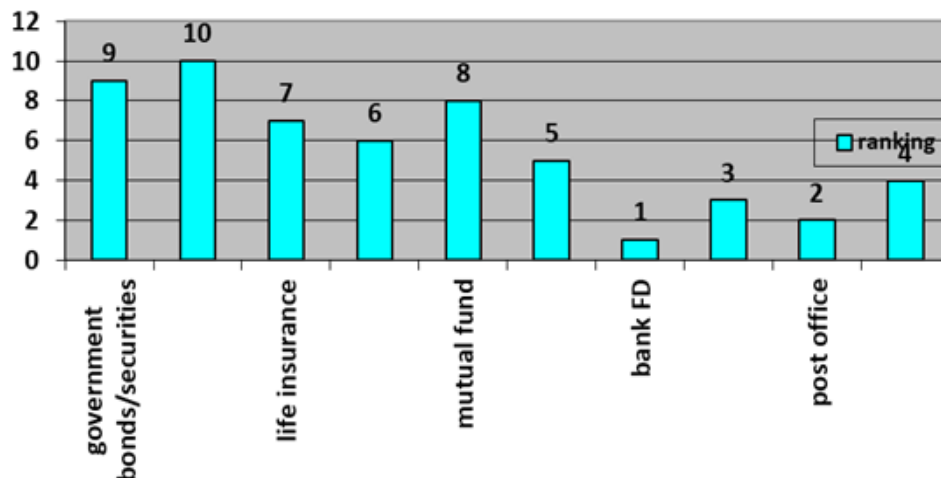
INTERPRETATION- Majority of the respondents prefers spending there investment in debt fund as it is secure with minimal risk 40% respondent invest in debt fund, 35% invest in gold fund ,15% invest in liquid fund and 10% invest in equity fund. Least investment made by respondent is equity because of the risk which it has but it also providereturn more than others and is always useful in long term benefit.

Q6. Which mutual fund have you purchased?



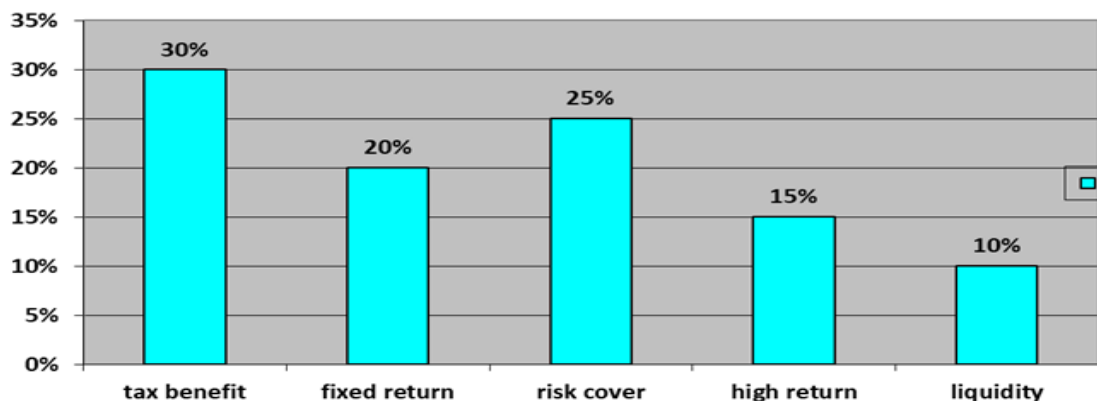
INTERPRETATION- Majority of the respondents that is 50% prefers Open ended scheme so that withdrawal is easy when needed banks ,30% prefer close ended for more return and saving that money and rest 20% invest in interval so that with time they can either invest money or withdraw it.

Q7. Rank the format of investment you would prefer to invest: (1 most imp & 10-least imp)



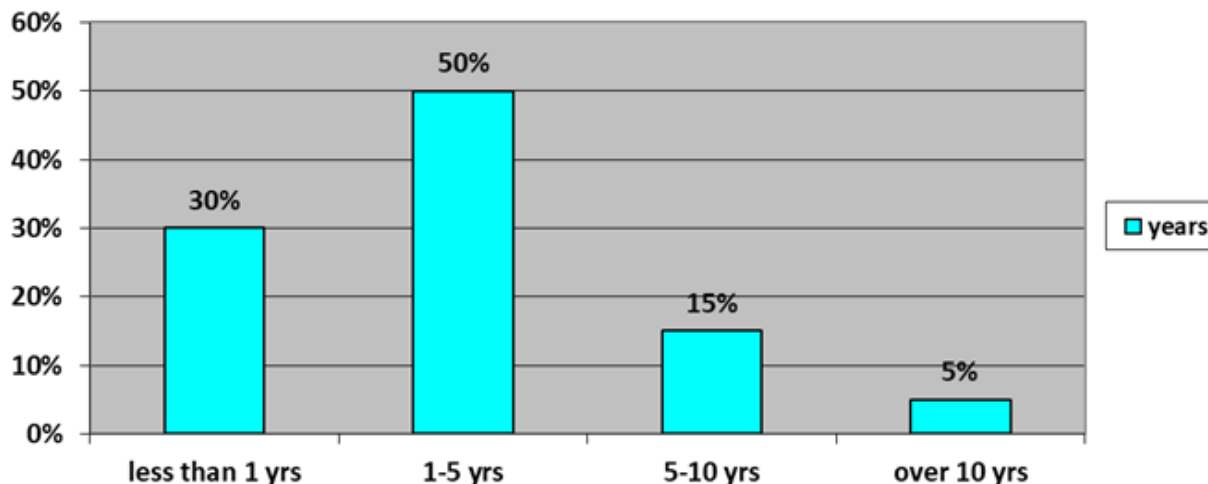
INTERPRETATION - Bank FD is ranked 1 in investment by respondent ,2 is post office scheme,3 is gold, 4 is public provident fund, 5 real estate, 6 is general insurance, 7 is life insurance, 8 is ranked mutual fund as due to the risk and also due to less awareness, 9 is government securities and bonds and 10 is stocks and shares.

Q8. What type of benefit do you want from your investment?



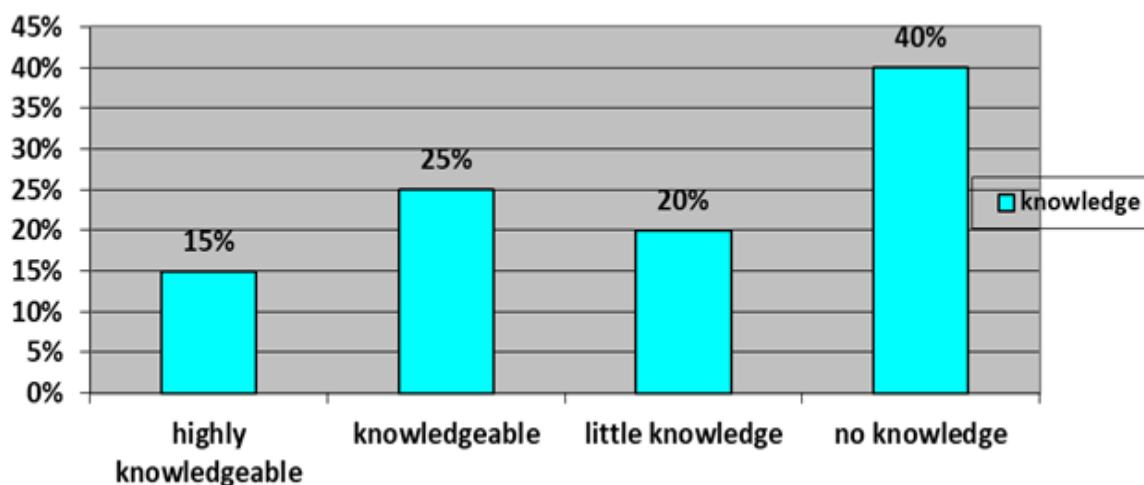
INTERPRETATION - Most of the respondent invest in mutual fund for availing tax benefit that is 30% of respondent do that ,25% invest to cover there risk, 20% invest in mutual fund to get fixed return , 15% invest for high return as there % is less because of the risk taken by them is less and10% spend for liquidity that is easily convertible into cash.

Q9. What is your investment horizon?



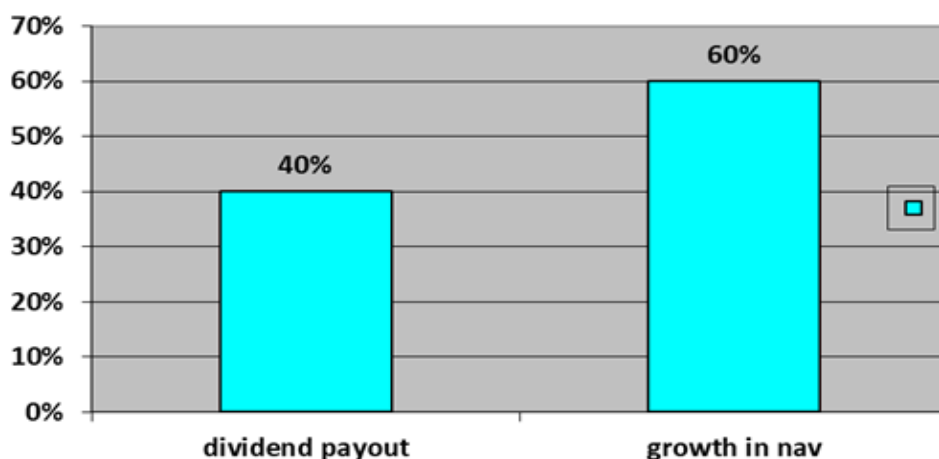
INTERPRETATION- Majority of the respondents that is 50% invest there money for 1-5 yrs,30% invest for less than 1 yrs rest 20 % only invest there money for above 5 yrs.

Q10. Describe your investment knowledge?



INTERPRETATION- The awareness level of respondents regarding mutual fund is less as 40% have no knowledge about mutual fund ,20% and 25% have little knowledge and knowledge about mutual fund that is having less knowledge and this is due to less awareness. Only 15% respondent are highly knowledgeable in mutual fund because of continous investment in it.

Q11. How would you like to receive the returns every year?



INTERPRETATION- 60% of the respondents would like to invest in mutual fund as a growth in nav and rest 40% would invest as dividend payout in mutual fund.

FINDINGS

- Investors are not ready to take risk for better return so often they keep their money either in saving account or fixed deposits to earn risk free return. Yet, youngsters who are in service industry using the instrument mutual fund for better return over risk.
- If we talk about reason behind investment in mutual fund then diversification of money and higher return are the top factors for those who invest where as respondents who do not invest in mutual fund because of lack of knowledge and lack of trust.
- Most of the respondents do not check the NAV (Net Asset Value) of schemes in a month not even a single time whereas few respondents use to go through details of various schemes 1-3 times in a month.
- Half of the respondents never think of investing through App launched by various Asset Management Companies where as remaining would think to invest later and few of them do invest using App of specific AMC's
- Promotional activities is still playing a key role of awareness regarding mutual fund because most of the investors got influence cause of the advertisement on television/print media, popups on websites and circulation of brochures, etc.

SUGGESTIONS

- Younger people aged less than 30 years will be a key new customer group into the future of digitalization, so making greater efforts with younger customers who show some interest in investing should pay off.
- Customers with graduate level education are easier to sell once they get aware regarding online investment and there is a large untapped market there to succeed.

LIMITATIONS

- The scope was of research was limited to city Kanpur.
- Time is the one constraint of the survey.
- Some of the persons were not so responsive.
- Possibility of error in data collection because of investors may have not given actual answers of my questionnaire.
- Sample size is limited to 50 respondents only so the sample size may not adequately represent the whole market.
- Lack of analysis of data.

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-
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A STUDY ON IMPACT OF TRAINING AND DEVELOPMENT ON EMPLOYEE'S PRODUCTIVITY AT SOCIETY MOTORS

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ABSTRACT

In Today's scenario every organization need to have a well-trained and experienced employee to perform their activity in well specified manner. The success and failure of any organization is dependent upon the quality of manpower. In any organization if current or potential job occupants are there to meet these requirements, Training is not important. Training and development play pivotal role in today's scenario it is helping common individual to change careers several times during their working lives. In India auto mobile sector is one of the emerging industry. This research tells about the impact of training and development program on employee performance. What are the ways we can identify the training need of any employee and how to know what kind of training he can go for? Training being in different aspect likes integrating it with culture of organization . The best and latest available trends in training method, the benefits which we can derive out of it. Development is integral part of training if employees are trained properly and efficiently it leads to development of that them and the company for whom they are working. In this research we discussed about development of employees, how to identify the needs, and after developing how to develop executive skill to enhance their knowledge. Here we also find out what kind of training should be given to individuals or employee for the purpose of the development of employee or organisation for the development of auto-mobile sector.

Keywords: On the Job Training, Off the Job Training, Society Motors, Productivity, Employee Development And Employee Productivity.

1.0 INTRODUCTION

In the changing phase of the market, all organizations have many opportunities to grab and many challenges to meet. Due to such environment, even in the tough competition the dynamic organizations are surviving .due to facing these challenges, management have great pressure on their shoulder. As per the requirement of the job it becomes responsibility of the management to make necessary changes . To survive in the competitive environment and to meet the requirements, the management needs to make amendments in their policies, rules and regulations. The organizations face a lot of pressure in the competence for a talented work force, for constantly improving the production methods, entrants of advanced technology and for the employees who are inclined to achieve work life balance. The success of any organization depends upon the quality of the work force, but in order to maintain the quality of the work force and to survive the business and becoming a successful player in the market; training work as a important tool while gaining competitive advantages . Training is considered to be a parameter for sharpening the ability of the workforce for accomplishing the organizational objectives. Thus essential goals for the business can be achieved through good training program. Hence, training is important for giving a dynamic aspect to the organization. A high degree of quality of work life in the organization results in increased profits, higher employments and accentuating demands in the market. Quality of work life concerns with the needs, requirement, working environment and job design of the employees at work environment. The focus of Human Resource Development is on development of the superior workforce which helps in the success of organization . All employees are needed to be valued and they should apply collective efforts in the labor market every time. This can be achieved through the proper implementation of employee training and development programs. It increases the ability of the employee to perform the job efficiently and with excellence.

2.0 LITERATURE REVIEW

One major area of the Human Resource Management function of particular relevance to the effective use of human resources is training and development [2]. Few people these days would argue on the importance of training as a strong influence on the success of an organization. Employees are a crucial and expensive resource [3]. In order to sustain effective and efficient performance, it is important that employees make their significant contribution to the aims and goals of the organizations. The importance of training has been recognized as a central role of management by research studies. For instance, Jehanzeb and Beshir (2013), confer one contribution of an organization's manager is to give others vision and ability to perform [13]. The general movement towards flexible structures of organizations, downsizing and the nature of management moving towards the devolution of power to the workforce give increasing emphasis to an environment of support

.Training is necessary to ensure an adequate supply of staff that is technically and A. M. Asfaw et al. 190 socially competent and capable of development of career into specialist departments or management positions. therefore there is a continual need for the process of development of staff and training fulfills an important part of this process. Training should be viewed therefore as an integral part of the process of total quality management

3.0 OBJECTIVE OF THE RESEARCH

- To study the training and development process of society motors.
- Different methods of training and development programs conducted in society motors.
- To identify whether training and development tailored towards job needs can motivate staff to higher performance.
- To find out the relationship between training and development and achievements of organizational goal.
- To know the satisfaction level of employees with regards to training.

4.0 RESEARCH METHODOLOGY

The research was carried out in Society Motors between 6 June 2017 to 31 July 2017 in behalf of Tata Motors. The research was carried out with the help of structured questionnaire. The questionnaire was designed in such a way that each question leads to other question. The questionnaire was filled by the Employee of Society Motors.

Type of research: Exploratory research

4.1 Research Approach

This research is done in order to know the impact of training and development on the productivity of employee.

4.2 Research instrument

Structured questionnaire was used in the research as research instrument.

4.3 Type of questions

A sample of the questionnaire used is included in Section 1. In the first part (Q4), open ended questions.

In the Section II (Q.15), closed ended questions were asked. Eleven randomized statements; both negatively and positively worded, describing various considerations by employee towards training and development on the basis of Likert scale.

4.4 Sample size 130

Area: Society Motors Kanpur

4.5 Research Design

The method intended to be used for evaluating criteria involve the ranking of all attributes together. This requires respondents to consider all attributes time, which is impossible if a visual aid showing all attributes is not presented to respondents. For this reason, the face-to-face interview is preferred over telephone survey and mail survey.

4.6 Sample Design

Convenience sampling was used. Researchers tried to approach, as often as possible, solitary individuals. Here the employee of the Society motors is to be targeted for the purpose of determining the impact of training and development to the employee of society on.

4.7 Questionnaire design

To enhance the employee skills and productivity. This research should be carried on the basis of following factors:

- Working efficiency.
- Productivity.
- Job knowledge.
- Achievement of target on time.
- Reduction and errors of mistake.

These attributes were identified from the exploratory research and have been refined after the pretest. In the exploratory research, main 5 attributes were identified.

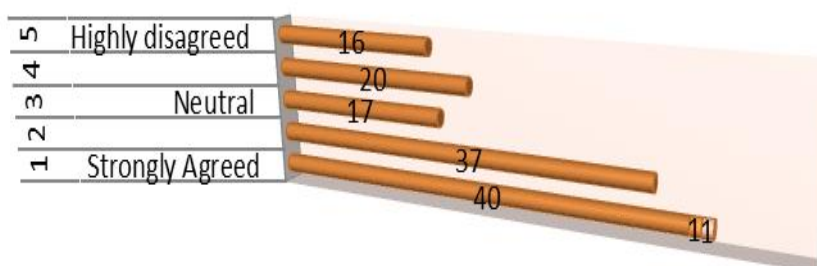
ANALYSIS AND INTERPRETATION OF DATA

Table – 1: Demographical Profile of the Respondents

PARTICULAR		No of Respondent	% of Respondent
Age of Respondent	20-30	70	54
	20-30	55	42
	30-40	3	2
	Above 40	2	2
	Total	130	100
Gender of Respondent	Male	89	68
	Female	41	32
	Total	130	100
Education level of the respondent	High school	29	22
	Secondary	33	25
	Graduate	45	35
	P G	13	10
	Diploma	10	8
	Total	130	100
Occupation of the respondent	Student	37	37
	House wife	4	4
	Employed	48	48
	Entrepreneur	9	9
	Retired person	2	2
	Total	100	100
No of year experience in this organization	Less than 3 year	61	46
	3-5 year	38	29
	More than 5 year	31	23
	Total	130	100

QUESTION 1

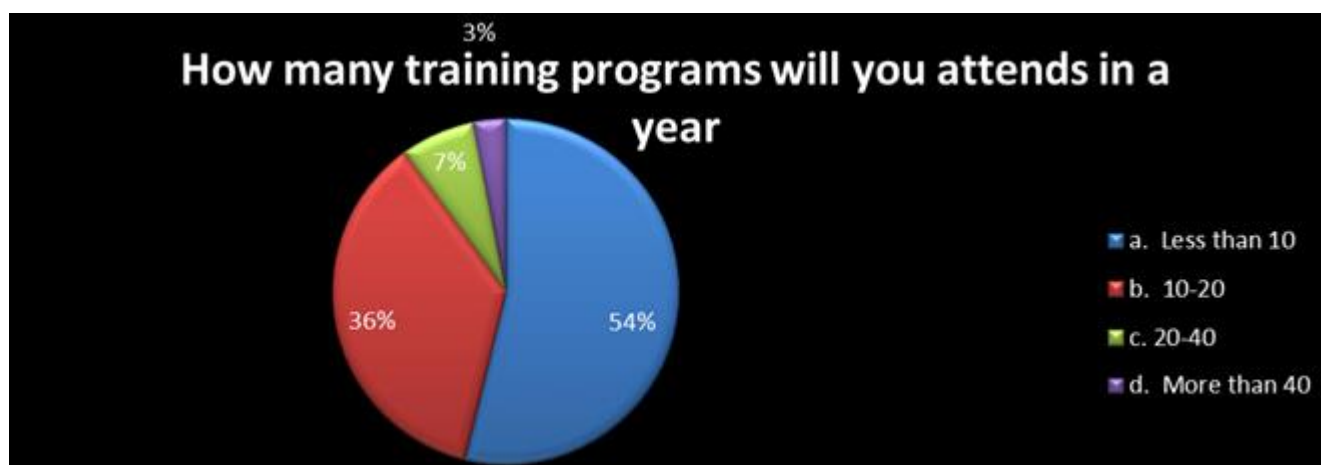
Q-1	Your Organization considers training as a part of organizational strategy. Do you agree with this statement?	
Sr. No.	Attribute	Total
1	Strongly Agreed	40
2	Agreed	37
3	Neutral	17
4	Disagreed	20
5	Highly disagreed	16
	TOTAL	130



Interpretation ; from the analysis of the data it should be analysis that 16 respondent are highly disagree from the strategy of the organization through which they provide training to employee, 20 respondent are disagreed, 17 are not agree not disagree, 37 respondent are agreed , and 40 respondent are strongly agree.

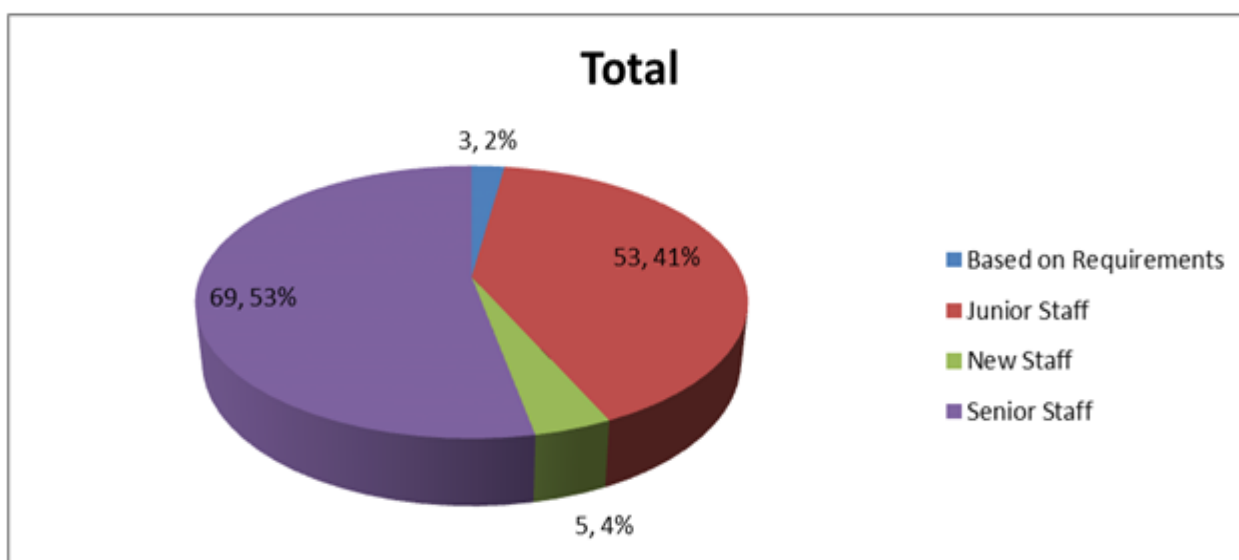
QUESTION-2

Q2.	How many training programs will you attend in a year?	
Sr. No.	Attribute	Total
a.	Less than 10	70
b.	10-20	47
c.	20-40	9
d.	More than 40	4



Interpretation of the data: here 3% responds more than a year to attend a training program in a year.7% responds for 20-40 attend the training a program in a year.36% responds for 10-20 attend a training program in a year and 54 % responded for less than 10 to attend a training program in a year.

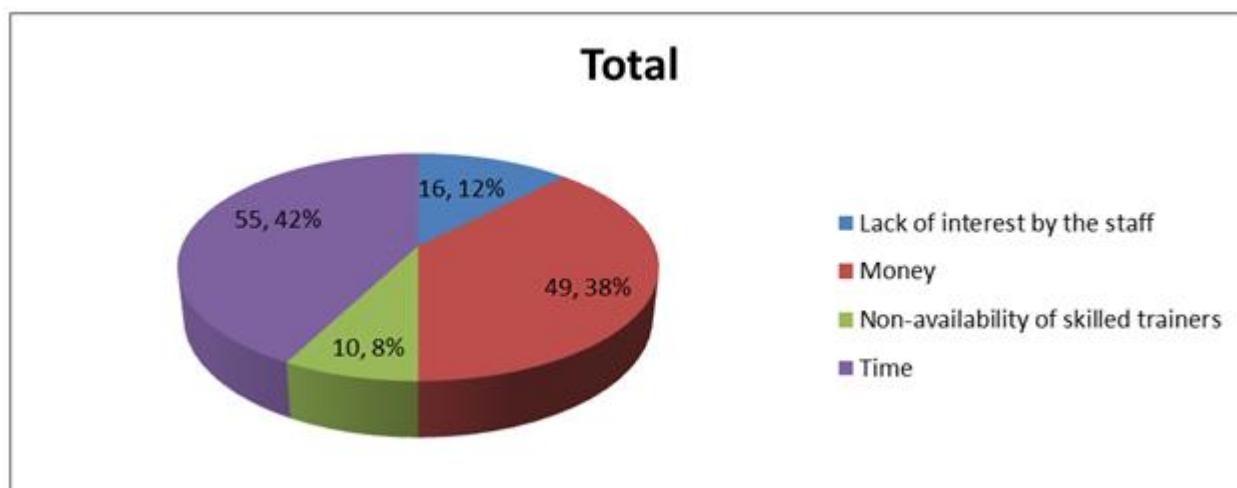
Q3.	To whom the training is given more in your organization?	
Sr. No.	Attribute	Total
a	Senior Staff	69
b	Junior Staff	53
c	New Staff	5
d	Based on Requirements	3



INTRPRETATION: here, 3% based on requirements, 5% for new staff, 53% for junior staff, 69% for senior staff to provide a training for an organization.

QUESTION 4

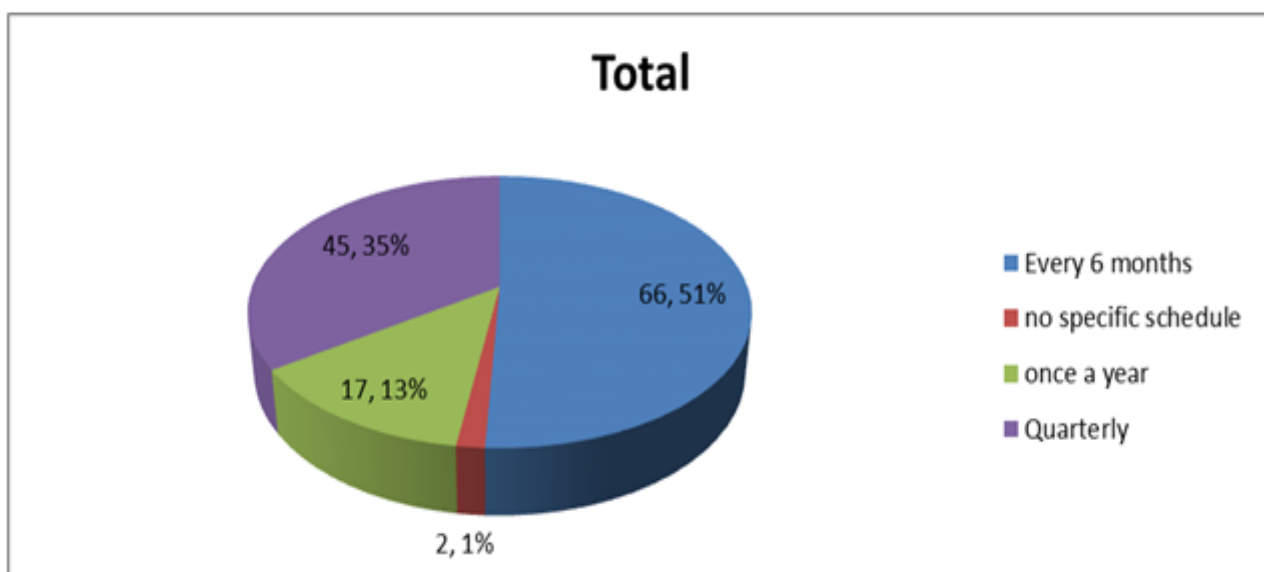
Q4.	What are all important barriers to training and development in your organization?	
Sr. No.	Attribute	Total
a	Time	55
b	Money	49
c	Lack of interest by the staff	16
d	Non-availability of skilled trainers	10



INTERPRETATION- here, 10 % are non – availability of skilled trainers, 16 % are lack of interest by the staff, 49 % for the money and 55% for time. These are the barriers for training and development in the organization.

QUESTION 5

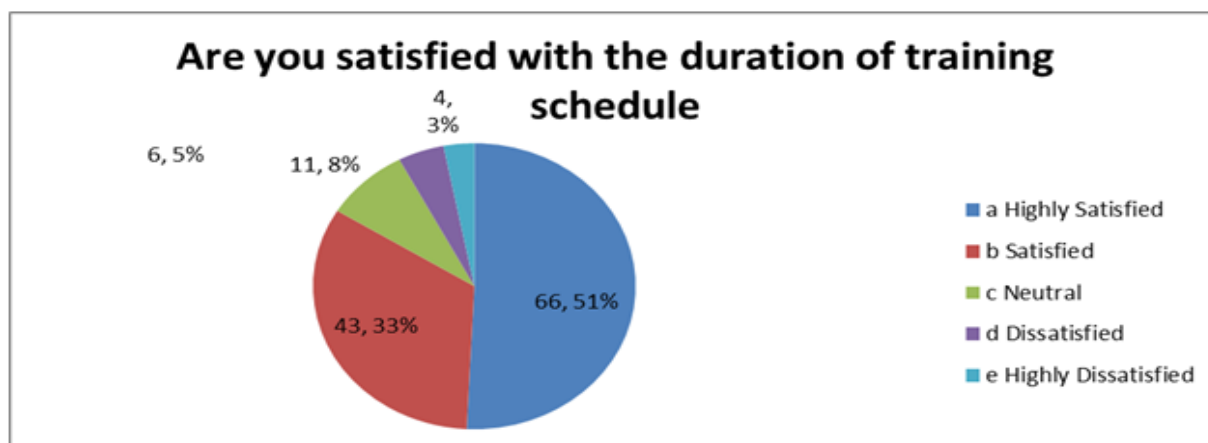
Q5.	What is the schedule of training program in your organization?	
Sr. No.	Attribute	Total
a	Quarterly	45
b	Every 6 months	66
c	once a year	17
d	no specific schedule	2



INTERPRETATION- here 2 % for no specific schedule, 17% once a year, 45% for quarterly, 66 % for every six months in a year. These are scheduled of the training program in an organization.

QUESTION 6

Q6.	Are you satisfied with the duration of training schedule?	
Sr. No.	Attribute	Total
a	Highly Satisfied	66
b	Satisfied	43
c	Neutral	11
d	Dissatisfied	6
e	Highly Dissatisfied	4

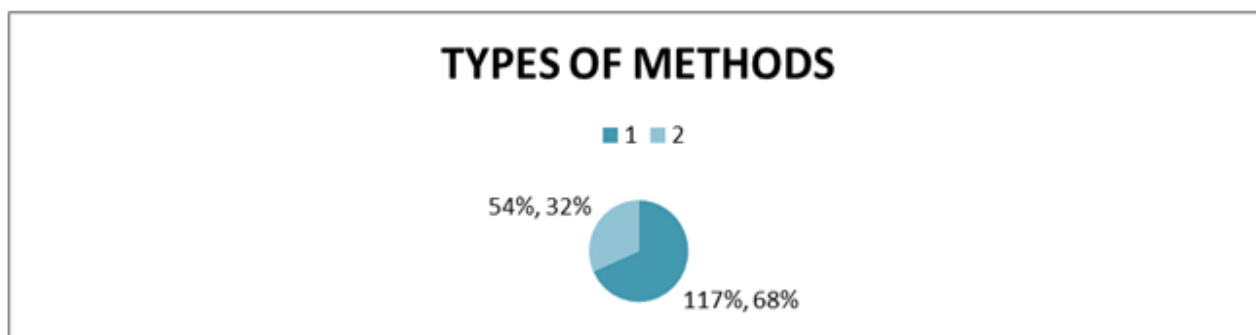


INTERPRETATION- here, 3% are highly dissatisfied for the duration of training schedule, 5 % are dissatisfied for the duration of training scheduled, 8 % are neutral for the duration of training scheduled, 33 % are satisfied the duration of training scheduled and 51% are highly satisfied with the duration of training scheduled.

QUESTION 7

Q7- Which training method is used to train the employees? If your option [a] then go with the Q8, if [b] then go with the Q9.

Sr. no.	Attribute	Total
a	On the job method	89
b	Off the job method	41

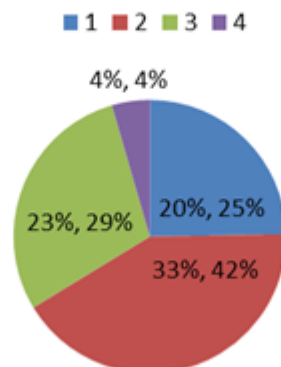


Interpretation: here, 89 respondents respond for 'on the job method' and 41 respondents respond for 'off the job method'.

QUESTION 8

Q8.	Which training program is used in the 'on the job method' in your organization?	
Sr. No.	Attribute	Total
A	Coaching	22
B	Internship	37
C	Discussions	26
D	Job Rotation	4

ON THE JOB METHOD

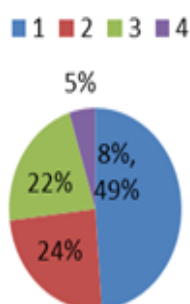


Interpretation: here, 89 respondents responds out of 130 respondents for the 'on the job method'. 22 responds for coaching, 37 responds for internship, 26 responds for discussion and 4 responds for job rotation.

QUESTION 9

Q9.	Which training program is used in 'off the job method' in your organization?	
Sr. No.	Attribute	Total
A	Conferences	20
B	Case study method	10
C	Lectures	9
D	Programmed instructions	2

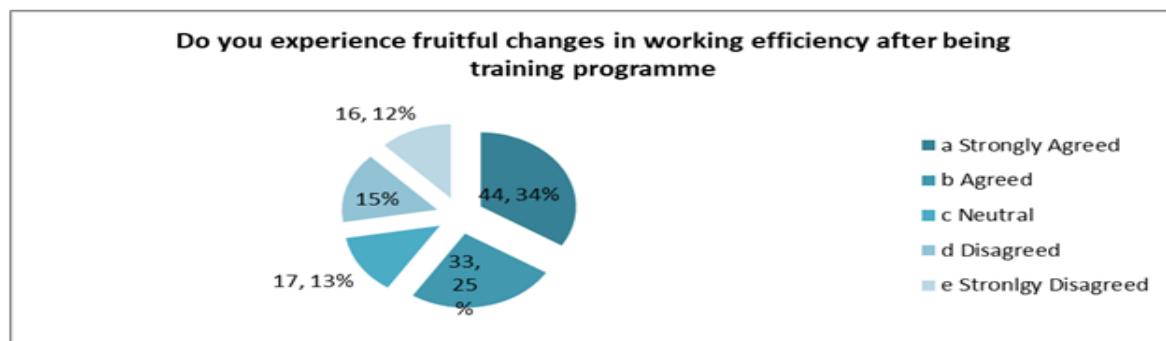
OFF THE JOB METHOD



Interpretation: here, 41 respondents responds out of 130 for the 'off the job method'. 20 responds for conferences, 10 responds for case study method, 9 responds for lectures and 2 responds for programmed instruction.

QUESTION 10

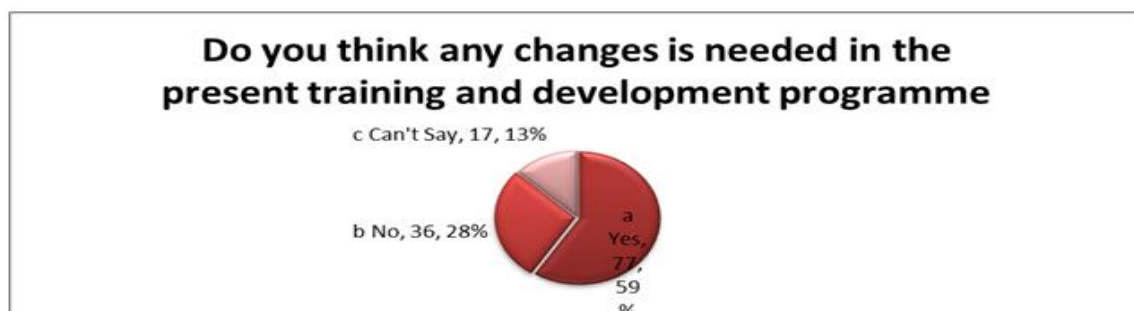
Q10	Do you experience fruitful changes in working efficiency after being training program?	
Sr. No.	Attribute	Total
A	Strongly Agreed	44
B	Agreed	33
C	Neutral	17
D	Disagreed	20
E	Strongly Disagreed	16



Interpretation: here, 44 responds for strongly agreed, 33 responds for agreed, 17 responds for neutral , 20 responds for disagreed and 16 responds for strongly disagreed for the experience fruitful changes in working efficiency after being training program.

QUESTION 11

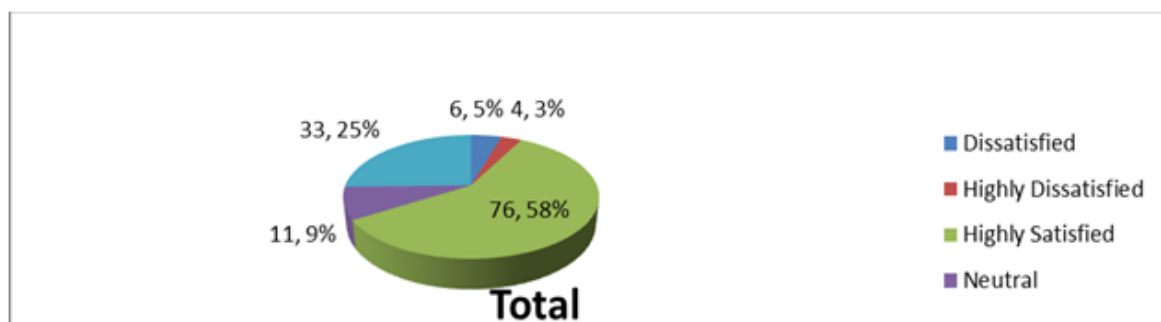
Q11	Do you think any changes is needed in the present training and development program?	
Sr. No.	Attribute	Total
A	Yes	77
B	No	36
C	Can't Say	17



Interpretation: here, 77 responds for yes , 36 responds for no and 17 responds for can't say for any changes is needed in the present training and development program.

QUESTION 12

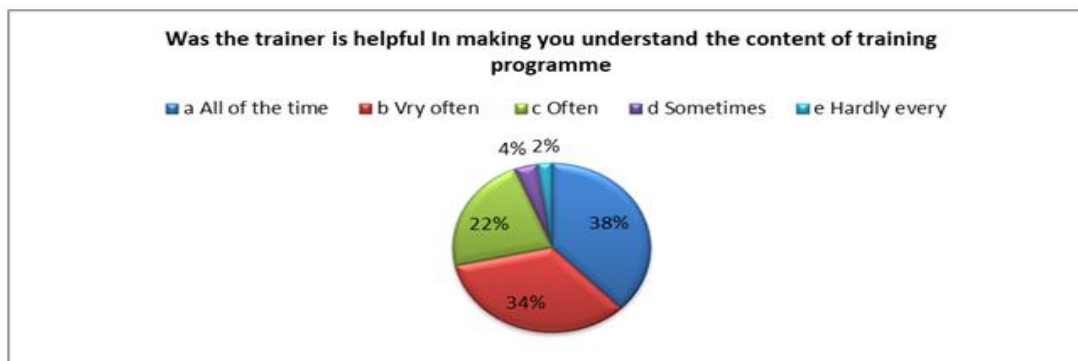
Q12	Are you satisfied with the content of training Program according to the job requirement?	
Sr. No.	Attribute	Total
A	Highly Satisfied	76
B	Satisfied	33
C	Neutral	11
D	Dissatisfied	6
E	Highly Dissatisfied	4



Interpretation: here, 76 are highly satisfied, 33 are satisfied, 11 are neutral, 6 are dissatisfied and 4 are highly dissatisfied with the content of training program according to the job requirements.

QUESTION 13

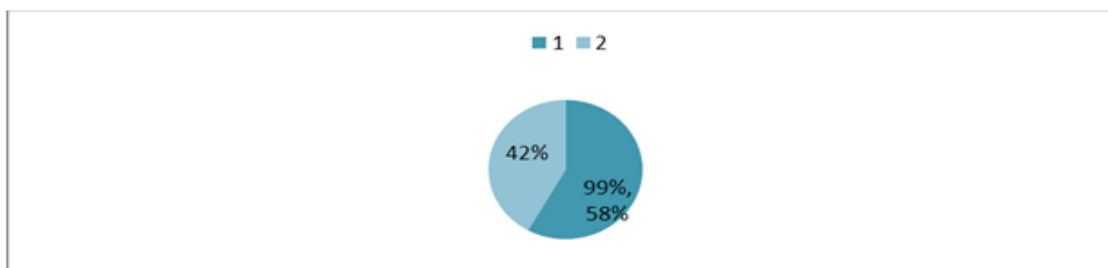
Q13	Was the trainer is helpful In making you understand the content of training program?	
Sr. No.	Attribute	Total
a	All of the time	49
b	Very often	44
c	Often	29
d	Sometimes	5
e	Hardly every	3



Interpretation: here, 49 responds for all of time, 44 responds for very often, 29 responds for often, 5 responds for sometimes and 3 responds for hardly ever for the trainer is helpful in making understand the content of training program.

QUESTION 14

Q 14- Are you satisfied with the training procedure?		
Sr. No.	Attribute	Total
a	yes	76
b	no	54



Interpretation: here, 76 respond for yes and 54 respond for no for the satisfaction with the training procedure.

QUESTION 15

Q 15- What changes have you seen in your working style after undergoing in the training program?							
S.No.	Parameter	Highly satisfied	Satisfied	Neutral	Dissatisfied	Highly Dissatisfied	TOTAL
A	Working efficiency	7	9	6	7	6	18
B	Productivity	8	6	7	15	5	22
C	Job knowledge	9	2	9	3	3	34
D	Achievements of target on time	15	7	13	7	9	33
E	Hardly ever	0	0	15	8	15	10
F	Reductions of errors and mistakes	6	5	8	8	14	15

Q15- What changes have you seen in your working style after undergoing in the training program?



Interpretation: here, 18 respond for working efficiency, 22 respond for productivity, 34 respond for job knowledge, 33 respond for achievements of targets on time, 10 respond for hardly ever and 15 responds for reductions errors and mistakes. Respondents respond on different parameter for the changes they have seen in their working styles after undergoing in the training program.

FINDINGS

- From the analysis of the data it should be analysis that 54% of the employee belong to the age group 20-30 of the total no of the employee.
- Most of the employee in Tata motors is male which are 89 out of the total no of the employee.
- 97 employee out of total employee having marital status single
- 35% of the employee in the Tata motors having qualification graduate and 25% of the employee having qualification intermediate.
- In Tata motors most of the employee having less than 3 year experience.
- 40 employees are strongly agreed to the statement that the Organization considers training as a part of organizational strategy.
- 70 employees of the Tata motors of the company attend less than 10 training program in a year.
- Most of the training program is given to the senior staff of the company.
- Time is the most important barrier for the development of the organization.
- The schedule of training program in Tata motors is every six month.
- 66 employee of the company are satisfied with the training schedule of the company.
- Most of the employee of the Tata motors prefers on the job training methods.
- Internship is the most on the job training methods for the organization.
- In other case off the job training methods is the most important for training.
- 44 of the employee strongly agree with the methods of the training program which help in increasing the work efficiency of the organization of the company.
- 76 of the employee out of total employee are satisfied with the content of training Program according to the job requirement

SUGGESTIONS

- Along with training programs organization should provide some other motivational programs.
- Implement training institutions at near the organizations.
- Evaluate cost of training and its result of training.
- Frame the training programs chart and proper care should be taken while conducting the training.
- A proper performance appraisal system should be adopted.

- In my opinion if the above suggestions are followed total training programs.
- Feedback must be collected from the entire trainer

LIMITATIONS

- In view of the limited time available for the study, only the Training and Development process could be studied.
- The sample size is too small to reflect the opinion of the whole organization.
- The answers given by the respondents have to be believed and have to be taken for granted as truly reflecting their perception
 - The respondents were not free while giving the answers.
 - Sample should have increased if the time was more.
 - Cost and time was limited for the research.

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CONSUMER PERCEPTION TOWARDS MOBILE WALLET

Rashi Saxena¹ and Sweta Chaudhary²Assistant Professor¹ and Student², STEP - HBTI, Kanpur**ABSTRACT**

Today's world is engrossed with digital technology and trends, from daily bread to business, home to office implementation of electronic gadgets have become the part and parcel of the life. Dealing of financial issues with liquid cash is conquered with virtual cash. All the basic payment transactions of daily life can be completed on a single click in other words mobile payment system (i.e.) "MOBILE WALLET", has changed the worlds payments system by providing multiple digital services right from utility payment to e-tailing. In India, the growing adoption of Smartphone's and mobile internet has given a boost to the mobile wallet industry in India. Players like Paytm, Mobikwik, Freecharge, Oxigen, etc have taken Charge towards the payment system.

The study provides the insights of the consumer's behavior and preferences towards M-wallets. Findings reveals that security, necessity, time, satisfaction of the services used are the factors which influences the consumers towards M-wallets as the respondents also feel that they saves time and has made life easier. Moreover the study identified the hurdles that consumers face when they want to adopt M-wallet as their mode of payment, the study witnessed that security issue is the prime concern of the respondents.

M-wallets play a significant role in day to day life with the increase in the use of smart phones and access to internet.

INTRODUCTION

In today-world, smartphone has become essential part of daily life. As it has become more rational, the number of smartphone users has increased radically. "India will exceed 200 million smartphone users, topping the US as the world's second largest smartphone market by the end of 2016 due to increasing penetration of affordable smart mobile devices in the country," the US-based research firm said in a report, india's mobile wallet market could reach \$6.6billion by 2020.

Along with smartphone production, a number of services have been generated to utilize the possible functions of smartphones. Smartphones are used as communication devices, as socialized tool, entertainment tool, internet access tool, and even payment tool. Due to technology, mobile users can nowadays use their smartphones to make money transaction or payment by using applications installed in the phone. Besides payments, people can also store receipts, coupons, business cards, bills... in their smartphones. When smartphones can function as leather wallets, it is called "Digital Wallet" or widely known as "Mobile Wallet".

Consider the following scenario: "A person is at the supermarket checkout line. He fumbles through his wallet to find credit card X, rejecting many other cards in the process, to pay for the transaction. He is now in a state of panic; he has to remember which cards he had in his wallet and then manually cancel those cards."

The above scenario highlights problems with a physical wallet; namely that finding particular items is time consuming, and finding a lost wallet is extremely hard. In addition, managing multiple monetary implements is not easy. Monetary implements include cash, debit and credit cards, and stored value cards while identification cards and driver's license.

A solution would be to replace the physical wallet with a digital wallet integrated into an existing mobile device like a cell phone. This digital wallet would allow the owner to carry multiple monetary and identification implements. These implements could be quickly searched by name, type, or other keywords. In addition, with the right software, these implements could be managed far more effectively.

However, the idea of a digital wallet is not new. Indeed, Japan, America, Sweden and south korea have already rolled out cell phone-based digital wallet solutions. Consumers in those countries can use their cell phones to pay for groceries, order drinks from a vending machine, and even identify themselves at airline ticketing counters.

ABOUT M-WALLET PROVIDERS**Paytm**

Paytm is one of the fast growing companies in the mobile wallet space in India. Paytm received the mobile wallet service license from the Reserve Bank of India last year, it aims to cross the more than 100-million users mark by 2016. With its mobile first strategy, Paytm does more than 30 million orders of various digital and

physical goods every month. Launched in 2014, Paytm wallet is India's dominating mobile payment service platform.

Mobikwik

Mobikwik Started in 2009, The Mobikwik Wallet claims to enable users to pay in a flash for their recurring mobile recharge, bill payments and online purchases on popular e-commerce websites (apps). The user can make payments using mobikwik for eBay, Snapdeal, Shopclues, MakeMyTrip, redBus, BookMyShow, Domino's Pizza, Fashion and you, American Swan, Abhibus, Purplle, HomeShop18, Naaptol, Pepperfry, Yepme and Infibeam.

Oxigen

Oxigen is one of the oldest players in the payment market while the company jumped into the mobile wallet space just last year. With its service, people can share money with their friends and family. It allows the users to use their wallet to recharge their mobile phones, pay bills and shop across a large number of online merchants.

Citrus

Citrus pay another key player in the mobile wallet space, which has quickly garnered attention from users in India. It claims to have completed transactions on its platform to the tune of 1bn dollars. In addition the company has attracted funding from investors such as Sequoia Capital, Beenos, and E-Context Asia, among others.

Freecharge

Freecharge founded in 2010, Free Charge claims to be strong in the mobile wallet space with 20 million registered users. It is one of the biggest mobile recharge platforms. The company was acquired by Snapdeal for \$400.

Other M-wallet service provider includes pay u money which offers a one percent discount on every purchase made using their wallets, Novapay which focuses on India's semi-urban and rural market, Momoe which is focused for cashless payments in city's retail outlets, Airtel money, Vodafone-m pesa, chillr, m-rupee, ikaaz, Lime, ICICI pockets etc.

Mobile Wallet is an advance alternative to physical wallet. It acts as the point of interaction between the users & merchants. Mobile wallet is a very young concept in India.

PURPOSE OF USING MOBILE-WALLET SERVICES

As a substitute for the traditional wallet, following are the uses of M-wallet:

- **Recharge and Broadband top-ups**

Instead of going to a shop in order pay for top-ups. M-wallet enables Telco's to allow mobile wallet users to quickly and efficiently recharge prepaid account of a mobile phone user via mobile phone anytime, anywhere.

- **Instant money transfer to any bank**

It offers the customers the flexibility and convenience of managing their funds via mobile devices by integrating their bank account with M-wallet. It is convenient and a secured alternative, which allows the consumers to flexibly transfer their funds from bank account to M-wallet and vice versa without having to visit their bank branch. Consumers need to register with their bank and integrate their M-wallet with the bank account to avail this service.

- **Online shopping and merchant payments**

It allows the users to make payments for all kinds of goods and services in an easy way via mobile wallet. The payment platform provides a real-time authorization and enables secure mobile commerce and payment acceptance for both in-store and online.

- **Payment for booking transport facilities**

Transportation facilities provide the users, personal mobility and freedom for users from every walk of life.

- **Utility bill payments**

It helps the household or office to pay for electricity, water, gas, telephone etc on a single click.

ADVANTAGES OF MOBILE-WALLETS**Services**

- One's wallet can be snatched, misplaced or pick pocketed, but mobile wallet cannot be, though there is a chance of someone stealing one's a mobile.

- If the bill is of Rs 199/- or Rs 235/-, one will not have to run around asking for change. It allows paying on a single tap.
- One need not fill in card numbers and passwords every time, they can link their credit cards, debit cards and bank accounts and pay immediately without any hassle to enter the details each time.
- When one makes a payment through a debit card or credit card, one is disclosing their confidential bank data on the merchant's site or establishment, it can lead to unwanted security issues but by using M-wallet, one can restrict the exposure of confidential data.
- Massive rewards in the forms of discounts & cash backs.

DISADVANTAGES OF MOBILE-WALLET SERVICES

- Only with a smart phone & speedy internet connection one can use such services.
- More than the connectivity, security is an major issue.
- Dismal battery back-up of smart phones one can never be sure whether the phone will be alive even for that one tap payment.

REVIEW OF LITERATURE

Sanaz Zarrin Kafsh (2015), made a study on "Developing consumer Adoption Model on mobile wallet in Canada", by taking a sample of 530 respondents through convenience sampling. data. The focus of the study was to identify the factors that influence the consumer's adoption of mobile wallets

Ngoc Doan (2014), conducted a study on "Consumer adoption in Mobile wallet (A study of consumers in Finland)", this study was undertaken to understand about the consumer adoption status of mobile wallet with research area limited in Finland. It also examines the market situation of mobile consumers toward mobile wallet. The study states that the adoption of M-wallet among consumers in Finland is only at the beginning stage & the success of M-wallets depends on the marketing strategies of M-wallet companies as well as the financial policy makers in Finland.

SIGNIFICANCE OF THE STUDY

As M-wallet is surging on an account of growing online payment transactions in INDIA, this study undertakes to give an insight about M-wallets payment gateway services. The study helps in understanding the company preference of the users with regard to M-wallets. It helps us to know the kind of services used by the users, which are provided by the M-wallet payment gateway services providers. The study also aims to find the factors influencing the perception of the consumers towards M-wallets.

OBJECTIVES OF THE STUDY

1. To find out the awareness and preferences of the users towards M-wallet service providers.
2. To study the services provided by the M-wallet providers and the services used by the M-wallet users.
3. To identify the impact of demographic shift towards 'M-wallet'.
4. To study the growth of M-wallet payment gateway services.
5. To study the risk and challenges faced by consumers is use of digital wallet.

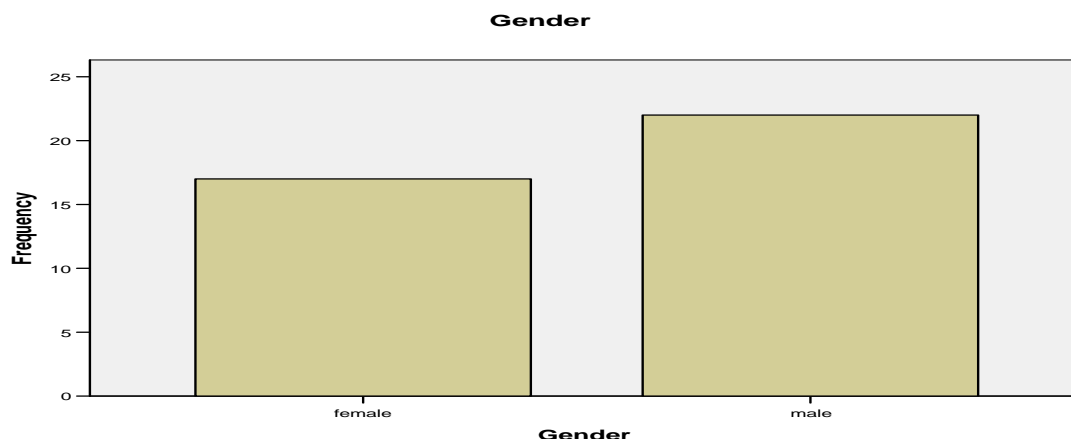
RESEARCH METHODOLOGY

Present study is exploratory in nature, and mainly based on primary data. A questionnaire was prepared and administered to 40 respondents to gauge the awareness of Mobile wallet amongst customer. The study used random sampling method to administer the questionnaire and sample area was Kanpur city. Apart from questionnaire, few responses were also collected through one to one interview with each of sample of respondents. Such responses were thoroughly analyzed and conclusions have been drawn based on both the responses.

DATA ANALYSIS AND INTERPRETATION

- Gender:- male/female

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	female	18	43.6	43.6	43.6
	Male	22	56.4	56.4	100.0
	Total	40	100.0	100.0	



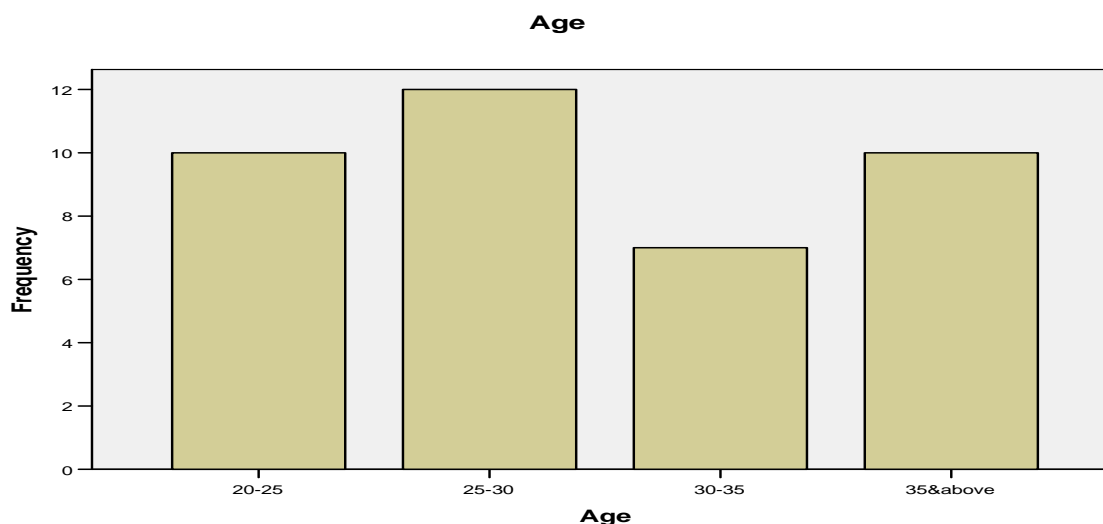
Interpretation:- out of 40 respondents 18 were female and 22 were male .

- AGE :- A) 20-25 B) 25-30 C) 30-35 D)35 AND ABOVE

Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	20-25	10	25.6	25.6	25.6
	25-30	12	30.8	30.8	56.4
	30-35	8	17.9	17.9	74.4
	35&above	10	25.6	25.6	100.0
	Total	40	100.0	100.0	

Enter it the age group

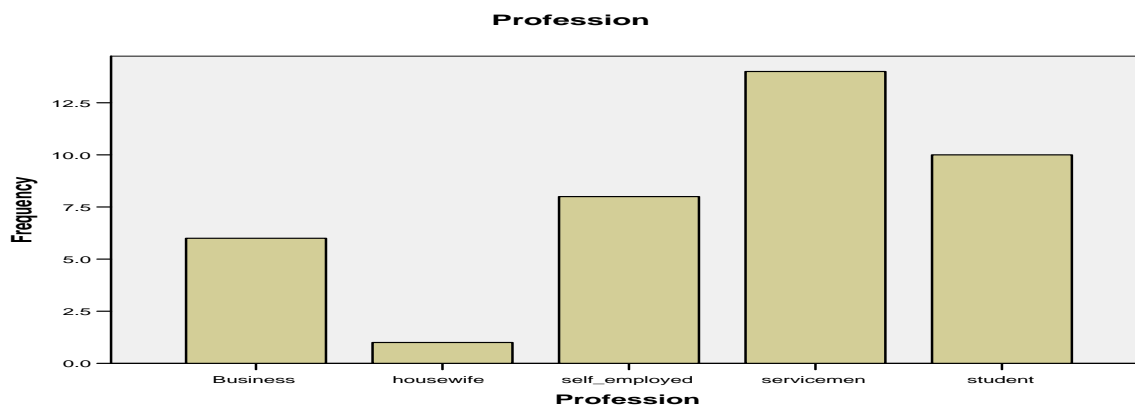


Interpretation : 10 respondent belong to age group 20-25, 12 respondent are belong to the age group 25-30, 8 belong to the age group 30-35 , and 10 respondent belong to 35 and above .

- 3 .PROFESSION: A) STUDENT B) SERVICEMEN C) SELF EMPLOYED D) BUSINESS

Profession

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Business	6	15.4	15.4	15.4
	Housewife	1	2.6	2.6	17.9
	self_employed	8	20.5	20.5	38.5
	Servicemen	14	35.9	35.9	74.4
	Student	10	25.6	25.6	100.0
	Total	39	100.0	100.0	

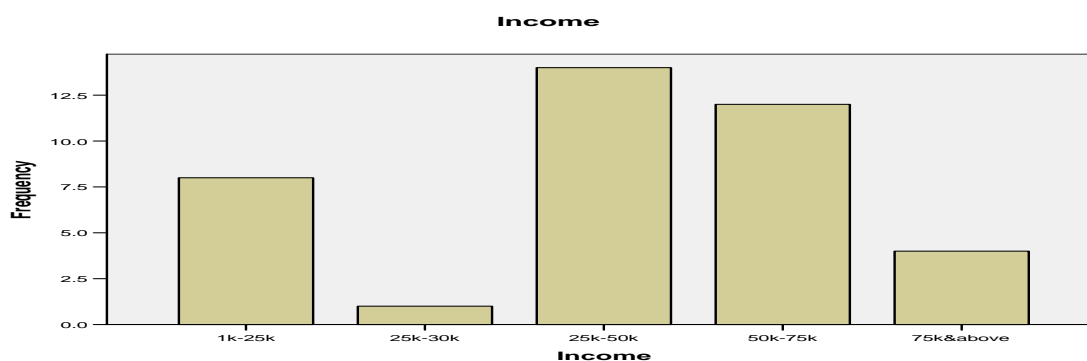


Interpretation: there are 15.4 percent belong to business , 2.6 percent belong to the house wife ,20.5 percent belong to self employment group, 35.9 percent are student from all over the respondent.

1. INCOME :- A)1K-25K B) 25K -50K C) 50K-75K D) 75K AND ABOVE

Table-1: Income

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1k-25k	8	20.5	20.5	20.5
	25k-30k	1	2.6	2.6	23.1
	30k-50k	14	35.9	35.9	59.0
	50k-75k	12	30.8	30.8	89.7
	75k&above	5	10.3	10.3	100.0
	Total	40	100.0	100.0	

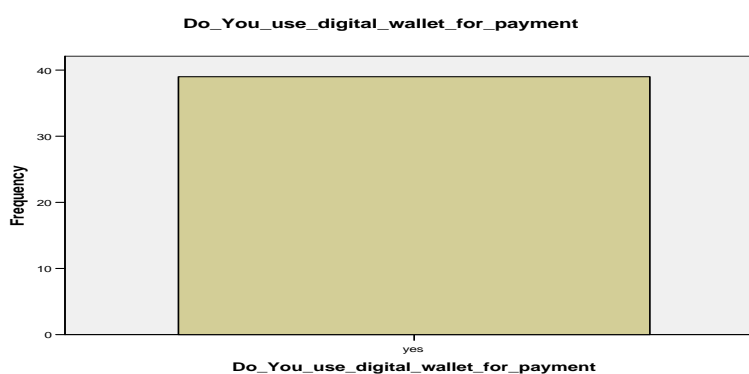


Interpretation: 20.5 percent belong to the group 1k-25k, 2.6 percent belong to the group 25k -30k , 30k- 50k having 35.9 percent,50k – 75k belong to the group 30.8 and 75k and above having 10.3 percent.

5.Do you use digital wallet for payment?

a)Yes b) No

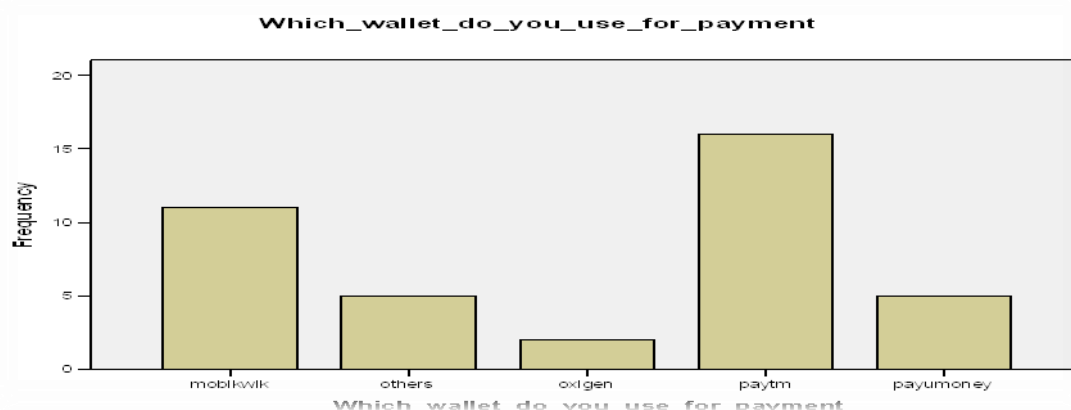
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	40	100.0	100.0	100.0



6. Which wallet do you use for payment ?

a) Paytm b) Mobikwik c) Oxygen d) PayUmoney e) Others

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Mobikwik	11	28.2	28.2	28.2
	Others	5	12.8	12.8	41.0
	Oxygen	3	5.1	5.1	46.2
	Paytm	16	41.0	41.0	87.2
	Payumoney	5	12.8	12.8	100.0
	Total	40	100.0	100.0	

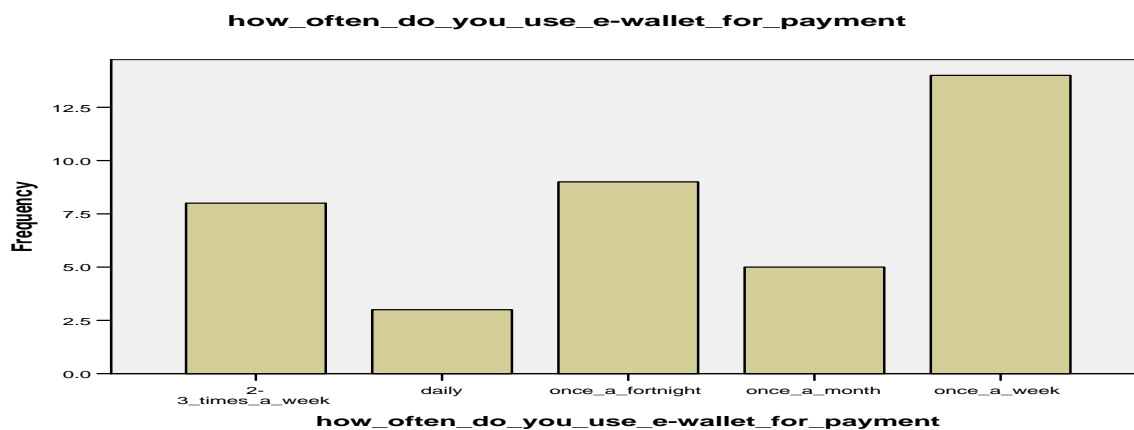


Interpretation: there are 28.2 percent are the mobikwik users, 5.1percent are oxygen, 41 percent are the users of paytm, 12.8 percent are the users of the pay u money and rest are the users of the other digital wallet

7. How often do you use digital wallet for payment?

a) Once a month b) Once a fortnight c) Once a week d) 2-3 times a week e) Daily

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2-3_times_a_week	8	20.5	20.5	20.5
	Daily	3	7.7	7.7	28.2
	once_a_fortnight	10	23.1	23.1	51.3
	once_a_month	5	12.8	12.8	64.1
	once_a_week	14	35.9	35.9	100.0
	Total	40	100.0	100.0	



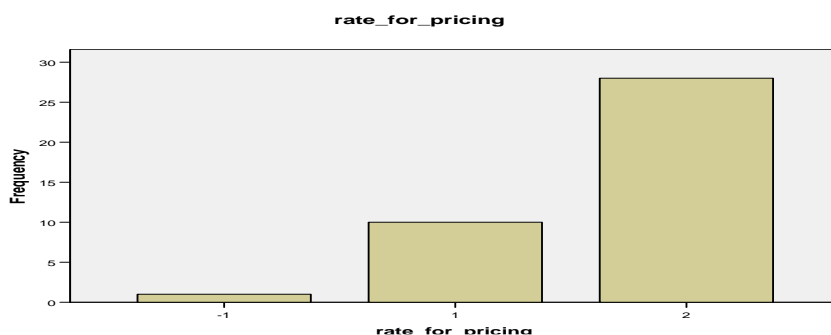
Interpretation: 20.5 percent users use the digital wallet 2-3 times a week , 7.7 percent daily , 23.1 percent use the digital wallet for a night , 12.8 use the digital wallet once a month, 35.9 once a week, from the overall respondent .

8, How important is each of the following factors in your decision in choosing Digital Wallet as a mode of payment?

- Pricing (transaction fees, service fees)
- Ease of use
- Brand Loyalty
- Security
- Privacy
- Utility of innovation
- Usefulness of Digital wallet
- Discount Offers

Table-2: Rate For Pricing

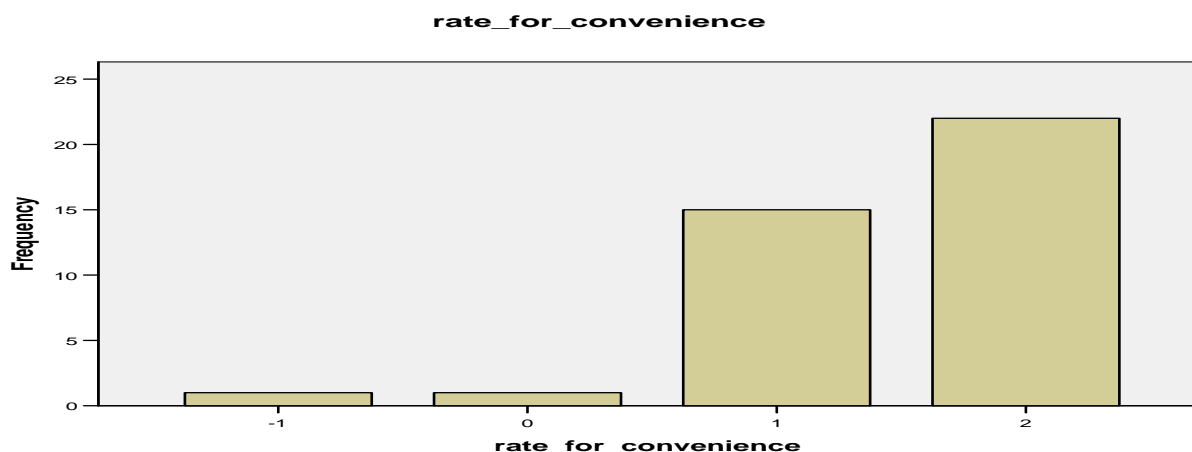
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	-1	2	2.6	2.6	2.6
	1	10	25.6	25.6	28.2
	2	28	71.8	71.8	100.0
	Total	40	100.0	100.0	



Interpretation : 2.6 percent respondent gives poor rating according to the pricing , 25.6 percent of the respondent gives good rating by the manner of pricing , and 71.8 gives rating very good for the pricing .

Table-3: Rate For Convenience

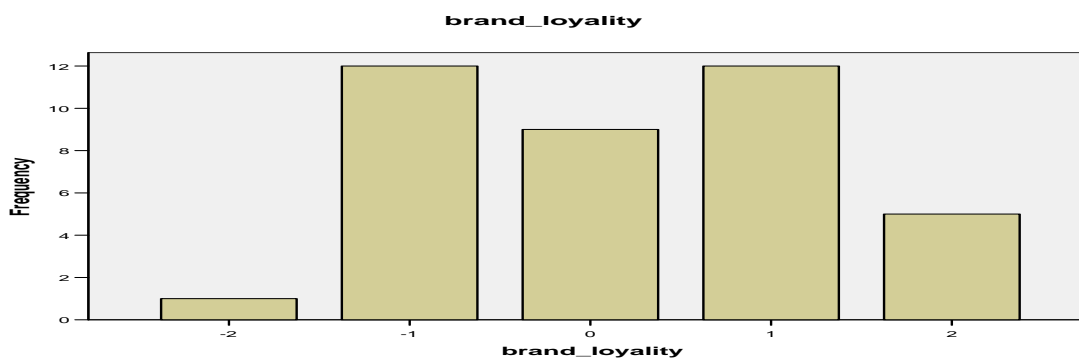
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	-1	1	2.6	2.6	2.6
	0	1	2.6	2.6	5.1
	1	15	38.5	38.5	43.6
	2	23	56.4	56.4	100.0
	Total	40	100.0	100.0	



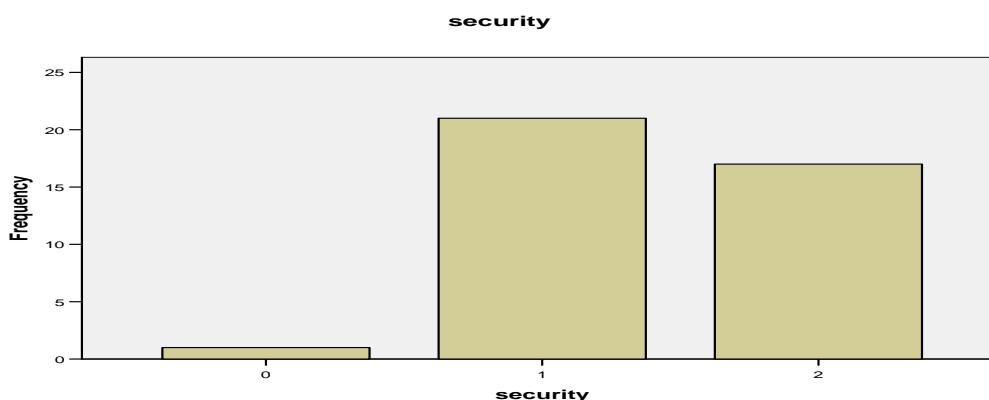
Interpretation: 2.6 percent respondent rate poor for the rate of convenience, 2.6 for natural, 38.5 percent give good for the rate of convenience, and 56.4percent of the respondent gives very good for the rate of convenience.

Table-4: Brand Loyalty

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	-2	1	2.6	2.6	2.6
	-1	12	30.8	30.8	33.3
	0	9	23.1	23.1	56.4
	1	12	30.8	30.8	87.2
	2	5	12.8	12.8	100.0
	Total	39	100.0	100.0	


Table-5: Security

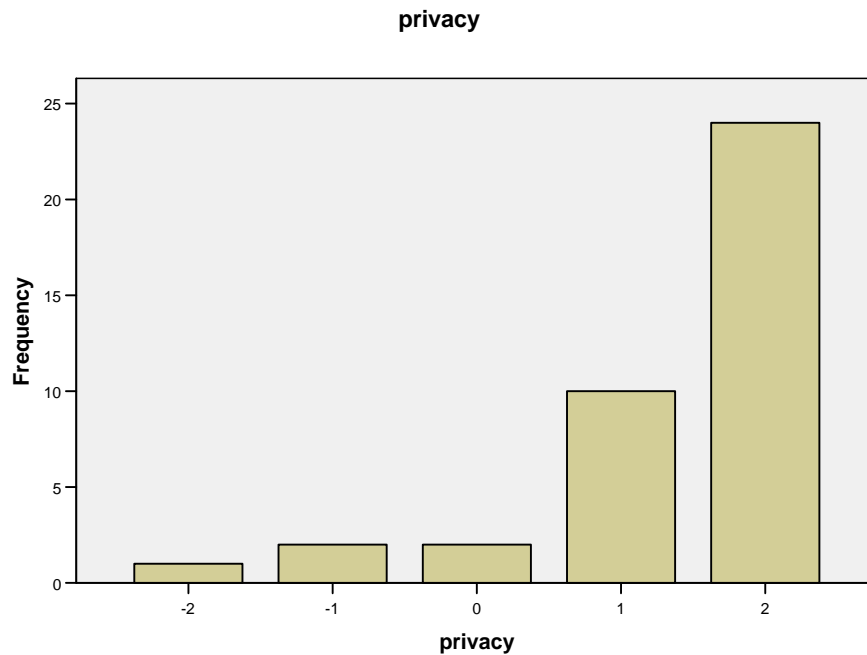
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		1	2.6	2.6	2.6
	1	21	53.8	53.8	56.4
	2	18	43.6	43.6	100.0
	Total	40	100.0	100.0	



Interpretation: 2.6 percent respondent rate poorthe security, 2.6 for netural, 38.5 percent give good for the rate of convenience, and 56.4percent of the respondent gives very good for the rate of convenience.

Table-6:Privacy

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	-2	1	2.6	2.6	2.6
	-1	2	5.1	5.1	7.7
	0	2	5.1	5.1	12.8
	1	10	25.6	25.6	38.5
	2	25	61.5	61.5	100.0
	Total	40	100.0	100.0	



Interpretation: 2.6 percent respondent rate poor for privacy , 5.1 poor, 5.1 natural, 25.6 percent give good for the rate of convenience, and 61.5 percent of the respondent gives very good for the rate of convenience.

Interpretation : 20.5 percent respondent rate poor for privacy ,38.1 poor, 17.9 natural, 20.5 percent give good for utility of innovation, and 2.6 percent of the respondent gives very good for the rate of for utility of innovation

Table-7: Usefulness of Digital Wallet

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	-2	9	23.1	23.1	23.1
	-1	14	35.9	35.9	59.0
	0	8	20.5	20.5	79.5
	1	6	15.4	15.4	94.9
	2	2	5.1	5.1	100.0
	Total	39	100.0	100.0	



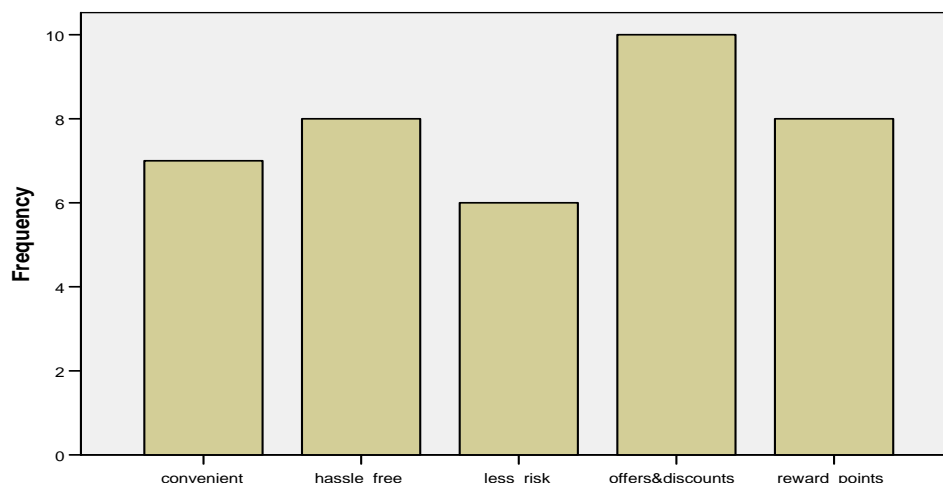
Interpretation: 23.1 percent respondent rate poor for usefulness of the digital wallet , 35.9 poor, 20.5 natural, 15.4 percent give good usefulness of the digital wallet, and 5.1 percent of the respondent gives very good for the use of digital wallet.

Why do you prefer Digital Wallet over other modes of payments?

Convenient b) Less risk c) Reward points d) Hassel-free mode of payment e) Offers and discounts

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Convenient	7	17.9	17.9	17.9
	Hasslefree	8	20.5	20.5	38.5
	less_risk	6	15.4	15.4	53.8
	offers&discounts	10	25.6	25.6	79.5
	reward_points	8	20.5	20.5	100.0
	Total	39	100.0	100.0	

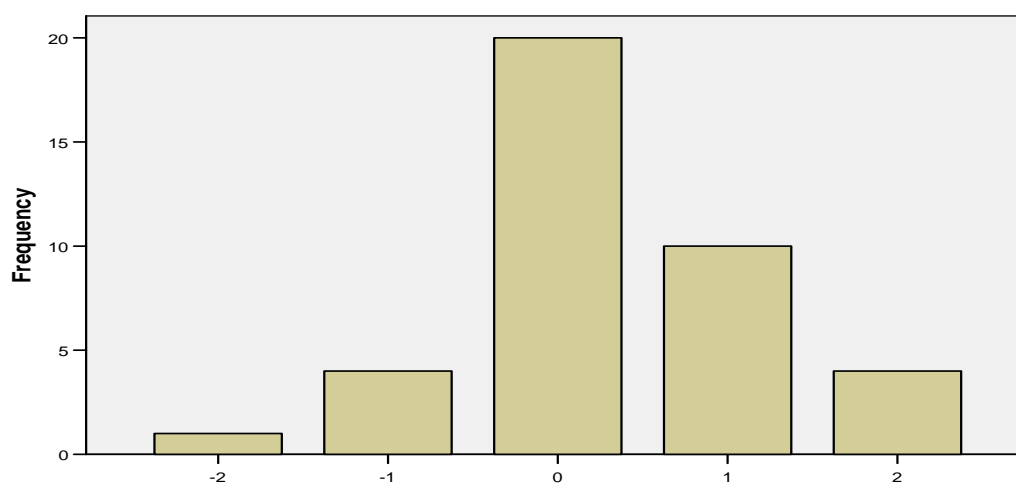
why_do_prefer_digital_wallets_over_other_modes_of_payment



why_do_prefer_digital_wallets_over_other_modes_of_payment

Interpretation: 17.9 percent respondent are convenient for the use of the digital wallet , 20.5 for the hassle free , 15.4 less rate poor for usefulness of the digital wallet , 25.6 for the use of the digital wallet for the purpose of discount and offers ,poor, 20.5 are the respondent prefers the digital wallet for the purpose of rewards and point.

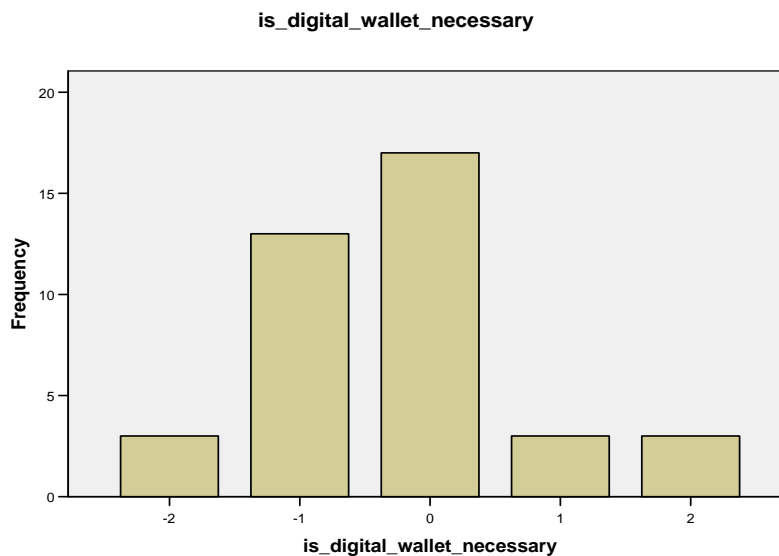
can_digital_wallet_support_existing_payment_method



can_digital_wallet_support_existing_payment_method

Table-8: Digital Wallet is Necessary

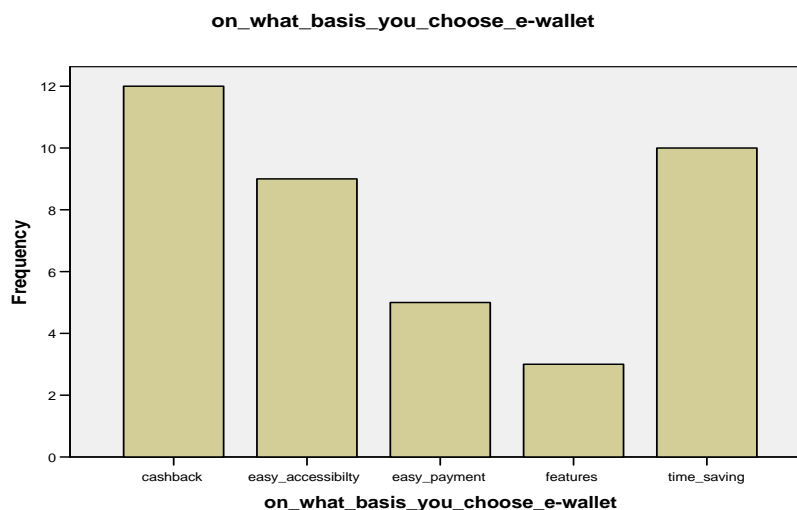
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	-2	3	7.7	7.7	7.7
	-1	13	33.3	33.3	41.0
	0	17	43.6	43.6	84.6
	1	3	7.7	7.7	92.3
	2	3	7.7	7.7	100.0
	Total	39	100.0	100.0	



On what basis you choose e-wallet ?

a) Easy payment b) time saving c) easy accessibility d) size of the application e) cashback f) feature g) brand name

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Cashback	12	30.8	30.8	30.8
	easy_accessibility	9	23.1	23.1	53.8
	easy_payment	5	12.8	12.8	66.7
	Features	3	7.7	7.7	74.4
	time_saving	10	25.6	25.6	100.0
	Total	39	100.0	100.0	



12. What are the reason of using current e-wallet ?

a) Easy payment b) Cash back c) Online-shopping d) User friendly

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	-2	3	7.7	7.7	7.7
	-1	13	33.3	33.3	41.0
	0	17	43.6	43.6	84.6
	1	3	7.7	7.7	92.3
	2	3	7.7	7.7	100.0
	Total	39	100.0	100.0	

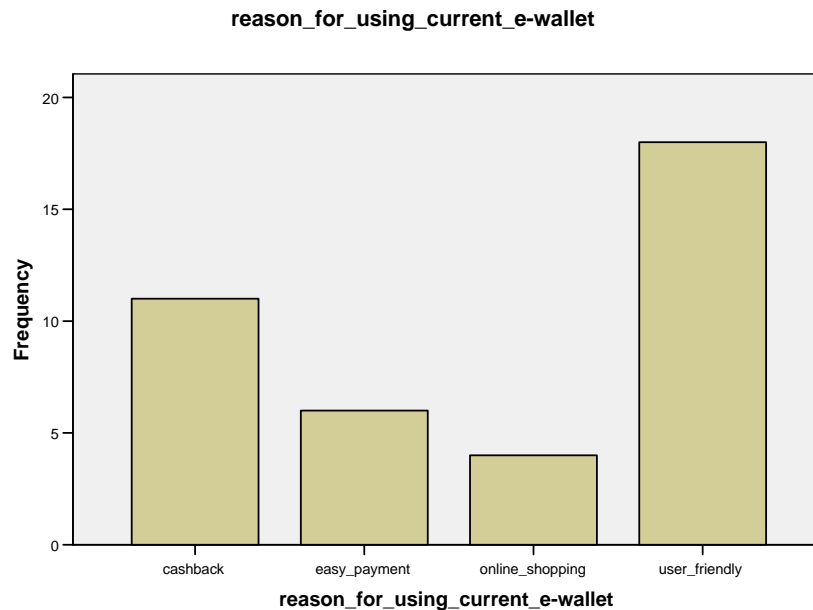
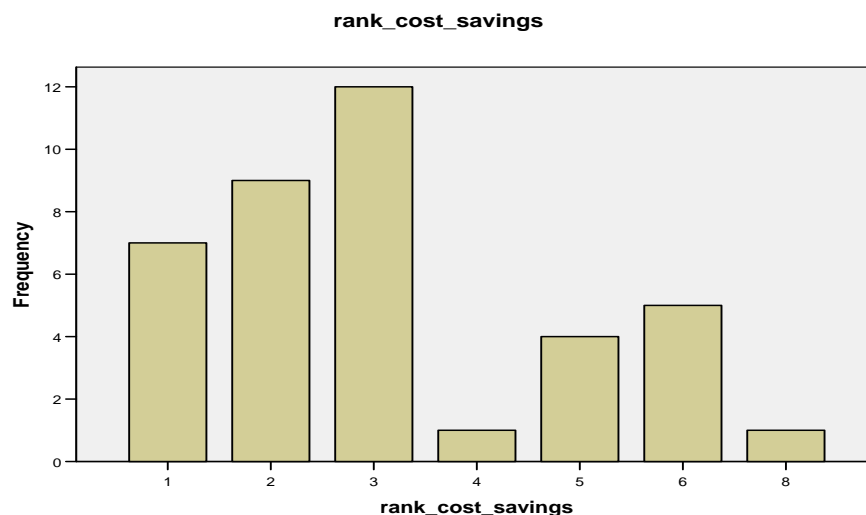


Table-9: Cost Savings

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	7	17.9	17.9	17.9
	2	9	23.1	23.1	41.0
	3	12	30.8	30.8	71.8
	4	1	2.6	2.6	74.4
	5	4	10.3	10.3	84.6
	6	5	12.8	12.8	97.4
	8	1	2.6	2.6	100.0
	Total	39	100.0	100.0	

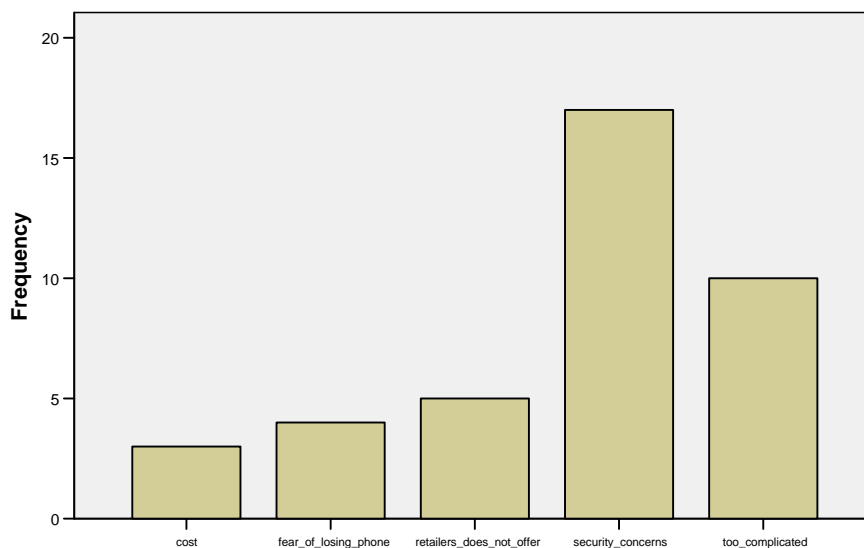


16. In your opinion what are the main drawbacks of Mobile Payment Apps (Mobile Wallets)?

- a) Too complicated / confusing
- b) Security concerns
- c) My preferred retailers do not offer this payment option
- d) Cost
- e) Fear of losing mobile phone
- f) Other (please specify)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Cost	3	7.7	7.7	7.7
	fear_of_losing_phone	4	10.3	10.3	17.9
	retailers_does_not_offer	5	12.8	12.8	30.8
	security_concerns	17	43.6	43.6	74.4
	too_complicated	11	25.6	25.6	100.0
	Total	40	100.0	100.0	

drawbacks_of_e-wallet

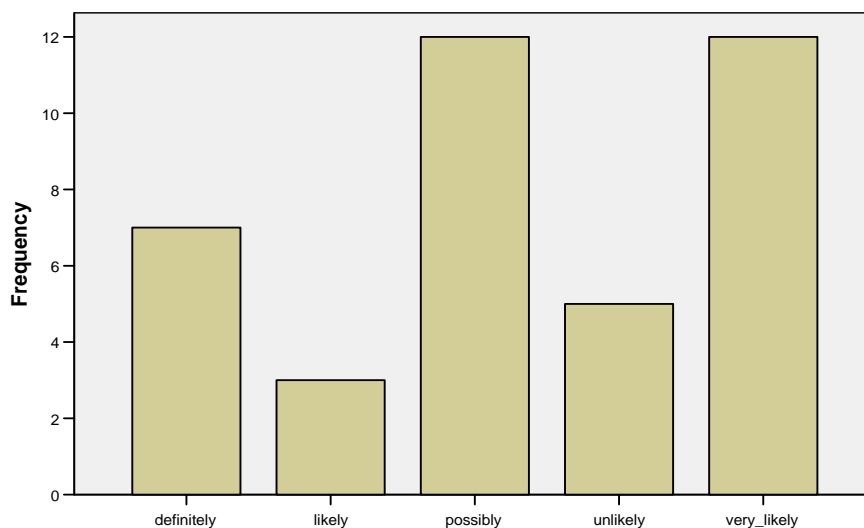


drawbacks_of_e-wallet

Table-10: Ability to Make Purchase At Favourite Retailer

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	definitely	7	17.9	17.9	17.9
	Likely	3	7.7	7.7	25.6
	Possibly	12	30.8	30.8	56.4
	Unlikely	5	12.8	12.8	69.2
	very_likely	13	30.8	30.8	100.0
	Total	40	100.0	100.0	

ability_to_make_purchase_at_your_retailer



ability_to_make_purchase_at_your_retailer

Table-11: Pin Required For High Value Transactions Only

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	must_have	20	51.3	51.3	51.3
	nice_to_have	15	38.5	38.5	89.7
	no_difference	5	10.3	10.3	100.0
	Total	40	100.0	100.0	

FINDINGS

- Out of 50 respondents only 40 were using digital wallet (only those responses are added in this research who were using digital wallets).
- Out of 40 respondents 11 were using mobikwik and 17 were using paytm.
- Out of 40 respondents 18 were using digital wallet only because of rewards, discounts and cashbacks.
- Out of 40 respondents 21 were happy to pay on groceries shops and malls.
- 10 respondents said the digital wallets are too complicated to use.
- 18 respondents said primary reason for selecting the digital wallet is convenience in payments
- Majority of the respondents have reduced their traditional payment due to M-wallets..
- As security is a major issue, most of the respondents fear of M-wallet provider sharing the confidential information with other companies, misuse of information if phone stolen, rise in the number of cyber crimes and virus being installed on the phone.
- Security, convenience, fast execution, offers and discounts and services used are the factors which influence the preferences of the respondents.

SUGGESTIONS

Mobikwik should increase rewards points and cashback in order to attract more and more customers

1. Mobikwik should advertise more through print as well as electronic media.
2. Mobikwik should give more cashback instead of Supercash.
3. Should focus more on sales team and should motivate them.
4. Should focus on brands rather than small shops.
5. Should increase features

LIMITATIONS

The research was carried out in two months duration. Since Gurgaon comes in Delhi NCR the duration was very limited. If the time limit was more than sample size would have increased and accuracy in results would have also increased.

- Time and money for the research was limited.
- The customers were not free while giving interviews.

CONCLUSION

- Every year lots of companies are joining the market of e-wallet. In order to survive in the market mobikwik should provide more and more features. Demonetization in the year 2016 has increased opportunities for e-wallets.
- Some of the points are listed which came out from the research
- The study was accomplished to explore consumer awareness, perceptions and willingness to engage in using a smart phone to replace the content of their physical wallets.
- With the increased penetration of internet connectivity and smart phones has led to an increase in the number of M-wallet users. M-wallet is getting more and more trendier among the consumers. As per the findings of the study, M-wallet is getting popularity among the young lots such as students and employees
- Brand image is very important in the choosing the e-wallet by customers.

- When a user is making an online payment via M-wallets, the respondents are affected by various assorted factors. The main influencing factors have been identified as time, convenience, security, loyalty/reward points and discount deals etc.
- One of the prime obstacles is security issues, due to which the users get anxious about his or her confidential information which may get disclosed.
- M-wallets are growing in INDIA as the consumers are relying upon the digital life style to make things convenient and faster and the consumers are embracing M-wallet with open arms.

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WASTE SEGREGATION USING PLC

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ABSTRACT

Now-a-days the wastes are dumped as landfill waste and the major problem in solid waste disposal is glass bottles, metal, Plastics (Polymer, Polystyrene) Paper, Linen can separation and they are separated manually and recycled by using various high tech sensors and belt conveyors. Some of the main causes of pollution include industrial emissions, poor disposal of wastes, mining, deforestation use of fossil fuels and agricultural activities. pollution can affect the air, the land and water bodies throughout the world. The major causes of pollution is sewage, garbage and wastes that contain harmful chemicals and toxins which make the environment polluted and plastics which is one of the major pollutant, they get buried inside the earth it takes so many years to decompose, this causes to reduce the nutrient in the soil. Here in this paper we are going to separate the garbage wastes at many categories and some of the garbage are reused by recycling method and some are modified for certain purposes. This Paper implements the Waste management using Program Logic Controller (PLC).

Keywords: solid waste; plc; automatic conveyer belt; proximity sensor; mechanical hydraulic cylinders.

I. INTRODUCTION

Solid waste management has become one of the main issues in both urban and rural areas all over the world[4]. Still the social and cultural response and the techno-economic considerations of the issue have not received the required importance in appropriate planning and application of waste management systems in our country.

Waste management is an important requirement for ecologically sustainable development in many countries. Due to rapid urbanization and uncontrolled growth rate of population municipal solid waste management has become acute in India. As per the previous data in India per capital waste generation had increased by 1.3 percent annually with urban population increasing between 3-3.5 percent per annum. Yearly increase in waste generation is around 5 percent. In India the municipal agencies spend 5-25 percent of their solid waste management[1].

Efficient sorting of waste is a major issue in today's society. Selective sorting is another approach, which is often implemented to improve recycling and reduce the environment. When the waste is segregated into simple stream such as plastic bottles, metal cans, tetrapacks it becomes more easy to recycle them and reuse them. We aim in just doing that ,separating this recyclable solid waste and putting them into individual bins so that they can be distinguished and used separatly.PLC helps us just doing that under harsh conditions.

II. SYSTEM DESIGN

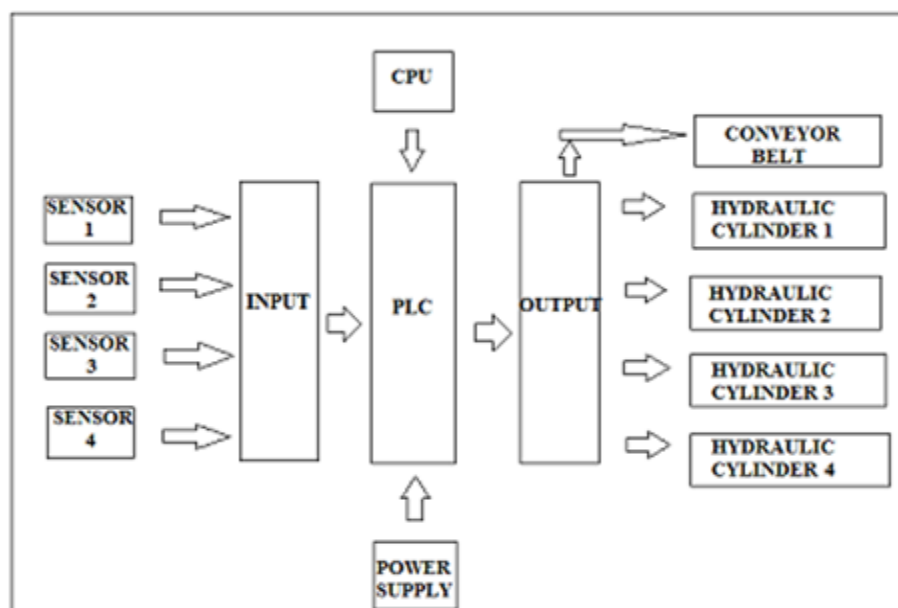


Fig-1: Block Diagram of PLC based Automatic Waste Segregator

Block Diagram description

The above block diagram mentioned in Fig.1 explains the process in which our project is going to work. It has three main blocks namely:-

1) Input block

The input block is used to interface input devices to the PLC i.e. in our case the sensor that we are using to detect different type of waste and switches etc.

2) PLC

The PLC is the core of our project. The inputs from input module are given to the PLC. PLC processes the program loaded into it and accordingly provides output. The power supply is connected to this PLC.

3) Output block

The output block is interfaced with the output giving devices i.e. in our case the conveyor belt and the hydraulic cylinders used as mechanical flaps. It will behave accordingly as commanded by the PLC.

IV. LITERATURE REVIEW**1. Noraml waste segregation method**

In India, rag pickers play an important role in the collecting, disposing of urban solid waste. This process has its limitation and it was time consuming as well. Rag pickers and conservancy staff have higher morbidity due to infections of skin, respiratory, gastrointestinal tract and multisystem allergic disorders, in addition to a high prevalence of bites of rodents, dogs and other vermin[8]. This system is still at large in most parts of India also there was no emphasis on waste segregation, so segregating recyclable items from amongst other became a tedious task.

1. RFID based Segregation System

In this system which applies radio frequency identification for on-line sorting of consumer waste groups can satisfy very important requirement of an efficient waste management system. Not only is the system robust, it is accurate, can handle vast quantities of plastic and e-waste. The drawback of this system is that the RFID is considered to be attached to each type of material during manufacturing only to resolve the problem of sorting during the disposal stage of the product[6]. Each waste material will have identical types of RFID tags that stores the information about the object along with which travels on conveyor belt. So whenever waste comes near the RFID reader it sends the vital information to the RFID reader. Commands and information are exchanged between the RFID reader and RFID tags. This information is used to drop the each waste material in their respective bins. Later this information is conveyed to the arduino microcontroller for further processing. After interpreting the data received from the RFID reader it will be forwarded to remote master embedded system wirelessly. The zigbee receiver is interfaced with the personal computer which corresponds.

Waste material having the RFID tag which contains the all information about the product to be coded during manufacturing in the passive tag placed as there are a variety of tags available to be attached with the material.

It is not viable as not all companies would add to their cost of applying RFID tags to their products thus implementation of such system is difficult and not economical. Also we are dealing with waste products so to use RFID scanner like devices in such harsh and non-suitable condition would only add to the difficulty.

1. Microcontroller based waste segregation

A simple 8051 microcontroller forms the heart of the system. It controls detect the working and timing of all the subsections so as to sort the waste. Inductive proximity sensor is used to detect the metallic waste[7].

The signal from the proximity sensor initiates the push mechanism to discard the metallic waste. The timing and movement of the conveyor belt is controlled by 8051 microcontroller. Continuous and unnecessary operation of any particular section is thus avoided.

The main limitations in this type of system are that the waste segregator device or equipment is more rightfully used in harsh and rough conditions. Different parameters such as heat, dust, etc. The microcontroller may be more prone to damage. Also the scope for expansion of this equipment may not be possible due to circuit constraints unlike PLC.

Some other limitations are:

1. Segregation of the waste consumes time

2. E-waste, Sanitary waste and medical waste cannot be segregated by the proposed system as there are certain rules and regulations specified by government to be followed for their segregation

4. PLC Based Automatic Waste Segregator:-

a) Advantage of PLC over other systems

The advantages of waste separation systems lie in the modular design, which allows for any required short-term adjustments to the capacity level. The attributes “affordable and high quality” are characteristic for waste sorting systems and waste separation systems.

Every waste separation system can be used flexibly. Waste separation systems can be put in use for local communities, private investors, industry and commerce. The stress of competition forces companies to produce economically and rationally. A higher level of automation demands more and more programmable logic controllers (PLC). The advantage of PLC is the automation with a relatively small amount of cabling and a low error rate [1]. Productivity, flexibility and efficiency with only a few contactors (heavy duty relay) specify the controller. The system is completed by modifications and extensions of functions (without mechanical intervention) as well as by communication with other devices via analog, digital and serial interfaces. With programmable logic controllers, processes can be monitored and operated via a PC.

b) Design consideration

This deals with the work flow of the total system from beginning till the end. As mentioned earlier, different modules have to be interconnected in such a way that they function in a proper sequence in a desired manner.

1. Sensors: Object sensor is used to detect whether the waste is glass bottle, plastic bottle, metal can, tetra pack etc.

2. PLC, Computer and power supply for PLC: To take action on input and output as per program logic feed to PLC.

3. Action performing components: It contains rotating conveyor belt, which keeps rotating. It also contains hydraulic pumps which are used as flaps to route a particular object amongst the selected items to their respective bin.

The following Fig. 2 represents the system architecture of our project

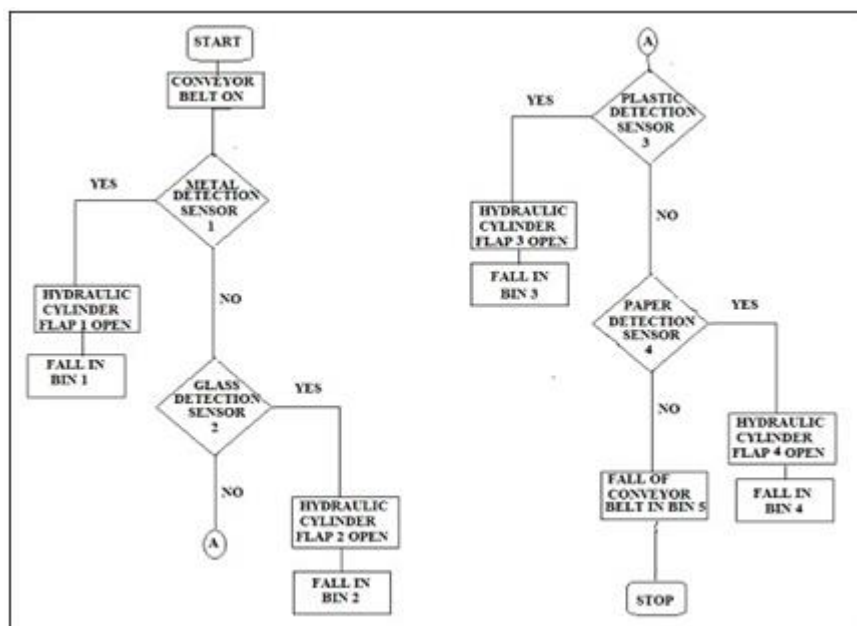


Fig-2.2: System Architecture

b) Main components of the system are as follows:-PLC(Programmable Logic Controller)

PLC S7-300 works as the core of the project. The PLC controls the final control elements. The main function of the S7-300 is acquire the digital and analog data from input module and vary the output of the system as the input conditions change, this is necessary as the system designed is a real time system. Fig. 3 represents the input output module of PLC S7-300

Input output modules of PLC of S7-300:-

- 16 inputs, electrically isolated in groups of 16.
- 16 outputs, electrically isolated in groups of 8.

- Rated input voltage 24VDC.
 - Rated load voltage 24VDC.
 - Inputs suitable for switches and 2-/3-/4-wire proximity switches(BEROs)
- Outputs capable of driving solenoid valves, DC contactors and indicator lights.

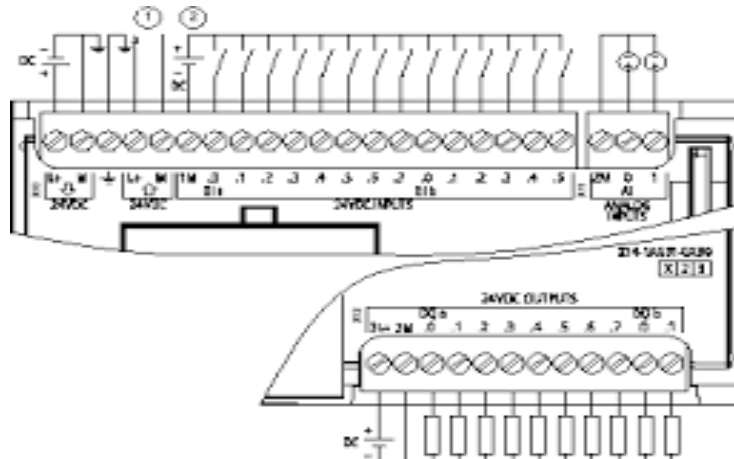


Fig-3: Input/Output module of PLC S7-1200

The software used for programming the S7-300 PLC is SIMATIC manager as provided by the manufacturer.

The program is downloaded from PC into the PLC using a RS232 cable

Sensors:-

The objective of the sensor is used to detect the presence of the object on the conveyor belt. When the object is detected the sensor will signal the PLC to start the conveyor. Sensor interfacing is done as shown in following Fig.4 to the PLC S7-300.

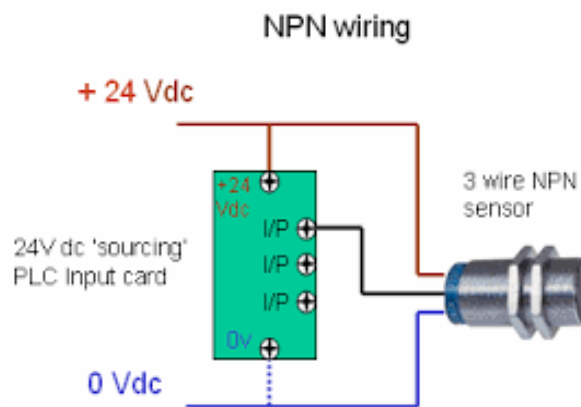


Fig-4: Sensor interfacing with PLC

a) Plastic detection sensor

Photoelectric Sensor with Built-in Amplifier for Detecting Clear, Plastic Bottles. Reliable Detection of transparent Objects, Including Thin-walled Clear, Plastic Bottles. Uses OMERON's unique optical system ("Inner View") that can detect various shapes of clear, plastic bottles.



Fig-5: E3FA DP-12 Photoelectric Sensor

The above Fig.5. is an image of this photoelectric sensor used to detect plastic in our project. Detect a wide range of bottles from 500-ml bottles to 2-l bottles, and from single bottles to sets of stocked bottles. Provides a high degree of protection(IP67)mutual interference prevention, and EN standard compliance.

a) Metal detection sensor

When a metallic object is introduced in the vicinity of the coil, eddy currents are induced on its surface. The eddy currents are a function of the distance, size, surface area and composition of the target

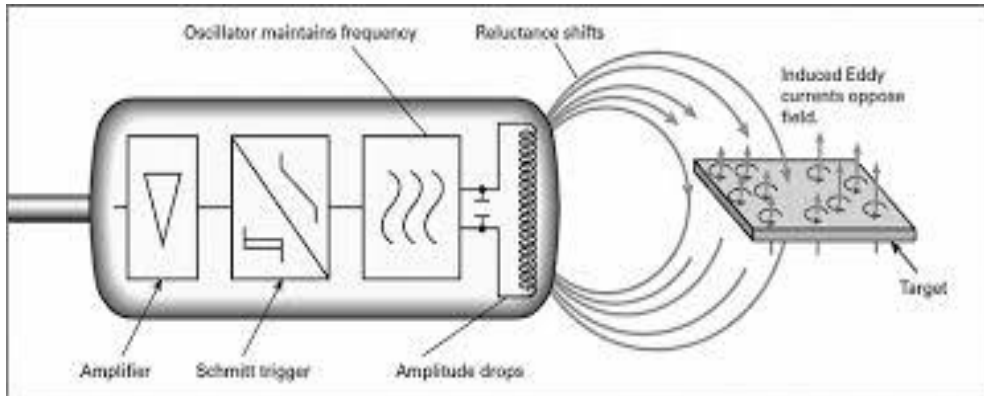


Fig-6: Inductive Sensor

The above Fig.6. represents the working of inductive sensor. The inductive coupling between the coil and the object creates a mutual inductance effect on the coil which decreases the parallel resonant impedance of the circuit which in turn is reflected by an increase in the proximity count value. Magnetic fields do not affect the metal detection system. It can detect any conducting material irrespective of its magnetic properties.

c) Proximity Capacitive sensor to detect glass and paper

Capacitive proximity sensors are similar in size, shape, and concept to inductive proximity sensors. However, unlike inductive sensors which use induced magnetic fields to sense objects, capacitive proximity generate an electrostatic field and reacts to changes in capacitance caused when a target enters the electrostatic field. When the capacitance reaches a specified threshold, the oscillator is activated, triggering the output circuit to switch states between ON and OFF. The following Fig.7 represents the working of capacitive sensor.

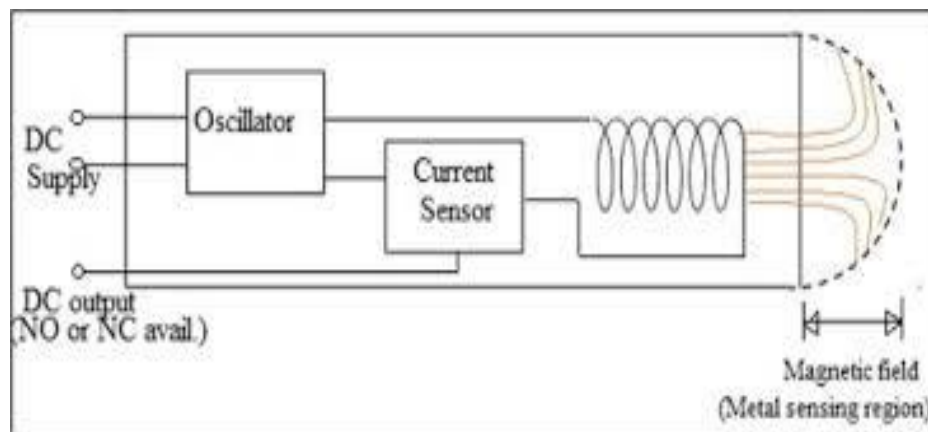


Fig-7: Capacitive Sensor

The larger the target's size, the stronger the capacitive coupling between the probe and the target. Materials with higher dielectric constants are easier to detect than those with lower values. The shorter the distance between target and probe, the stronger the capacitive coupling between the probe and the target.

• Conveyor Belt

The system consists of conveyor belt with object sensors clamped on it. The material passes over the conveyor belt get detected by sensor and pushed by hydraulic pump flaps into respective bins.

• Hydraulic cylinders

The hydraulic pressure in these cylinders is in the form of hydraulic fuels that are stored under pressure in these cylinders. The energy stored in these oils is converted into motion. In a complete hydraulic system, a hydraulic motor consists of one or more hydraulic cylinders. A pump regulates the oil-flow in the hydraulic system. The hydraulic cylinders initiate the pressure of the oil, which cannot be more than that required by the load.

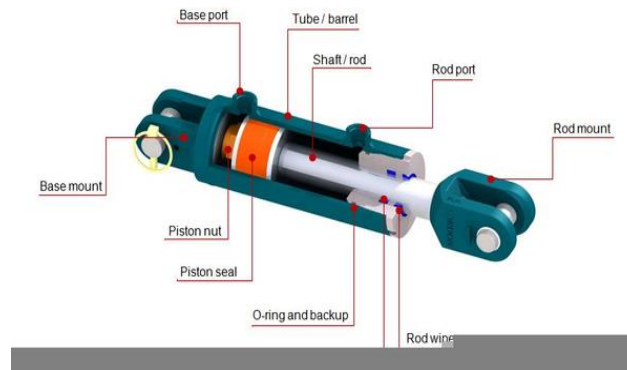


Fig-8: Hydraulic Cylinder

The above Fig.8.represents the image of an hydraulic cylinder. In single acting cylinders the fluid is pressurized from only one side of the cylinder during both the expansion as well as the retraction process. A spring or an external load is used to return the cylinder top to its original position i.e.when pressure of the fluid is cut off. We are using this hydraulic cylinder as mechanical flap to route the particular waste to its respective bin.

II. CONCLUSION

In this paper we presented our work on developing an affordable and efficient method that can sort different categories of glass bottles, metal cans, and tetra packs, Plastics (Polymer, Polystyrene) Paper, Linen quickly and accurately using PLC. The system can segregate only one type of waste at a time as the solid waste material object moves on a conveyor belt one at a time behind each other. The entire sensing module can be placed along a single platform where the object is stable to ensure better result. Automated waste segregation can be largely implemented in various municipal corporations , taking into consideration various factors such as reduction in manpower, avoid risk at hazardous places, improve accuracy, increase speed of waste management etc. Here in this paper we are going to separate the garbage wastes at many categories and some of the garbage are reused by recycling method and some are modified for certain purposes.

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A STUDY ON THE BEHAVIOR OF MUSLIMS TOWARDS ISLAMIC FINANCIAL PLANNING AND MANAGEMENT IN MUMBAI CITY

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ABSTRACT

The management of financial resources and its planning at an individual level particularly among the Muslims requires the thorough understanding of financing and investment principles laid down in Quran. It is very important in Islam that Muslims are required to have a proper balance between the fulfillment of his spiritual and worldly obligations. The Prophet stated, "A Muslim should prepare himself for the next world as if he is going to die tomorrow, but at the same time work hard to improve all his worldly comforts as if he is going to live forever"¹. In this perspective, financial planning and management is therefore a must and is not only for high income earner and rich but applies to all. A Muslims still has to properly understand the Islamic financial planning and management. Mumbai is a city of opportunity and hope. Mumbai city provides employment to millions of people. Peoples in return make the planning, investment and management of their earning from the prospective of their religious belief. Mumbai has number of investment opportunities like as earnings. One can invest in share market, mutual funds, commodity trading, bullion market, real estate and such others. The purpose of this paper is to examine the behavior of Muslims towards Islamic financial planning and Management. A survey questionnaire is distributed to 400 Muslim respondents using convenient sampling technique as the preliminary investigation. The study findings justify further refinement and show that the survey instrument is appropriate in a wider study of a representative sample of the Islamic Financial Planning and Management.

Keywords: Islamic Banking, Islamic Finance, Behavior, Islamic financial planning and Management

INTRODUCTION

Muslim represents nearly a quarter of the world's population and yet less than 1% of financial assets are Shariah compliant². Shariah compliant funds have a long history. They first introduced in the late 1960s in Malaysia and in the mid-1970s in the Middle East region. Their creation was driven mainly by individuals, who were attracted by the idea of faith based investments³. Islamic financial planning and management principles emphasizes ethical investing their income known as Shariah compliant investment, which is the Islamic law that governs every facet of Muslims life. Investment in financial instruments with fixed income, such as preferred stock, bonds and some derivatives are unacceptable as they promise a fixed rate of return and grant no voting rights. Furthermore, Islamic investors are not permitted to purchase stock of companies whose main business activities are alcohol, gambling, conventional financial services, entertainment, pork-related products, tobacco, and weapons⁴.

As compare to non- Muslims, Muslims do not invest their earnings in conventional banking and other conventional funds market which provides a good rate of earnings and due to this reason Muslims are badly affected to inflation in an economy. At presently, Muslims are investing their earnings in the Shariah compliant fund market such as Islamic banking, Islamic shares, Islamic mutual funds, Islamic bullions, gold, silver and precious metals which will be a good option to be protected against inflation⁵. Muslims should take advantage of the boom witnessed in the Indian funds market and they should not get behind in the economic growth that is being witnessed throughout the country and would remain years to come. Muslims must take the benefits of investment in various funds market that would help them to create wealth in the long term in the Shariah way⁶.

The history of Islamic thought is an ocean, which has produced many interpretations, many theories and debates. Islamic thought is very rich and could address the problems met by Islamic societies. Islamic thought always mirrored the challenges which Islamic societies had to face. Islamic thought has been clearly connected to the contemporary problems, Muslims intellectuals has to deal with. This point is important because it shapes the possibilities for present day Islamic thought to address the crisis of capitalism. Various studies are conducted in the Islamic countries, European countries and Malaysia to analyze the behavior of Muslim salaried people towards Islamic financial planning and management. The review of literature has done to assess the income and investment behavior of Muslim salaried people at domestic, national and international front. Researchers have also studied and examine the Islamic financial literacy knowledge of Muslims. The studies are also conducted to know the problems and difficulties faced by Muslim salaried people towards investment in the present scenario.

It is quite evident that Muslims before taking investment decision they screen the do and don't of the opportunity from the principles of Quran⁷. Therefore, in the present context it is worth to study the investment behavior of the Muslims in the Mumbai city.

LITERATURE REVIEW AND HYPOTHESIS FORMULATION

A review of literature is a text of scholarly papers, articles which includes the status of knowledge of the research area including substantive findings as well as theoretical and methodological contributions in the study. This review of literature deals with past studies conducted on the subject, to generate understanding in the area, extensive review of literature was carried out by the researcher. All the sections of the study have undergone gradual change and evolved at present level. The study is conducted in the field of Islamic financial planning of Muslim salaried people and relevant literature is reviewed to find the gap in the literature and accordingly frames the problems, hypothesis and objectives for the research study.

Mark Andrews (2010)⁸ has explained that Islamic finance stated ethos and principles which are based on Quran. Islamic finance offers its customers, a Shariah compliant Islamic financial product and Islamic banking. The primary authority for Shariah principles is Quran which means "the text of God" and it includes the detailed rules covering every aspect of Muslims life including religious, family, community, honesty, fairness, integrity and morality. Islamic finance has several basic principles and rules i.e.; no uncertainty, trade must be in real goods and assets, sellers must be honest, totally frank and actually own what they sell, there can be no speculation or gambling, no trade in prohibited activities like pork, alcohol, armaments, pornography etc. There are many debates about an Islamic finance principally that it is banking for Muslims only. This is not true at all. Anyone can open investment account and apply for the full range of services on offer. The liquidity challenge in Islamic banks is actually a treasury and profitability problem. There is no effective Islamic interbank market and banks cannot lend to or borrow from each other in conventional term as a result a bank that finds itself too many investments or it is short of cash, has limited options in Islamic finance.

Siddqui Muhammad N. (2002)⁹ has criticized that interest stating that even in commercial loans, the borrower may suffer a loss, yet interest based lending obliges them to repay the principal amount with compound interest. Conversely, the borrower may get huge profits, yet the lender gets only the fixed rate of interest which may likely turn out to be small part of the actual profits. It results in inefficient allocation of society's resources and increases the inequality in the distribution of income and wealth as it guarantees a continuous increase in the money's lent out, mostly by wealthy, and puts the burden of bearing the losses on entrepreneur and through loss of jobs on the workers

Alsadek Gait (2007)¹⁰ has explained that Islamic finance- financial institutions products and services designed to comply with the central principles of Shariah (Islamic law) is one of the most rapidly growing segments in global financial services. However, despite its growing importance, it is only relatively recently that attempts have been made to evaluate the attitudes, perceptions and knowledge of current and potential consumers and providers of Islamic financial products and services. This paper provides a synoptic survey of the comparatively few empirical analyses of attitudes, perceptions and knowledge of Islamic finance. This paper also briefly explains that the attitudes, behavior and perception of an individual consumer towards conventional financial services and products.

Andrew Worthington (2008)¹¹ has explained the widespread and extensive analysis of attitudes, perceptual and knowledge of conventional financial institution products and services, the parallel analysis of these same concerns in Islamic finance is still in its infancy. This is an important deficiency in the article given the global growth in Islamic financing techniques and the evolution of banking systems in many parts of the Middle East and South East Asia encompassing both Islamic and conventional financial services.

In terms of an individual consumers, attitudes, behavior and perception towards an Islamic finance is totally depends on religious conviction, however it is often not only the concern, with most consumers also identifying bank reputation, service quality and pricing as being of relevance in determining the patronage of a financial institution. Most of the individuals have lack of knowledge with an Islamic finance system which yet to be established especially among immigrant communities and countries.

Rashid et al. (2011)¹² conducted a study on the prospect and growth potentials of Islamic banks in Bangladesh from both Islamic and conventional bankers' perspective. They found that conventional bankers believe that Islamic banks only claim but do not actually follow the true Shariah based system of banking. For them, the conventional system of banking is more lucrative and it stands as an honest method of banking as opposed to Islamic banking, which they feel is only profitable as a Strategic Business Unit (SBU). In contrast, Islamic bankers endorse the view of risk minimization by zero interest rate, while conventional banks do not reinforce

this claim. However, Islamic bankers believed that Islamic banks in Bangladesh have a greater social and moral motive to fulfill, even at the expense of reduced profit.

In Malaysia, with the high prospect and potentials of Islamic banking as opined by some great scholars, there is a need to examine how non-Muslim customers perceived the prospect and potentials of Islamic banking. A study found that non-Muslims viewed the prospect and potentials of Islamic banking as average, compared to Muslims who believed a strong prospect and potentials of Islamic banking in Malaysia.

Ahmed, Rehman and Safwan (2010)¹³ have found service quality has significant influences on customer satisfaction in the case of Islamic and conventional banking, while the magnitude of effect is greater in Islamic banking as compared to conventional banking. Their study on the perception of satisfaction among bank customers with the existence of two banking systems in Pakistan found that customers of Islamic banks were more satisfied as compared to customers of conventional banks. A study has shown that banking behavior of Islamic banking customers and found that most customers were highly satisfied with the products and services of Islamic banks. The researchers then suggested that bankers should develop professionalism and competency to maintain profitable relations with customers.

Haron et al. (1994)¹⁴ conducted a study in Malaysia which includes commercial and corporate bank customers among commercial bank customers. Primary this study examined customers' understanding on Islamic banking concepts. The study found that 99 percent of Muslim while 70 per cent of the non-Muslim respondents were aware about the existence of the Islamic bank, while 12 percent of Muslims and 32 percent non-Muslims believed that the Islamic banking was relevant primarily to Muslims. This study also revealed the willingness of non-Muslims to establish a relationship with Islamic banks if they have a complete understanding about Islamic banking concepts. A study on perceptions of Malaysian corporate customers towards Islamic banking surveyed 45 respondents comprising 20 percent Muslims and 80 percent non-Muslims. The finding however showed that Islamic banking products were not popular among corporate customers.

Khan et al. (2007)¹⁵ conducted a study on banking behavior of Islamic bank customers in Bangladesh. Interestingly, this study revealed that about 70 percent of the customers had previous relationship with conventional banks. Therefore, Khan's study indicated that Islamic banks have shown good progress in seizing customers from conventional banks and about half of the respondents have more than 4 years relationship with Islamic banks. Such a long tenure of relationship signifies the ability of customer retention by Islamic banks as well as the customers' loyalty to the banks' products and services. In comparing between Muslims and non-Muslims' willingness to deal with Islamic banks in Malaysia it was found that Muslims were supportive to Islamic banking, while non-Muslims viewed Islamic banking as relevant primarily only to Muslims. However, among non-Muslims, X-Generation has a more favorable perception towards Islamic banking than Baby Boomers.

Mahamad and Tahir (2010)¹⁶ examined the study on perception of non-Muslims towards Islamic banking in Kuala Terengganu conducted that found a low acceptance among the non-Muslim community towards Islamic banking as an alternative over conventional banking. They found that Islamic banking was able to attract more non-Muslim customers if Islamic banks can fulfill their selection criteria of banking, which was quality of services provided. Meanwhile, it was indicated that most of the respondents believe that Islamic banking will dominate the banking industry in Malaysia in the near future. This is in line with the government vision for Malaysia to be an international hub for Islamic banking and finance by 2020.

Temporal (2011)¹⁷ had pointed out that in Muslim to Muslims marketing perspective, having an accepted Halal brand is important; but from a Muslim to non-Muslim marketing perspective, top quality is an additional imperative. Islamic brands can harness the values of the religion in order to build brands of universal appeal to both Muslim and non-Muslim audiences. Some brands cleverly mix the rational and emotional characteristics of their brand's personality, so the brand can flex the brand character to suit the audience they are addressing. If this situation happened, it will harm the purity and the message of Islamic brands. For that reason, the investigation of Halal and more, specifically those aspects pertaining to branding and business, are still in their infancy, and it is a need for academic scholar to find out about Islamic brands.

Hence it is concluded that in Islamic countries including India it is observed that no concrete work is carried out in the area of "Islamic financial planning and management of Muslims" therefore to bring the authenticity to the present research, researcher has framed following objective, problem and hypothesis.

OBJECTIVES OF THE STUDY

To study and analyze the behavior of Muslims towards financial planning and management.

PROBLEMS OF THE STUDY

Traditional outlook and Shariah rules have influenced the investment opportunities of the Muslims which resulted in major bulk of population away from the investment market.

HYPOTHESIS OF THE STUDY

Null Hypothesis (H₀): Traditional outlook and Shariah rules have not significantly influenced the investment opportunities of Muslims.

Alternative Hypothesis (H₁): Traditional outlook and Shariah rules have significantly influenced the investment opportunities of Muslims.

Therefore, the researcher has justified the linkages between the title, objective, problem and hypothesis. The efforts taken on review of literature are worthwhile.

RESEARCH METHODOLOGY

“Research design is the conceptual structure within which research is conducted. Research design indicates the blue print for the collection, measurement and analysis of data. The design includes an outline of what the researcher plans and frames the research work. It explains how samples are selected, sample size determined, how data is collected and which statistical methods are used for data analysis”.²⁹

Quantitative research approach is being used for the study as a quantitative research enables the researcher to examine association and differences among the variables. To carry out research effectively, Data is collected from primary sources and secondary sources.

Universe of the study: The study covers all the 52 railway station areas of Mumbai city dealing with Western line, Central line and Harbour line.

Sample of the study: To assess the quality of the study, the universe mentioned above is not possible for an individual to reach all areas of Mumbai city. Therefore, within Mumbai city there are 52 railway station areas, the researcher has purposely selected 40% of Western line, Central line and Harbour line viz. 20 areas for the research study. The researcher collects the filled questionnaire from 400 respondents including female/ male Muslim Financial planner in order to know the behavior of Muslims in Islamic financial planning and management. This research design fulfills the sample size determination suggested by R.V. Krejcie and D.W. Morgan.

DATA COLLECTION

Primary data collection involved Mumbai city, there are 52 railway station areas, the researcher has purposely selected 40% of Western line, Central line and Harbour line viz. 20 areas for the conducting the study. The researcher collects the filled questionnaire from female/ male Muslim salaried people from selected railway station, colleges, schools and companies. The researcher also visits to all Muslim minority institutions. The survey enumerators facilitated 20 respondents from each of the 20 areas selected of the Mumbai city in completing the questionnaire.

Table-1: Demographic Description of the Respondents

Demographic Variable	Demographic Categories	Number	(%)
Area	Western line	200	50
	Central line	140	35
	Harbour line	60	15
Gender	Female	152	38
	Male	248	62
Age	Less than 20years	4	1.0
	20-30years	112	28
	31-40years	174	43.5
	41-60years	110	27.5
Education	Graduation	208	52.0
	Post-graduation	129	32.3
	Professional	63	15.8
Occupation	Private	82	20.5
	Public	68	17
	Profession	250	62.5

Annual Income (in INR)	Less than 2 lakh	12	3.0
	2-3.5 lakh	88	22.0
	3.5 -5 lakh	285	71.3
	5 lakh and above	15	3.8
Annual Savings (in INR)	Less than 10,000	78	19.5
	10, 000-20,000	82	20.5
	20, 000-40,000	209	52.3
	40,000 and above	31	7.8
Savings Objective	Children's education	129	32.3
	Retirement	19	4.8
	Home purchase	180	45
	Children's Marriage	17	4.3
	Health care	52	13
	Others	3	.8

ANALYSIS AND RESULTS

In the present study researcher used this analysis for hypothesis testing. For testing the hypothesis or test of significance, following tests are performed.

i) 'z' test for two independent samples at 95% confidence level.

ii) **Kolmogorov-Smirnov** test for two independent samples at 95% confidence level.

For analysis researcher used statistical package SPSS version 21. In addition to this, excel add-in Mega Stat is also used. Depending upon the type of data statistical methods are chosen. Statistical analysis is categorized as descriptive analysis and inferential analysis, which is often known as statistical analysis.

Table-2: Frequency distribution of data related to financial planning and management

Statement		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Total
Islamic financial market is better than conventional financial market.	F	0	5	129	108	158	400
	%	0	1.3	32.3	27	39.5	100
Better financial planning and management is necessary for making soundful investment.	F	6	3	10	138	243	400
	%	1.5	0.8	2.5	34.5	60.8	100
Financial planning and management according to Shariah rules is necessary before investing your income.	F	21	2	8	183	186	400
	%	5.3	0.5	2	45.8	46.5	100

Interpretation

From above table, it is observed that

- Majority of the respondents (66.5%) are either strongly agree or agree with the statement that Islamic financial market is better than conventional financial market.
- Regarding statement better financial planning and management is necessary for making soundful investment almost 85% respondents are either strongly agreed or agreed. 92.3% respondents feel that financial planning and management according to Shariah rules is necessary before investing their income.

For in-depth analysis, the researcher gave the details of Descriptive statics parameters related to financial planning and management.

Table-3: Descriptive statics parameters related to financial planning and management

	N	Mean	Median	Mode	Std. Deviation
Islamic financial market is better than conventional financial market.	400	4.05	4	5	0.876
Better financial planning and management is necessary for making soundful investment.	400	4.52	5	5	0.725
Financial planning and management according to	400	4.28	4	5	0.95

Shariah rules is necessary before investing your income.					
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Interpretations

From above table, it is observed that

1. Mean value related to statement Islamic financial market is better than conventional financial market is 4.05 with low standard deviation value 0.876 indicates that most of respondents agree with this statement. Median value 4 and modal value 5 supports this. Hence, we may infer that Islamic financial market is better than conventional financial market.
2. Mean value related to statement better financial planning and management is necessary for making soundful investment is 4.52 with low standard deviation value 0.725 indicates that most of respondents strongly agree with this statement. Median value 5 and modal value 5 supports this. Hence, we may infer that better financial planning and management is necessary for making soundful investment.
3. Mean value related to statement better financial planning and management according to Shariah rules is necessary before investing the income is 4.28 with low standard deviation value 0.95 indicates that most of respondents agree with this statement. Median value 4 and modal value 5 supports this. Hence, we may infer that better financial planning and management according to Shariah rules is necessary before investing the income

For testing above hypotheses, Researcher has compared median rating scores with score 3 (which gives positive agreement opinion rating score).

Tests of Normality

Before selecting statistical test, we test normality of data as follows:

Researcher used **Kolmogorov-Smirnov** test for testing normality and results of which are tabulated below

Table-4

	Kolmogorov-Smirnov ^a		
	Statistic	df	Sig.
Influence of Traditional outlook and Shariah rules on the investment opportunities.	0.168	400	0.000

OBSERVATIONS AND INTERPRETATIONS

From the above table, it is observed that significant p value 0.000 for k-s tests is less than 0.05 clearly indicates that data for different characteristics related to influence of Traditional outlook and Shariah rules on the investment opportunities of Muslim salaried people is not normal. Hence, Researcher has been used non-parametric **one sample sign test** for testing significance of different characteristics related to influence of Traditional outlook and Shariah rules on the investment opportunities of Muslim salaried people.

One sample sign test

To test above null hypothesis, we use **one sample sign test** with hypothesized mean value 3

The details of which are tabulated as follows.

Table-5: One sample nonparametric sign test of median vs hypothesized score 3 for influence of Traditional outlook and Shariah rules on the investment opportunities of Muslims

	Median score	Sample size	Calculated 'z' value (one tailed, upper)	Significant P value
Hypothesized scores different characteristics related to influence of Traditional outlook and Shariah rules on the investment opportunities of Muslim salaried people.	$\mu_0 = 3.0$	n= 387	z = 6.61	p =0.000
Observed Mean rating scores for different characteristics related to influence of Traditional outlook and Shariah rules on	M= 3.67			

the investment opportunities of Muslim salaried people.				
Critical z values: 1. At 5% level of significance the corresponding z value is 1.645 2. At 1% level of significance the corresponding z value is 2.326				

OBSERVATION

From the above table, it is observed that 'z' value for null hypothesis is 6.61 which is greater than +1.645 (also greater than +2.326). Also, p value is 0.0000 which is less than 0.01. Hence, Researcher reject the null hypothesis at 5% & 1% level of significance.

INTERPRETATION

Based on the above data, it can be inferred that Median rating scores for different characteristics related to influence of Traditional outlook and Shariah rules on the investment opportunities of Muslim salaried people is greater than or equal to 3.

DISCUSSION AND FINDINGS

1. Out of total 400 respondents, 204 (51%) invest less than 10% amount of their total savings. 165 (41.25%) invest amount between 10% and 25%. only 31 (7.75%) invest between 25% and 50%. Graduate male respondents with age categories of 31-40 years invest more as compare to female respondents and majority of the investment is less than 25% of total savings.
2. Out of 400 respondents, 22 (5.5%) respondents investing in share market, 2 (0.5%) investing in bullion market, 123 (30.17%) investing in Mutual funds, 40 (10%) investing in bonds, 117 (29.25%) investing in gold/silver, and 96 (24%) investing in real estate. Graduate male respondents with age categories of 31-40 years invest more as compare to female respondents and majority of the investment is in Mutual funds.
3. Out of total 400 respondents, 121(30.25%) of respondents Shariah based investment objective is income and capital preservation, 67(16.75%) of respondents Shariah based investment objective is long term growth and 212(53%) of respondents Shariah based investment objective is short term growth. Majority of the graduate male respondents with age categories of 31-40 years invest more for the short term growth Shariah based investment objective as compare to income and capital preservation and long term growth.
4. Out of total 400 respondents, 266(66.5%) are either strongly agree or agree with the statement that Islamic financial market is better than conventional financial market.
5. Regarding statement better financial planning and management is necessary for making soundful investment almost, 381(85%) respondents are either strongly agreed or agreed.
6. 369(92.3%) respondents feel that financial planning and management according to Shariah rules is necessary before investing their income.

From the above findings Researcher concluded that, Shariah rules are necessary for better investment and better financial planning and management. Traditional outlook and Shariah rules have significantly influenced the investment opportunities of Muslims.

CONCLUSION

Financial Planning and Management is an integral part of any individual life, especially in this modern world where value of everything is expressed in terms of money. The active working period of human life is short as compared to the life period. This means people will be spending approximately the same number of years in after retirement what they have spent in their active working life. Thus, it becomes important to save and invest while working so that people will continue to earn a satisfying income and enjoy a comfortable lifestyle. Islamic Financial Planning and Management is a process of assisting Muslims in determining their financial goals and priorities and the resources to meet them optimally within the parameters of the Shariah rules. Shariah rules are very concern about the financial planning due to its financial implications on the family and society at large. Therefore, Muslims are encouraged and urged to plan their life economically and financially well to achieve the objectives of Shariah which bring prosperity and happiness to every Muslim salaried people.

Thus, Shariah rules are necessary for better investment and better financial planning and management while taking an investment decisions.

SCOPE FOR FURTHER STUDIES

Researcher has tried to evaluate the impact of Islamic financial planning on the investment behavior of Muslims such as investment in Shariah product, Awareness of Shariah rules and Quran principles, Shariah investment advice, Investment pattern and Savings pattern of Muslims, Investment objective and Financial literacy knowledge of Muslims. Further study can be conducted with reference to its impact on stock market performance, banking sector, growth rate, wealth creation and such other parameters.

LIMITATIONS OF THE STUDY

The geographical limitation of the primary data collection is confined to Mumbai city only. Respondents' opinion can be biased.

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**AN ADAPTION OF RETENTION STRATEGIES IN SELECT MANUFACTURING AND IT FIRMS:
AN EMPLOYEE PERCEPTION**

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ABSTRACT

The association or alliance between employer and employee is termed as "Employment Relationship". This relationship is characterised by mutual dependence, reciprocation and a policy of give and take between employer and employee. Presently due to a rapid growth in Information Technology Sector, there is a lot of influx of new firms into the industry; consequently requirement of professionally competent and right kind of manpower has increased. The employers in Information Technology Sector are facing high turnover of employees. Human Resource wing of IT firms are having perennial function i.e., recruitment, retention, and retraining. There is high attrition rate in respect of performing employees and retaining these employees, has become a challenge. "Employee Retention" has become a specialist function. After thorough literature study it has come to the knowledge of the researcher that certain factors such as Compensation, Poor Appraisal System, Lack of Employee Engagement, Insufficient Training and Development are very strong reasons for leaving the present employment. Besides this Job Dissatisfaction, Lack of Motivation, Lack of Morale, Lack of Team building, Poor Employer and Employee Relationship, Failure of Exit Interviews, Underutilisation of References are also pertinent reasons for employee turnover. In the first instance researcher has undertaken a study to test whether the above factors affect the retention of employees in Manufacturing and IT firms, secondly a comparison has been made to see whether the impact is similar on both IT and Manufacturing firms or different. The result of comparative study has shown that the impact of these factors is almost similar on both Sectors.

Keywords: Employee turnover, Retention, Retention Strategy.

INTRODUCTION

In the "International Labour Organisation" 100th anniversary celebrations it was emphasised that the most important feature of employment relations is uninterrupted alliance, association between employer and employee. Irrespective of the culture, people engaged, time, nature, size, and nature of the organisation, time, employment relations between employer and employee are bilateral and dependent on each other. But the astonishing factor is that both the parties involved are unaware of duration of the relationship. When the company is economically strong, it hires new employees and relationship is strong between employer and employee. It also promotes a sense of belongingness and faithfulness towards the company and the work (Jeff Haden- Qualities of remarkably loyal Employees-2019). But in a charged atmosphere where there is rapid progress in industrialization, the employment relationship is becoming more complex and unpredictable. The advancements in technology are providing managements plenty of opportunities to start new industries, as a result more and more new firms are coming into existence. At the same time employees also have plenty of chances to leave the current employment or firm. At all times there is shortage of good workers for the new industries. Though bringing up of many firms into existence gives plenty of opportunities to employees seeking greener pastures, it also brings number of problems to employers. The specialist manager of people always fails to understand the pulse of the employees (Miles Burke, 2018). The manager is simply in dark almost continuously as to what is in store; whether the employees go home after the day's work, to return to work the next day or not. He has to regularly tap different sources of man power supply. Recruitment has become a specialist function. No employer can prevent any employee from seeking the new opportunity (Robert Half - Employee Retention Strategies, 2018) Employer has to regularly tap different sources of man power supply. Recruitment of people in these circumstances has become a specialist function within human resource management function in these organizations. There are various reasons for employees quitting the organization such as Compensation, Poor appraisal system, Lack of employee engagement, Insufficient Training and Development, Job Dissatisfaction, Lack of Motivation, Lack of Morale, Lack of Team building, Poor employer and employee relationship which have been continuously subjected to study by various scholars.

A study on employee retention strategy was conducted by Roger E. Herman who is regarded as the founder of 'Strategies for Retention of employees' which was published in 1991 titled as "Keeping Good People: Strategies for Solving the Dilemma of the Decade". Another great thinker Gregory P Smith, who on the basis

of his extensive work has published in 2007 a book under the title “401 Proven Ways to Retain Your Best Employees”. Both these works together give an exhaustive list of strategies to retain employees in their jobs which could be adopted by any employer with or without modification.

Yet this study on Employee Retention Strategies was undertaken to identify the retention strategies in practice in Indian and multinational IT firms and High Tech Manufacturing firms. For this purpose a comparative study is conducted in respect of problems prevalent in Manufacturing and IT firms because both the firms are playing an important role in advancement of Indian Economy. A detailed study has been done on many factors affecting retention strategies in IT firms; subsequently same study is conducted with organisations in manufacturing firms also. To our astonishment it was observed that the factors which are affecting one firms belonging to one sector also affects the firms belonging to other sector with a very little degree of variation. There is a consistent relationship between the factors affecting retention strategies of both Manufacturing and IT firms. Before going to the details of the study it is essential to understand importance of these two sectors.

An article published in ‘The Hindu’ dated July 23, the 2018 titled “High attrition rate continues to be a bane for companies” authored by Amritha Nair-Ghaswala reveal that “75-90 per cent of new employees will decide whether or not to stay in the job within the first six months of employment. Although high turnover costs may not produce recordable associated losses, many employers and HR professionals underestimate the high impact of hidden costs”. According to experts and various authors IT professionals who are working in Tier –II cities such as Mangaluru, Hubballi, Belagavi etc., are always looking to switch over to Tier –I cities like Bengaluru, Chennai and so on for better prospects. Similar tendency also observed in all other sector.

REVIEW OF LITERATURE

There is a serious need for “Knowledge Development” among the Professional employees in IT Firms. In the present circumstances, the scope for knowledge development is less in many of the IT Firms. This has become one of the serious problems for employers in IT Firms resulting in high attrition rate (Carole Anderson-2018). The employers in IT Firms consider the impact of high attrition rate because it results in ordeals of the process of recruitment incurring additional expenditure (M.Hannay, Northam-2000). It is usually expected of an employee to renders his services to organization throughout his active work life (Anderson-2018). In the same way employer is required to provide employment to the employee so long as he is fit to carry out his work (Susam.M.Heathfield-2018).

Employment in a company or organization means bringing into existence a relationship between employer and employee which implies commitment on both parties, dependent on each other and maintaining the relationship for the advantage of both the parties. (Ruth .c. King -2007). It connotes that a congenial and interdependent bondage is established between employer and employee. Both the parties are keen to characterise, add features to the relationship (A.C.Keller-2019). Both employer and employee for reasons best known to them break this relationship. The employment relations can ended by employee for his personal reasons such as – nepotism and favouritism, poor quality of work life, poor facilities, inadequate remuneration, managements not giving good opportunities for employees, professional dissatisfaction, reasons relating to family and health (L.M.Isaed 2016). The rules and regulations prescribe the superannuation age up to which an employee can work in the organization which has been prescribed by statute (Julia Kagan-2018). Voluntarily quitting the employment due to unwillingness to work can also be a reason for ending the employment relationship (S.C.Butler-2018). The employment relationship can also come to an end because of death of the employee, this kind of severance of relationship between employee and employer and employee at behest of employee is called Voluntary Turnover (Robert Tanner-2017).

In the same way employment relationship can come to an end because of decisions of employer also (Rob Leonard-2015) for reasons such as business reorientation, underperformance of the employee, for reconstitution and reforming of organization and improving the system (Alison Doyle-2019), not obeying the orders of managers and the dissension with the colleagues, unruly and turbulent behaviour, dereliction, such other acts of misbehaviour in the organization as well as outside world (Ashok Kanani-2015), stealing, vandalism, immorality on the job, alcoholism, carelessness in the work, taking part in obstruction to work and not following the instructions of superiors or disobedience, keeping away from duty without proper orders from higher ups, (Micheal Josephson-2016) every organisation has got code of conduct and the acts which are against code of conduct, suffering from fatal diseases for long periods, inefficiency and not able to reach the targets (Wafi Assiri-16), and so on. From this we can infer that there are many varieties of reasons on the basis of which employee can leave the current job against his sense (Lea McLeod-2019). This sort of bereavement of current job of a worker against his will is what is called involuntary loss of employment. Whether it is voluntary or involuntary loss of job or work or employment these occurrences are called labour/employee

turnover. It is expressed by Michael Armstrong of UK that, “sometimes employee turnover is referred to as the employee or labour wastage index”. This is also known as “any permanent departure beyond organizational boundaries” (WayneF.Cascio:2006:54)

RESEARCH GAP

1. Literature survey has revealed that not much research study has been done comparing employee retention strategies between Manufacturing and IT firms, where as other sectors comparative study has been conducted by the various scholars.
2. No such comparative study of employee retention strategies between Manufacturing and IT firms has been conducted in the recent past.
3. No scholar has conducted comparative study of employee retention strategies between Manufacturing and IT firms particularly in the Mangaluru District.

OBJECTIVES OF THE STUDY

1. To examine the perception of employees of IT and Manufacturing firms on adoption of retention strategies in Mangaluru District.

HYPOTHESIS

H0: There is no significance difference in the perception of employees on adoption of retention strategies between IT and Manufacturing firms.

H1: There is a significance difference in the perception of employees on adoption of retention strategies between IT and Manufacturing firms.

METHODOLOGY

In a fast changing industrial and information based economy finding right kind of employees is quite critical. But more critical and challenging is the issue of retaining the employees with the organization. This is specially so in case of the Information Technology Industries. At this point it was thought whether these problems are prevalent only in Information Technology Firms or it is prevalent in other firms also. These problems are also prevalent in other industries. In fact high tech manufacturing Firms are having high attrition rate. Considering this aspect, ‘An adaption of Retention Strategies in Select Manufacturing and IT Firms: An Employees Perception’ was taken up. Hypothesis was formulated with null hypothesis to show similarity exists between IT and Manufacturing firms on adaption of Employee Retention Strategies. The intention is to know whether different retention strategies are common or otherwise. For this purpose, study of as many as 256 employees from manufacturing firms and 254 employees from IT firms were taken up as sample in Mangaluru District. The survey method was adopted for data collection and questionnaire was used as a research instrument. The details of the study are indicated below:

Type of Research	: Descriptive
Sources of Data	: Primary and Secondary
Data collection	: Survey Method,
Research Instrument	: Questionnaire
Sample Size	: 256 from Manufacturing & 254 from IT firms
Sample area	: Mangaluru
Sample Unit	: Corporate employees of Manufacturing & IT firms
Sampling Technique	: Convenience sampling
Tools for data analysis	: Descriptive statistics, Z test with independent samples.

RESULTS AND DISCUSSION

Profile of the Respondents: Gender classification

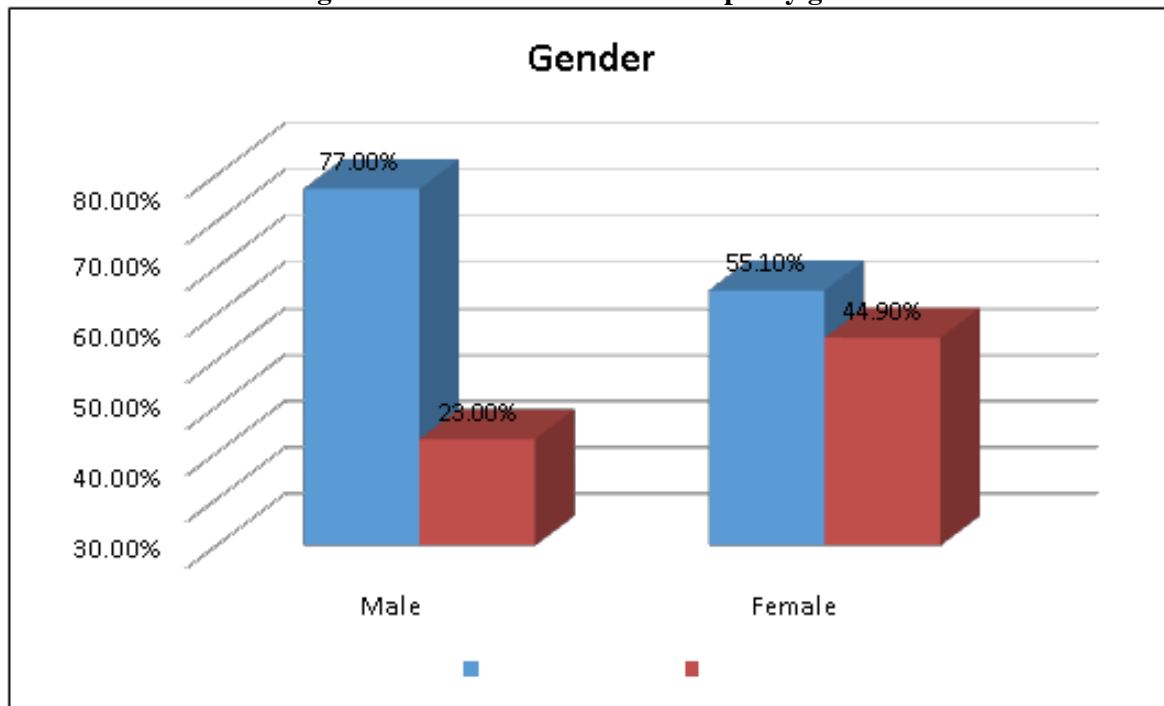
Table1.1: Distribution of the samples by gender

Gender		Organization		Total
		Manufacturing	IT	
Male	Frequency	197	140	337
	Percent	77.0%	55.1%	66.1%

Female	Frequency	59	114	173
	Percent	23.0%	44.9%	33.9%
Total	Frequency	256	254	510
	Percent	100.0%	100.0%	100.0%

Source: primary data

Figure 1.1: Distribution of the sample by gender



As far as gender was concerned 337 respondents were male employees representing 66.1% and 173 female employees representing 33.9% of which 197 male employees from Manufacturing firms and 140 from IT firms; 59 female employees from Manufacturing firms and 114 female employees from IT firms respectively.

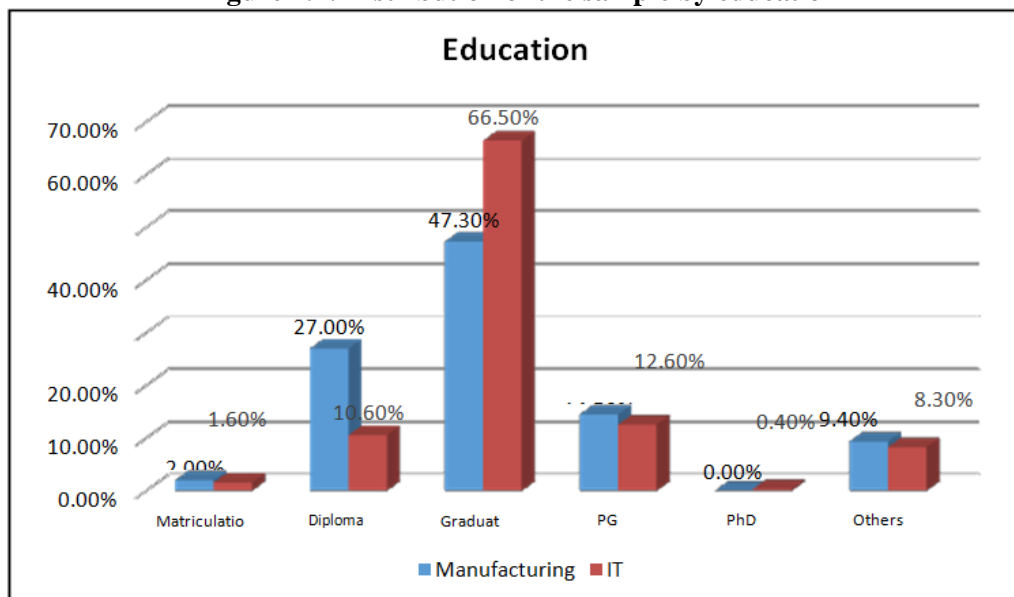
Educational Background

Table 1.2: Distribution of the sample by education

Education		Organization		Total
		Manufacturing	IT	
Matriculation	Frequency	5	4	9
	Percent	2.0%	1.6%	1.8%
Diploma	Frequency	69	27	96
	Percent	27.0%	10.6%	18.8%
Graduate	Frequency	121	169	290
	Percent	47.3%	66.5%	56.9%
Post Graduate	Frequency	37	32	69
	Percent	14.5%	12.6%	13.5%
Ph.D	Frequency	0	1	1
	Percent	.0%	4%	2%
Other Certification Courses	Frequency	24	21	45
	Percent	9.4%	8.3%	8.8%
Total	Frequency	256	254	510
	Percent	100.0%	100.0%	100.0%

Source: Primary data

Figure 1.2: Distribution of the sample by education



Adaption of Different Retention Strategies

Table 1.3 Frequency and per cent responses on adaption of Retention strategies in Manufacturing and IT and firms and results of independent Samples of Z test.

Strategies		Respon- dents	Manu- facturing	Information Technology	Total	CC	P Value
Compensation	YES	F	211	196	407	.065	0.139
		%	82.4%	77.2%	79.8%		
	No	F	45	58	103		
		%	17.6%	22.8%	20.2%		
Performance Appraisal System	Yes	F	216	221	437	.038	0.396
		%	84.4%	87.0%	85.7%		
	No	F	40	33	73		
		%	15.6%	13.0%	14.3%		
Career Development	Yes	F	206	197	403	.036	0.420
		%	80.5%	77.6%	79.0%		
	No	F	50	57	107		
		%	19.5%	22.4%	21.0%		
Employee Engagement	Yes	F	183	156	339	.106	0.016
		%	71.5%	61.4%	66.5%		
	No	F	73	98	171		
		%	28.5%	38.6%	33.5%		
Training and Development	Yes	F	226	197	423	.141	0.001
		%	88.3%	77.6%	82.9%		
	No	F	30	57	87		
		%	11.7%	22.4%	17.1%		
Employer-Employee Relations	Yes	F	188	136	324	.202	0.000
		%	73.4%	53.5%	63.5%		
	No	F	68	118	186		
		%	26.6%	46.5%	36.5%		
Motivation	Yes	F	180	161	341	.073	0.097
		%	70.3%	63.4%	66.9%		
	No	F	76	93	169		
		%	29.7%	36.6%	33.1%		
Job satisfaction	Yes	F	219	190	409	.134	.002
		%	85.5%	74.8%	80.2%		
	No	F	37	64	101		
		%	14.5%	25.2%	19.8%		
Morale	Yes	F	171	125	296	.175	0.000
		%	66.8%	49.2%	58.8%		
	No	F	85	129	214		
		%	33.2%	50.8%	42.0%		
Team building	Yes	F	170	163	333	0.023	0.596
		%	66.4%	64.2%	65.3%		
	No	F	86	91	177		
		%	33.6%	35.8%	34.7%		

Of the total 510 respondents, 256 were from Manufacturing firms and 254 from IT firms. Of which 9 are matriculates (1.8%), 96 diploma holders (18.8%), 290 were graduates (56.9%), 69 were postgraduates (13.5%), 1 Ph.D holder (0.2%), and 45 were from the category 'other Certification Courses' (8.8%).

Out of 256 were from Manufacturing firms; 5 are matriculates, 69 from diploma holders, 121 from graduates, 37 from postgraduates, and 24 from other Certification Courses. Out of 254 from IT firms; 4 are matriculates, 27 diploma holders, 169 graduates, 32 postgraduates, 1 Ph.D holder and 21 was from the category of 'other Certification Courses'.

Compensation: For the component 'compensation', 79.8% of the respondents opined 'yes' as against 20.2% of the respondents who opined 'no'. Further, the comparison between Manufacturing and IT firms revealed a non-significant association ($CC=.065$; $p=0.139$), indicating similarity in their pattern of responses.

Performance appraisal system: A non-significant association ($CC=.038$; $p=0.396$), was observed between Manufacturing and IT firms for the component 'performance appraisal system', where 85.7% of the respondents agreed as against 14.3% of the respondents who disagreed. The pattern of the responses from the respondents was also found to be similar.

Career Development: 79.0% of the respondents opined 'yes' as against 21.0% of the respondents who opined 'no' for the component 'career development'. Further, comparison between Manufacturing and IT firms revealed a Non-significant association ($CC=.036$; $p=0.420$), indicating similarity in the pattern of responses.

Employee engagement: A significant association ($CC=.106$; $p=0.016$) was observed between Manufacturing and IT firms for the component 'employee engagement', where 66.5% of the respondents agreed as against 33.5% of the respondents who disagreed. Further, the agreement was high among the respondents of manufacturing firms (71.5%) as compared to the respondents of IT firms (61.4%).

Training and development: For the component 'training and development' 82.9% of the respondents agreed as against 17.1% of the respondents who disagreed. Further, comparison between Manufacturing and IT firms revealed a significant association ($CC=.141$; $p=0.001$), where higher levels of agreement was found among respondents of Manufacturing firms (88.3%) as compared to the respondents of IT firms (77.6%).

Employer-employee relationship: A significant association ($CC=.202$; $p=0.000$), was observed between Manufacturing and IT firms for the component 'employer- employee relationship', where 63.5% of the respondents agreed as against 36.5% of the respondents who disagreed. Further, the level of agreement was high among the respondents of manufacturing firms (73.4%) as compared to the respondents of the IT firms (53.5%),

Motivation: For the component 'motivation', 66.9% of the respondents agreed as against 33.1% of the respondents who disagreed. Further, comparison between Manufacturing and IT firms revealed a Non-significant association ($CC=.073$; $p=0.097$), indicating similarity in the pattern of responses.

Job satisfaction: 80.2% of the respondents agreed as against 19.8% of the respondents disagreed for the component 'job satisfaction'. Further, the comparison between Manufacturing and IT firms revealed a significant association ($CC=.134$; $p=0.002$), where higher levels of agreement was found among the respondents of Manufacturing firms (85.5%) as compared to the respondents of IT firms (74.8%).

Morale: A significant association ($CC=.175$; $p=0.000$), was observed between Manufacturing and IT firms for the component 'morale', 58.0% of the respondents agreed as against 42.0% of the respondents who disagreed. Further, the level of agreement was high among the respondents of manufacturing firms (66.8%) as compared to the respondents of the IT firms (49.2%).

Team building: For the component 'team building', 65.3% of the respondents agreed as against 34.7% of the respondents who disagreed. Further, the comparison between Manufacturing and IT firms revealed a non-significant association ($CC=.023$; $p=0.596$), indicating the pattern of the responses to be similar.

FINDINGS

After thorough analysis, the researcher found that in the strategies such as Compensation, Performance Appraisal System, Career Development, Employee Engagement, Motivation, Job satisfaction and Team building cases, the responses are similar between Manufacturing and IT firms. Where as in Training and Development, Employer-Employee relationship and Morale cases there is a dissimilarity found in the responses which indicates that each sector considered these strategies independently and think of adapting.

CONCLUSION

Manufacturing sector is a large sector in the Indian Business having varieties of production and the study covers such varieties of organisations to cover the responses. Similarly IT is equally competent sector where lot of attrition exists. Keeping in that mind, the researchers wanted to examine the adaption of different strategies in both Manufacturing and IT sector & the results found that there are seven strategies are adapted commonly in both the sectors.

SUGGESTIONS

The adaption of strategies such as Compensation, Performance Appraisal System, Career Development, Employee Engagement, Motivation, Job satisfaction and Team building are commonly used in manufacturing and IT sector according to the responses received. Hence these strategies can be considered as generally accepted for adaption. The Organisations can make use of these strategies depending on the situation arises.

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TOWARDS UNDERSTANDING THE MUSLIM PERSONAL LAW WITH SPECIAL REFERENCE TO WOMEN'S RIGHT

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ABSTRACT

In a civilized society law is must. In India there is rule of law which requires law in every field. For family affairs there is law to deal with these. For different religious and cultural communities, the matter of marriage, dower, dissolution of marriage, maintenance, gift, will, waqf, guardian ship, inheritance, joint property, karta, sapind etc are dealt by their own customs, personal laws etc. These are neither illegal nor against our constitution. In most of the cases the women's condition is also better. Similar is the case of Muslim personal law which is applied on Muslim persons in India.

1. INTRODUCTION

Muslim law is like other laws. The basic difference is that the concept of Sovereignty belongs to Allah. The Holy Quran is His guidance and prophets are interpreters. Prophet Mohammad (peace and blessings of Allah be on him for short PBUH) is His last messenger so one is to rule and be ruled as per instruction of these two. The religion is known as Islam and followers are Muslims. Muslim is that who follows Islam. The word 'Muslim' means one who submits his will before Allah (the most merciful). This is done by reciting that there is no worth worship except one Allah (the most merciful) and Mohammad (PBUH) is the messenger of Allah (the most merciful). Thus, anyone who willingly submits its will to the authority of Allah (the most merciful) is a Muslim. All the prophets before he prophet Mohammad (PBUH) are considered Muslims. The Holy Qur'an specifically mentions Abraham who was long before Moses and Jesus that, 'he was not a Jew or a Christian but a Muslim,'¹ because, he had submitted to the will of Allah (the most merciful). There are Muslims who are not submitting at all to the will of Allah (the most merciful). On the other hand, there are Muslims who are doing their best to lead Islamic life. Judgment of Islam cannot be looking at individuals who have a Muslim name but in their deeds. They are not Muslims if they are not living or behaving like Muslims. The extent of being a Muslim can be according to his submitting to the will of Allah (the most merciful), in his beliefs and his deeds. There are certain principles laid down by Islam for those to be known as Muslim. True belief in Allah (the most merciful)² and His messenger is base of this faith. Scholars say that one who accepts the oneness of Allah (the most merciful) and Mohammad (PBUH) is His messenger, with the tongue but does not confirm it in its heart, he shall be included among the unbelievers, and shall go to hell hereafter. Although persons may treat him a Muslim because it is not known what is in his heart, and man is obliged to accept what is on his tongue. The former Union Minister Maulana Abul Kalam Azad in his Urdu commentary of the Holy Qur'an, supplicates it.³ Once, under the influence of some spiritual urge, the Holy Prophet Mohammad (PBUH) told one of his companions to go and tell people that whoever in his life even once says with his tongue, there is no worth worship but Allah (the most merciful) will go to heaven. It means oneness of Allah (the most merciful) is pivotal in Islam.

2. WHAT IS MUSLIM PERSONAL LAW

Personal law is that law which applies upon Muslim person without considering the territorial limitations of provinces or intra national boundaries⁴. It is also known as family law because it deals with the family affairs of the followers. Sharia⁵ is also synonyms for this which means beaten path or much used path i.e each and every prophet has followed this law which is contained in the Holy Qur'an.⁶

¹ Abraham was neither a Jew nor a Christian, but he was one inclining toward truth, a Muslim i.e submitting to Allaah]. And he was not of the polytheists. Holy Quran S 3 A 67

² Say, 1. "He is Allah (the most merciful), the One. 2. Allah (the most merciful), the Absolute. 3. He begets not, nor was He begotten. 4. And there is nothing comparable to Him."

³ Tarjumanul Qur'an, (Delhi:MMI), 1931, vol. i, p. 119

⁴ Dr Badre Alam Khan, 'ADR for Muslim Personal Law' (Jaipur:UBH, 2018) ISBN 978-81-8198-952-4

⁵ The Muslim Personal Law (Shariat) Application Act 1937 permits personal law in India.

⁶ Holy Qur'an S 26: A 196 that this Qur'an is what We have revealed in Earliest Books; Further S 87: A19. That this book is what we have revealed to Abraham and Moses

3. WHAT SHAPE ISLAM GIVES TO ITS FOLLOWERS

Islam, say its followers, is a true religion because it teaches a person everything including how to act and behave in daily life. A Muslim is sure of himself both in this world and in the life hereafter that he will get success, prosperity and freedom from anxiety and is not troubled with doubts and conflicts in the life hereafter. Most of the children respect their parents and other relatives as per guidance of Holy Qura'an.¹

Muslims have been guided to present good role models to set a good example to the non-believers so that when they look at a Muslims and their behaviour they may feel how great this path is and consequently they would like to accept this path. So, they try to project the right image. They are duty bound to be honest, truthful, trustworthy, modest, patient, tolerant, punctual, kind, generous, forgiving, brave and hard working as per scripture revealed to the Prophet. Tawhid i.e belief in the Oneness of Allah is also important in Islam which helps them a lot. Anyone who believes in Tawhid, surrenders completely to the will of Allah and becomes a true servant of Him. Tawhid gives a person a lot of respect and confidence on Allah (the most merciful) because it provides power over everything and the belief that He keeps in His loving care. It also makes a person humble and modest. The Prophet Mohammad (PBUH) has said that modesty is part of faith². A Muslim person is never arrogant or rude because of the belief that everything on earth belongs to Allah so there is no reason to be proud and boastful. An intelligent and wise man named after Luqman Hakim, has been quoted in the Holy Qur'an while he addressing his son, "O my son! Do not make partner with Allah. Truly, polytheism is a tremendous wrong"³. Further- "O my son! establish prayer (in India termed as Namaz) and command the right and forbid the evil and bear patiently whatever may come to you, for this is firmness (of purpose) in (the conduct of) affairs. Do not turn your face away in disgust from people, nor walk arrogantly in the land. Surely, Allah does not love any arrogant boaster. Be moderate in your pace and lower your voice. Truly the harshest of all voices is the voice of the ass"⁴. Muslim is one who is willing to give up pleasure for life hereafter and has the ability to settle differences without resentment or anger. Qur'an says that life is too short to waste in idle activities so one is to refrain from prejudice, intolerance, hatred or revenge. Prophet guided not to think little of any good deed even if it is just greeting fellows with a cheerful face. Smiling with fellow beings is an act of charity⁵. There is concept of community of moderation which has been explained in the Holy Qur'an as- "Thus have we made of you an Ummah justly balanced, that you might be witnesses over the nations, and the Apostle a witness over yourselves,"⁶. This society is to be one community which is explained nicely in the Holy Qur'an Surah (Chapter of the Holy Qur'an) Al-Ambiya (The Prophets), Allah says: "Verily, this brotherhood of yours is a single brotherhood, and I am your lord and cherisher: Therefore serve me (and no other)"⁷.

4. STATUS OF WOMEN IN ISLAM

There are some misconceptions regarding status of women in Islam that she suffers under the abuse of her husband. The non-Muslims in general and media in particular have specialized in portraying these images. Although the behaviour may not be so harsh but prejudices remain. In Asiatic countries, these prejudices started from misunderstandings, ignorance, old tales and sayings, which entered in the society and after sometimes people believe what is told to them is real religion and the word of Allah (the most merciful), it mixes with cultural attitudes and takes in the name of religion. So, it has been and remains a challenge to affirm the rights of Muslim women in Islamic society.

Today, the women are said to be liberated in the west and that the women's liberation movement began in the 20th Century. Actually the women's liberation movement was revealed by Allah (the most merciful) to Prophet Mohammad (PBUH) in the seventh century. The Holy Qur'an and the Traditions of the Prophet known as hadis and/ or sunnah guarantee a Muslim woman certain rights and duties.

¹ Holy Qur'an S 17: A 23- 24

² Bukhari and Muslim also known as Sahihain

³ Holy Qur'an S 31: A13)

⁴ Id S 31: A 17, 18, 19; A Muslim is not allowed to use voice above the voice of ass i.e above 80db so use of mike openly is not as per Islamic instruction.

⁵ Id S 3 : A 134

⁶ Id S 2 : A 143

⁷ Id S 21: A 92; S 49: A13

There are some rights provided to women which are like those of a man but they may not be necessarily identical. The terms equality and sameness are two different things. This difference may be understood because man and woman are not identical but they are created equals by creator. It is wrong imagination that woman is inferior to man on the basis that her rights are not identical. Islam takes her personality into consideration, acknowledges her, and recognizes her independence and role.¹ The marker of status is right. So it is important to see the rights of women which may be enumerated as under-

4.1. Human Rights of Women in Islam

Woman is equal partner in the procreation of children to continue human generation. They are father and mothers which is essential for life. Through this partnership, woman has an equal share in every walk of life be that rights or duties.²

4.2. Civil Rights

The civil rights aspects and education is having much importance. The Prophet (PBUH) said that seeking knowledge is a mandatory for every Muslim which includes male and female both. Ignorance is equals to oppression for both man or woman. Women used to pose questions directly to the Prophet (PBUH) and to other Muslim leaders. They (heads) offer the opinion of women folk concerning religion, economics, and social matters.³ Although there is patriarchal system in Islam women are not forbidden for holding important positions in service. Women participated in public life, accompanying Muslim armies into battle to nurse the wounded, prepare supplies, and serve the warriors, and so on at the time of prophet and caliphate. They were not restrained in the houses or treated worthless creatures or deprived souls.

4.3. Economic Rights⁴

Islam allows women her economic activity. Her contributions to society in this term is loudable. From the prophet's days greater financial security was assigned to women. They are not only entitled to receive marital gifts, to keep properties and income for their own security but also they are not under obligation to spend a penny on the household. She is entitled to receive maintenance during marriage and during the waiting period where she is divorced from her husband⁵. Whether she is a wife or mother, a sister or daughter, she is allowed to receive a certain share of deceased kin's property as Qur'anic sharer, and no one can disinherit her.⁶ Although both man and woman are entitled to inherit property of relations, their shares may vary. In some instances the man receives double shares whereas the woman gets half only; this is because the man by law is solely responsible for the complete maintenance of his family. It is also his duty to contribute financially to all good causes in his society. The woman, in contrast, has no obligatory financial responsibilities. She is provided for, whether by her husband, son, father, brother, or other male relative. If she has no relation on whom she can depend, and she has no inheritance, then she is the responsibility of the society as in India waqf boards are responsible for this.⁷ She may be given aid or a job for her livelihood if no one is there to maintain her, and whatsoever money she makes will be hers. So, in the hardest situation her financial responsibility is limited, while the man's is unlimited.

4.4. Marital Rights

It is important to look at the rights after her marriage. The Holy Qur'an states the equality of both sexes.⁸ Marriage is not just a physical or emotional necessity,

¹ Id S 55: A 35

² Id S 4: A 1. Further- O mankind! Verily we have created you from a single (pair) of a male and female, and made you into nations and tribes that you may know each other. Holy Qur'an S 49: A 13

³ Id S 58:1-4; S 60: A 10-12

⁴ Dr Badre Alam Khan, 'Economic Rights of Women' (Delhi:APD, 1999) ISBN 81-7435-173-6 p 42

⁵ Id pp 3-7

⁶ Ibid chapter inheritance

⁷ S 4 the Muslim Women (Protection of Rights on Divorce) Act 1986

⁸ Holy Qur'an S 30 A 21 And among His signs is that He created for you mates from among yourselves that you may live in tranquility with them, and He had put love and mercy between you; Verily, in that are signs for people who reflect.

but in fact, a sign from Allah (the most merciful). It is a relationship of mutual rights and obligations based on divine guidance. Allah (the most merciful) created men and women with complimentary natures¹. In the Holy Qur'an, He laid out a system of laws to support harmonious interaction between the sexes. Allah says that 'they are your garments and you are their garments'.² Clothing provides physical protection and covers the beauty and lacunas of the body. A spouse is viewed similarly. Each protects the other, hides the faults and compliments the characteristics of the spouse and to foster the love and security that comes through marriage. Amongst rights of Muslim wives the first one is to receive dower from the husband, which is a gift as part of the marriage contract. The second is right to kind treatment. The Prophet (PBUH) said that the most perfect believer is the best in conduct. And the best of you are those who are best for their wives.³

4.5. Family Rights

A woman, as mother, has much importance. This is what all of us have been blessed. A mother, in Islamic system, receives a special place of honour. A man came to the prophet Mohammad (PBUH) and submitted, 'O prophet of Allah, who amongst the people is the most worthy of my good deeds? The prophet replied, 'your mother'. The man said then who is next: the prophet said, 'your mother'. The man asked again, then who is next: the prophet said, 'your mother'. The man asked further and only then did the Prophet say, your father.⁴ Kindness to parents, especially to mothers, is a key stone in the Islamic structure. So seventy five percent of that goes to mother and 25 percent to father.

4.6. Social Rights and Wearing of Hijab

One more issue creates misunderstanding is the custom of wearing hijab. The Holy Qur'an commands for modest dress for men as well as women. A Muslim society dresses in a particular way. Some Muslim women interpret the Holy Qur'an and Hadis as guiding them to dress modestly and cover their hair in all public situations while some others insist that their whole body including hands and face are to be covered. Many Muslim women freely choose to dress modestly in order to avoid the public scrutiny, judgments, and social dynamics related to physical appearance. It is appreciable the dressing in such ways that do not draw attention to bad eyes. It is as per the Holy Qur'anic teachings both of modesty and gender equality. No The Islamic scholars can't appreciate if women being forced to remove themselves from public life and violence against them. The denial of right of women to work and have property is against the religion. She can raise voice if government is curtailing her right. Where such treatment takes place in a Muslim ruled state, people of other faiths will think that there is disparity between beliefs and practices in Islam. The fact that the actions of certain individuals who claim Islam do not truthfully or accurately represents Islam.

5. CONCLUSION

Like other personal Law Muslims⁵ are also allowed to follow their personal law which includes the Qazi's Act 1880; The Mussalman Wakf Validating Act 1913; The Mussalman Wakf Validating Act 1913; The Mussalman Wakf Validating Act 1930; The Muslim Personal Law (Shariat) Application Act 1937; The Dissolution of Muslim Marriage Act 1937; The Muslim Women (Protection of Rights on Divorce) Act 1986. The Wakf Act 1995 etc. In at least two cases status of women was misunderstood in Muslim law i e Saburannessa v. Sabdu Sheikh⁶ and Moammad Ahmad Khan v. Shah Bano Begum.⁷ In concluding the things it may be said that personal laws are those laws which do not deal the society at large but only family affairs of the parties that is why Supreme Court held that if Constitutional principles are applied on these laws it will be like entering china bull in a glass house. In Vishnu Charan Mohanti v. Union of India⁸ the Orissa High Court held that personal laws do not affect article 14 of the Constitution of India.

¹ Dr Badre Alam Khan, 'ADR for Muslim Personal Law' op cit

² Id S 2: A187)

³ Badre Alam Khan op cit

⁴ Sahih Bukhari

⁵ Indian Christian Marriage Act 1872; The Indian Succession Act 1925; Parsi Marriage and Divorce Act 1936; The Hindu Marriage Act 1955; The Hindu Succession Act 1956; The Hindu Minority and Guardianship Act 1956; The Hindu Adoptions and Maintenance Act 1955 etc.

⁶ AIR 1934 Cal 603,

⁷ AIR 1985 SC 945

⁸ AIR 1993 Ori 176

B R AMBEDKAR ON BUDDHISM**Karnika Dubey**

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ABSTRACT

Two aspects have been highlighted by the history of religious conversions. One is the transformation of one's spiritual and transcendental realm, and the other is the social and political domain, which includes a sense of rejection and assertion of one's political outlook of existing religious and philosophical world views. In this context, this article explores the contours of B.R. Ambedkar one of modern India's most important political thinkers, after 40 years of experimenting with the Hindu religion, embraced Buddhism. This paper is divided into two parts; the first deals with the engagement of Ambedkar with Hinduism with the hope of reforming the same but he declared to leave the religion in 1936 after failing in his attempt for 20 years. The second part deals with both explicit and implicit deliberations by Ambedkar to select the right noble faith, that is, Buddhism based on equality and compassion, whose foundation was egalitarianism. In order to reject Hinduism and seek refuge in reformed Buddhism, that is, Navayana Buddhism, he used Deweyan experimentalism and Buddhist rationalism.

Keywords: Buddhism, Caste, Discrimination, Socialism, Reformation

INTRODUCTION

'I assure you solemnly I'm not going to die a Hindu' was Dr's ultimate choice. He expressed this on October 13, 1935, in Yeola, Babasaheb Ambedkar In another meeting held on 30&31 May 1936 at Nashik. 1 Conference, in Nashik: Bombay has attacked and developed strongly Hindu and Hindu social systems clearly, Hinduism could not appeal to his awareness, and his respect for oneself, not Hinduism assimilated. 2 Why was it so contradictory to Hinduism? Why did he do that? Do you want to leave Hindu fold desperately? What forced him to reach the end conversion decision? These are the issues on which I have debated document. Besides, Dr Ambedkar took nearly 20 years to achieve the actual result conversion in Nagpur after its first public on October 14, 1956, announcement that Hinduism should be discarded and another religion adopted in 1935 Yeola. - Yeola. He conducted an extensive and comparative study during this period nearly all the world's main religions. He tested all religious possible conversion alternative. But he ended up embracing Buddhism. Why has he chosen Buddhism? How did Buddhism think it could serve its cause? The Face responses to Dr Ambedkar's genesis will satisfy everyone. These questions related in particular to his conversion and his mission to life in general. This paper is intended to try and explore this genesis.

BACKGROUND

The Brahmanic dominance's historical roots can be found in Vedic the Hindu canonical literature of religious texts. Buddhism was born a powerful force for Indian society debrahmanization. It was a great thing. Inculcating humanitarian principles in the Indians Systematic Movement of the company. In the Rigveda, according to Purusha-Sukta or the hymn of creation. From the Purusha, the divine man, came the Brahmin the Kshatriyas, the Vaishya, the shudra from his thighs. The legendary Chaturvarnya theory is four-fold society division. This system has spread This varnashrama inequality. The custodians of Hindu Brahmin, the priestly classes the other varnas, the warriors' class of the Kshatriya, The trader class is going to shudra the caste. Ati or Ati-Shudras Avarnas were Antyajas and branded as untouchables they were especially forced to serve Porahamin's top classes. The Census of Buddhism before Babasaheb Ambedkar In 1951 only 2487 Buddhists registered in Maharashtra were registered. But that's all. The Buddhist population could then swell into India within five years. 32,50,277 of them. The Role in India of Buddhist Missionaries conversion to Buddhism is not so remarkable and important Ambedkar, Dr Babasaheb. So you can put that forward safely the recovery of Buddhism in Modern India is primarily Dr Ambedkar Babasaheb. Buddhism's revitalization in Modern India is the growth of the seed of Buddhism in Indian soil developed and reminiscent. In his capacity and for liberation, Dr Babasaheb Ambedkar. In India, untouchables tried to revive Buddhism. Dr Babasaheb resurrected Buddhism in Modern India, In studying his genesis, Ambedkar can be well-understood conversion into Buddhism, Buddhism course, his conversion and Revival of Buddhism Writings and speeches and the consequences of his Buddhist conversion. During the conversion ceremony in Nagpur on October 14, 1956 Initiation of Dr Babasaheb Ambedkar and Maisaheb by Mahasthvir Chandramani the Buddhists Ambedkar. The people who are willing to go Babasaheb Ambedkar the Hindu faith should stand with folded hands and embrace Buddhism. Please recite trisharan after him and Pancha Sheela. In answer to his announcement, the whole the gatherings were held, and Dr Babasaheb Ambedkar initiated the Buddhists. Babasaheb Ambedkar gave twenty-two oaths to the more than five lakh peoples the Buddhism was initiated for their relief from the Hinduism's grip. In his

speech on October 15, 1956, on the occasion of his Conversion to Buddhism Saying, "Those who studied Buddhism have a different reason to choose this place. History will learn that there were the people in India who propagated Buddhism Nag people were the Aryan's fierce enemy Many strong fights. Are there many examples available between Aryans and non-Aryans? Puranas about were the Aryans, and Naga had burned nagas. We are his descendants. The people of Naga who tolerated the depression. They needed a big man to uplift them, and in lord Gautam, they found that big one Buddha. The Naga spread Lord Buddha's teachings all over India. We nagas, in and around Nagpur was the principal dwelling of the Naga people. This town is therefore called the city of Nagas "Nagpur." The speeches by Babasaheb Ambedkar clarify all the conversion questions To Buddhism. - To Buddhism, it helps us to understand his Hindu religious philosophy religion for which discrimination and human exploitation were based in India for thousands of years. Need a social change response to convert the solution for social change was appropriate to Buddhism. In theory, he constructed through his writings and speeches the whole favourable environment. His Health mental setting up of depressed conversion classes was prepared for discourses. He delivered several speeches between May 1924 and November 25, 1956, in India and abroad many places concerning Buddhism more than five lakhs converted to his speeches and writings On October 14, 1956, Buddhism. It was the largest and most important conversion to the world of Buddhism. Every Buddhist can give his message. It led to various other conversions to Buddhism Initiate others for the future of Buddhism. The process of conversion is still noteworthy Buddhism is underway. The light from Babasaheb Ambedkar Neo-Buddhist Culture has developed in India to convert to Buddhism. His Health urges international Buddhist countries to help resolve the problems Buddhists in India are not well understood and accepted by many of followers that will help in furthering if well taken and understood Buddhism spread throughout India.

Buddhist Practice

During the time of the Buddha, there was only one school of Buddhism, which is the one that the Buddha taught; however, over time, there came to be different sects of Buddhism. Fissures produced these Buddhist sects within the monastic order. Such fissure occurs in differences in practice, not in belief in the doctrine. In other words, regardless of what sect of Buddhism one is talking about, all adhere to the Buddha's doctrine of the Four Noble Truths and the Eightfold Path. Two major schools of Buddhist thought are Theravada and Mahayana Buddhism.

Theravada Buddhism

Theravada translates to "the School of the Elders" since it is believed by some to be closer to the Buddha's original teachings. According to Theravada Buddhists, each person is responsible for their enlightenment. There are teachers and models, and the Buddha is exemplary, but, everyone must ultimately reach enlightenment by their own volition. Today, Theravada Buddhism is practised in much of mainland Southeast Asia and Sri Lanka.

Mahayana Buddhism

Mahayana Buddhism was a school that developed in c. 100 C.E. Mahayana means the "big vehicle." It is a big vehicle that transports more sentient beings off the samsaric cycle towards enlightenment and nirvana. One of the cornerstones of Mahayana Buddhism is compassion, which is visualized in the appearance of bodhisattvas. Bodhisattvas are altruistic enlightened beings that vow to delay their parinirvana (final nirvana) until every sentient being reached enlightenment. Mahayana Buddhism is most commonly practised in East Asia and Vietnam.

Differences

Where Theravada and Mahayana differ is that Mahayana regards becoming a bodhisattva as the ultimate goal. Therefore depictions of bodhisattvas are frequent in Mahayana art. Another fundamental difference between the two schools is how they regard the character of the Buddha. Mahayana considers the Buddha to be nearly divine—he is superhuman, and as such, he is worshipped in Mahayana Buddhism.

India Buddhist's Socialism

Dr B.R. Ambedkar registered the Buddhist Society of India on May 4 in the Mumbai Office of the Company Registrar, 1955. He held a formal ceremony on May 8, 1955, in Nare Park, Bombay. Announcement of the foundation of this Buddhism Society. Some of society's objectives and objectives were:

- 1) Promoting Buddhism propagation in India.
- 2) To set up religious and scientific schools and colleges.
- 3) To create orphanages, hospitals and centres of relief.
- 4) Promoting benchmarking for all religions.

5. To publish and issue leaflets in Buddhist literature; pamphlets to give the common Buddhist religion a true understanding.

6) To organize meetings and conferences of the Indian Buddhists action and fellowship building.

Many social reformers have been in the history of the social, religious reform movement in India To reform the Hindu socio-religious structure, various organizations were established. Mahatma Phule founded Brahmo Samaj, Raja Ram Mohan Roy Dr Ambedkar and other organizations, Satyashodhak Samaj, also; The Buddhist Society of India was established. Chaturvarnya System is well-known untouchables were never treated as human beings in Hinduism. So no one existed Dr Ambedkar option to renounce Hinduism and to look for another option untouchables option to improve their social status as a human being the Hinduism denied. Dr Ambedkar took all these things into account organization. Hinduism is rooted in the denial of democratic values as social inequality Chaturvarnya stratification caused irreparable damage to the overall evolution of tens of thousands of years untouchable as human beings. Even the religious and social people modern India reform movement has not changed undemocratically, inhumanely Hindu traditions. The untouchability practise incidents to date, the Hindu fold is usually seen in Devdasi, Sati, Dowry, female infanticide, and others in the struggle for social democracy Dr Ambedkar's civil rights movement the Buddhist Society of India, considered one of the following, was founded in India significant organizations for the Social Reform Movement, democracy values.

DR. Babashab Ambedkaer Conversion to Buddhism

In the Hindu social sector, Dr Babasaheb Ambedkar wanted to correct mistakes order. He wanted to free the untouchables of Hindu social clashes. He tried to reform from within the Hindu social order; the so-called Hindu leaders are striving to appeal for the same. His efforts were nevertheless in vain. Rather he was confronted with the orthodox Hindus' wrath. Dr Babasaheb Ambedkar, therefore, decided to turn to the left with no alternative. Other religion, a religion based genuinely on democracy Freedom, equality, brotherhood and social justice principles. He thought it was just the Dhamma Buddha, i.e. the most appropriate Buddhism Dr Babasaheb Ambedkar, therefore, on October 14. Religion for his conversion. He embraced Buddhism with his followers. He decided that Buddhism would be restored India, it's home country. To enhance democracy in India and restructure the Hindu society on the revival and democratic principles, it was necessary to spread the Buddhist to India.

Ambedkar embraced Buddhism for Three Reasons

October 14, 1956, was an important moment in the history of the Dalits. B R Ambedkar and 365,000 of his Dalit followers decided on this day to leave the folds of Hinduism and embrace Buddhism. The conversion of Ambedkar to Buddhism marked a moment when the country's Dalits received a new impetus and a voice that was previously constrained by Hinduism's four-fold varna system. The basic tenets of Hinduism had long frustrated Ambedkar, considering the inherent characteristics of religion, especially the caste system, to be a greater threat to freedom in Indian society than that of the British. Ambedkar believed that the only way the Dalits could find a place for themselves in Indian society was by way of conversion, unlike Mahatma Gandhi, who considered the internal reform of the caste system to be the way forward.

Ambedkar addressed a massive gathering of Mahars in Mumbai in May 1936, where he declared his thoughts on conversion and why he considered it the best path to emancipation. Very specifically, I say to you all; religion is for man and not man for religion. Convert yourselves to get human treatment,' said Ambedkar. His switch to Buddhism was hardly impromptu, however. He spent the next 20 years thinking about which religion would best suit his needs. Because of the foreignness attached to them, he dismissed the idea of converting to Islam or Christianity. As Professor Gauri Vishwanathan explained, even when he decided to convert to a different religion, Ambedkar did not want to betray the folds of 'Indianness'. After a long process of contemplation of religion, however, he chose Buddhism. He came out with his version of the Buddhist Dhamma, where he modified those aspects of Buddhism that he considered not to align with the overall rationality inherent in religion.

Unfortunately, after practising Buddhism, Ambedkar did not live long and passed away just two months after his official conversion. For decades, scholars have tried to reflect on Ambedkar's reasons for conversion since his death, and his choice of Buddhism in particular. Here are three main reasons that scholars have considered the cause behind the shift of Ambedkar to Buddhism as being.

The fact that it was a political stunt was a common scholarly critique of Ambedkar's conversion. Ambedkar, as a measure of protection against the rule of the Hindu majority, had long demanded separate voters for the untouchables. After much agitation, however, in the Poona Pact of 1932, which was signed by Ambedkar

together with Pandit Madan Mohan Malviya to break Gandhi's protest against the separate electorate demand, he gave up on his demands. Several critics, such as sociologist Gail Omvedt, believed that the conversion of Ambedkar to Buddhism was a political protest aimed at his frustration at being unable to get separate voters for the untouchables.

Social Reformation

In Hindu society, there was a gradual inequality principle. All Four Varna and thousands of castes and subcastes have been classified one by one with respect and fear of those below or below the Varna those above Varna and Caste. The most serious form of untouchability. The touch and the shadow of the untouchables contaminated the highest castes. The Untouchables pollution was so strong that their touch and entrance into temples had polluted even Gods. In the Hindu order, Dr Ambedkar has worked untiringly for the reform. He would like to rebuild the old, democratic social order Freedom, equality, brotherhood and social justice principles. When it comes to it learned that it was impossible to reform or rebuild the Hindu society. Within Buddhism, he turned. He gave up Hinduism and took up Buddhism called on its millions to become Buddhism with the hope of giving an equal, fraternal and social model societal basis Justice and free from unfairness, injustice, disdain, ignominious pollution etc. He wanted Buddhism to be a Hindu antidote. Almost half a million of his followers were converted in his appeal on October 14 1956. Dr Babasaheb Ambedkar died in only 52 years after this historic event. But the conversion movement was not hampered. The untouchables were liberating them from this wave of mass conversion to Buddhism the Hindu fold's age-long slavery. The untouchables were free people now. They were not dehumanized or demoralized any more. Their trust was lost generations had been restored now. The principles of understanding and respect freedom, equal opportunities, brotherhood and social justice. They believed in the form of democracy-- Social order. They began to believe in a related way of life. They began abolishing and considering caste and subcaste identity as a class, yourself. The Buddhists, Dalits, programmed castes, etc. were the names. To show their unity, this has been a great social change. The Strong Social Hindu the order to keep planned castes and castes Shudra has started to become flexible in her fold.

The conversion to Buddhism of Dr Babasaheb Ambedkar was very good the effect on the caste Hindus orthodox and caste psyche. But the caste remains, atrocities of age, discrimination, ignominies are begun abate. Temples for the planned castes are now thrown open. Locations like public Gardens, open roads for use equally accessible by schools, hospitals, hotels the castes planned. The untouchability appears to be not observed in the list constructing the distinctive identity of the Buddhist as untouchable. The Untouchables were caste-free they were, i.e. from Avarnas They had no place in both the caste system and the four systems. Varna system. System of Varna, i.e. The Sunrises. Sunrises.

Although not part of the Hindu They were a part of Hindu society and considered as a social structure the Hindus Caste's collective property. They did not have their social status; As such, they didn't have a human existence; their identity was respectable the slave's identity. It was worse than the African slaves and Europe. It was worse than livestock. They lost their identity as people for ages. Dr Ambedkar thought that it was normal to establish the Intouchables human beings and privileged citizens as respectable members of society they must remove politics as Untouchable, their identity. And that's why your conversion to that religion that can give them new and new responsible identity was inevitable.¹⁵ After a long and thorough study Dr Ambedkar has found that of almost all the world's major religions. The Dhamma Buddha would be the best religion for those who cannot be touched aim not only did Dr Babasaheb give his own lost identity to the Intouchables; They were connected with their own long and glorious history. He too entrusted them with and bringing about the mission of Buddhism revival in India Other Backward Class (OBC) or Shudras in all Scheduled Castes new but revitalized Buddhist fold which was and was their original identity. It was a cult and religion of their own. The untouchables, in particular the Maharashtra community, Buddhism and its original Buddhist identity as taught Dr Ambedkar, their leader. In India, they also spread Buddhism. To safeguard and strengthen democratic freedom principles, In India, equality, brotherhood and social justice. Dr Ambedkar founded the Buddhist Society of India for the sole purpose the proliferation among the Scheduled Buddhism and Buddhist culture many other classes work with devotion. Organizations who work for the same reason to provide the planned the original identity of the castes.

Modern India's Buddhism Revival

Dr Babasaheb's conversion to Buddhism with his followers on 14th in Nagpur, October 1956 was, without doubt, an event of epoch in religion India's history and Buddhism's history in particular. Suppose you have modified the course of Buddhist history. The historical October 14, 1956, Buddhism recovery in India has taken a plunge into an era of intense activity that could rightly be called the Indian Buddhist 'Ambedkar era.' The Buddhism Renaissance Movement in India began in May 1891. Anagarika Dhammapal formation of the Maha

Bodhi Society. He was the first great modern-day Buddhist missionary. By 1956, The Maha Bodhi Society and other Buddhist pioneers a large consciousness of the rich heritage of Mission in India Buddhism could not but attract many Buddhist followers. The following is the by 1956; there was not much impact of this revival movement. It was Dr Babasaheb Ambedkar, who embraced Buddhism with his people the Buddhist revival movement began in 1956 and increased. It's never been before the history of any faith, that so many people and at the time our one man's instances converted into a certain religion. After the evening the conversion movement continued untimely with the death of Dr Ambedkar.

Neo-Buddhist Literature Development

The teachings and doctrine of the Buddha were dispersed through the vast sea Known as the 'Tripitaka' literature. Buddhist monks and mountains, i.e. and Bhikkus Bhikkunis have been reading these kinds of literature for their whole lives. Ambedkar wanted one clear book farther than Dr Babasaheb comprehension of the teaching of Buddha. His wish was a Buddhist Bible. For if his followers wanted to learn and read the lessons from, they'd become confused and lost in the huge Buddha and his Dhamma Buddhist Ocean, it wasn't a common man's task to go by such immense literature. Dr Ambedkar was interested in writing a for his people, the Buddhist Bible. Besides, Ambedkar was either Hinayana or the conception of Buddhism. Mahayana. - Mahayana. His understanding of Buddhism was different. The approach of Ambedkar to Buddhism has not been social and ethical, mystical and philosophical. Religion is personal and one according to him, it must keep itself. It must keep itself. Buddha's Dhamma, on the other hand, is social basically. Dr Babasaheb Ambedkar had neither Hinayana nor Mahayana embraced. He was a Navy and or neo-Buddhism he said to have embraced. Therefore, his Buddha, the neo-Buddhist view of Buddhism, is also reflected in his Dhamma. K. David Pandya rightly called a text of neo-Buddhism. He says, "The Buddha and His Dhamma could be treated as the neo-Buddhist religion text, and the doctrinal principles are in it. This summary has a substance assimilated Buddhist literature without supernatural, tantric or yogic material experience. Experience. Experience. A universal authority should be applauded for this text. This book led to the revolutionary change of mentality, Buddhism. The neo-Buddhist belief system and view of the world. It was grown in them a rational and scientific perspective. They began to look at the issues from a different practical and realistic perspective of the world and their perspective. Democratic freedom, equality, brotherhood and social principle they upheld the justice vigorously. They began to speak rationally, democratic, scientific thinking in literature. Buddhism wasn't for the religion, but a social change tool. It is a reconstruction formula for the company. The principles of Buddhism were believed to be democratic, and Buddhism was, therefore, propitious and supportive of the construction of a nation.

CONCLUSION

One of the landmarks is the conversion of Dr Babasaheb Ambedkar to Buddhism religious history incidents in India. His transformation towards Buddhism is one of Indian Hinduism's biggest blow. He didn't just deny his conversion Hindu religion, but the Hindu social norms have also been rejected. He was brave. Combat the modern social system. For millennia tyranny depressed classes have been tolerated by Hinduism. Customs of Hindu traditions norms were so rigid and cruel that no constructive measures existed the Hindu revolt. The minds of the depressed classes dominated Hindu, and they accepted slavery as their destiny, the religious scriptures. As stated, the associated life was necessary for all democracy Babasaheb Ambedkar, the company. He observed that Hinduism spread over thousands of years classified social discrimination that was contrary to the healthy principles society of democracy. The minds of depressed classes he also observed. They became a social psyche victim and accepted their destiny as slavery. Babasaheb Ambedkar gave the freedom of the human mind importance. Babasaheb Ambedkar Modern India undertook the task of reviving Buddhism. He has published articles, books and raised Indian awareness on Buddhism. The Broken Men theory he put forward. That older man he described Indian history had been a clash between Brahmanic and Buddhist ideologies. The fact that India was once a Buddhist country was stressed emphatically. He traced the causes of Buddhism's decline in India. The Pushya Mitra was exposed Shunga, Hindu Brahmin, who played a significant part in the destruction of Buddhism. Conversion also was inspired by Babasaheb Ambedkar's speeches deprived class Buddhism. His statement of renouncement of Hinduism in 1935, Dr Babasaheb's impact on the whole of India was great. He was a leader of seven crore-Untouchables, not just one single person. Some of the Hindus threatened to kill him, except Dr His decision of Babasaheb Ambedkar remained firm and determining leaving Hindu fold. Leaving Hindu. Dr Babasaheb Ambedkar finally took over in October 1956. He had a strong faith in Buddhism with his lakhs of followers Buddhist democracy and noble purpose to revive Buddhism India. Dr Ambedkar took over the Jyotiba mission. He considered him to be one the Buddha and Saint Kabir, of his three preceptors, were the two other ones. He the way of its preceptors was followed, gurus. He called into question the sovereignty of religious Brahmanic or Shastras kinds of literature. He tried to demonstrate and reveal.

Shastras' futility and absurdity. He was responsible for it freed the depressed and oppressed masses by walking his path like a true follower, preceptors. He made the release of the untouchables a mission of his life, specific and that of the Shudras in general. The reconstruction of the Hindu for this release of the depressed masses democratic freedom, equality, brotherhood and justice principles of society. It's been needed. And the destruction of society for this reconstruction religion must be destroyed, based on Shastras or the oppressive rules. Dr Babasaheb Ambedkar tried hard to achieve this destruction in the fold but in vain. Seeing the Hindu's apathetic approach, he decided to revive the leaders and sleep of the Hindu masses the sharply proven weapons to kill the powerful indigenous force of Brahmanic monsters and their descendants, Chaturvarnya, Castes and touch-free. And in time, he revived Buddhism successfully in the true sense of India.

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THE STUDY OF FACTORS AFFECTING CROPPING PATTERN IN BELAGAVI DISTRICT

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ABSTRACT

Belagavi is the second largest exporter of the state. Belagavi's total GDP is a whopping INR 159.65 billion contributing 5.3% to state GSDP. Per capita annual income in the district being INR.52, 250. Belagavi devotes 48% of its land for cultivation. Biggest district with 10 Talukas. Belagavi houses India's first notified Aerospace Precision Engineering and Manufacturing SEZ center. The fourth largest city, Belagavi houses India's first notified Aerospace Precision Engineering and Manufacturing SEZ center. Rich deposits of bauxite and 200 foundries producing over 70,000 tons of automotive and industrial casting of ferrous base has made it an important center for manufacture of heavy machine tools and high pressure oil hydraulics. Agriculture is one of the oldest and most important occupation of man. There fore any country almost half of economic status depends on agriculture. Agriculture also supports too many agro based industries by providing raw materials. Development of Agriculture always depends on fertile soil, rainfall, water resources, suitable climatic conditions, moisture in the Atmosphere, plain topography, fertilizers, insecticides and chemicals, improved seeds farm technology etc. Nearly 60% to 70% farmers live in rural areas of Karnataka and Belagavi district. Farmers are primarily engaged in agriculture activities. Farmers in Belagavi have adapted to dry and irrigation land area. Farmers in the district are shifting to crops that not only require less water but also give higher yield. The paper contains introduction, objectives, review of literature, factors affecting Cropping pattern, factors affecting Cropping pattern in Belagavi district.

Keywords: cropping pattern, Factors Affecting Cropping Pattern, development and crop combination in Belagavi district.

I. INTRODUCTION

Agriculture has always been the backbone of the Indian Economy. Cropping Pattern means the proportion of area under different Crops at a point of time, changes in this distribution overtime and factors determining these changes. Cropping pattern in Belagavi is determined mainly by rainfall, climate, temperature and soil type. Technology also plays a pivotal role in determining Crop pattern. The multiplicity of cropping systems has been one of the main features of Belagavi agriculture. This may be attributed to following two major factors. Despite concerted efforts in industrialization in the last six decades, agriculture still occupies a place of pride. It provides employment to around 60% of the total workforce in the district. The significance of agriculture in the national economy can be best explained by considering the role of agriculture under different heads. Agriculture in Belagavi has a significant history. In Karnataka, only 40% of the total cropped area has the irrigation facility and the rest is rain-fed. Karnataka agriculture has seen vagaries of nature, pre-dominance of small farmers, irregular and uneven distribution of monsoon, low level of productivity, vast disguised unemployment, increasing population pressure, excessive use of fertilizer and pesticide, defunct land reforms, poor techniques of agricultural production, etc.

II. OBJECTIVES

1. Cropping pattern in Belagavi Karnataka state
2. To Examine the change in the cropping pattern in Belagavi District
3. To analyse the Factors Affecting Cropping pattern in Belagavi District
4. To compare the Latest Cropping pattern
5. conclusion

III. REVIEW OF LITERATURE

1. According to Watson, S.J. (1950), "The original meaning of the term agriculture is the soil but this is much too an interpretation. The growing of crops and the rearing are as much a part of agriculture as the original cultivation of the soil....."

2. According to M. Carty & Limberg, "Agriculture is defined as the purposeful tending of livestock. Compiled and Circulated by Dr. Sukamal Maity, W.B. Govt. approved ppt Of Deography, Narajole Raj College

The review of literature suggests the relation between changing cropping pattern and agriculture development.

3. Vernon W. Ruttam [1997] studied the agro-climatic regions where varieties developed at CYMMIT and rice varieties developed at IRRI were best adopted and reported to have relatively rapid and high level of adoption. However, the study shows that the rate of diffusion is slower and the yield impact is lower.

4. The Reserve Bank of India, College of Agricultural Banking [2007] It was reported by the study that the cropping pattern in India has undergone many changes with the introduction of modern agriculture technology during the period of Green Revolution. This urge for diversification of agriculture in terms of crops was made for economic considerations. The study noted that the crop pattern changes are the result of the interactive effect of factors related to resources, technology, household consumption, prices, trade policies, institutional and infrastructure factors and the economic policies of the Government. The report brought out that the cropping pattern in India has shifted from cereals to non cereals in the first decade of Green Revolution.

5. H.K. Jain and Daljit Singh [1984] have studied the impact of agricultural technology and creation of new infrastructure on the production. The study used the index numbers for the estimation of simple and compound growth rates. The study found that new agriculture technology and the infrastructure have made positive impact on the crop yield in Keonjhar in Orissa and Allepey in Kerala.

V.V.S Rama Krishna and T.V. Ramana [2014] have made a study of Crop Holiday in Andhra Pradesh for the year 2011. The study concentrated on the prototype of cropping and reasons for declaration of Crop Holiday, explored the factors leading to Crop Holiday, its consequences and suggested remedial measures. The study found that low MSP led to the declaration of Crop Holiday by the farmers.

6. Dr. Uma H.R., Madhu G.R. and Pushpa Naniah K. [2013] The authors made the study of the impact of changing cropping pattern on food security in the Hassan District of Karnataka State. The study found that the marginal farmers depend less on agriculture and more on non agriculture sectors because of prevailing higher wages in these sectors. At the same time, the farmers changed the cropping pattern from food crops to commercial crops which posed a threat to the production of food crops and hence to food security in the study area.

7. V. Kalaiselvi [2012] studied the crop protection and diversification in India across the states of J&K, Punjab, Haryana, Himachal Pradesh, Kerala, Rajasthan, Gujarat, Madhya Pradesh and Uttar Pradesh. The study found that the states of Haryana, Uttar Pradesh, Rajasthan, Gujarat and Bihar have increased their allocation of area under food crops and non food crops cultivation. The farmers in these states replaced the inferior food crops like cereals; whereas, the farmers in the state of Punjab increased the allocation of area to specialised crops like rice and wheat by reducing the proportion of area under other high value non food crops.

8. B. L. Jana [2009] The author in his book "Diversification in Agriculture" has dealt with the cropping patterns in Northern India. The author says that there are two distinct cropping seasons – "Kharif" and "Rabi" and in between during the months of March to June, the crops were called "Zaid". The author refers to mixed cropping, rotational cropping. The reference is also made to mono cropping, double cropping, multiple cropping and relay cropping. The diversification of crops was made for more income in an eco-friendly manner. The decisions of changing the cropping patterns were based on experience, tradition, needs, expected profit, personal preferences, resources available, facilities of markets, support price, domestic consumption, export facilities, social and political pressures. The author made the study of cropping pattern in the states of Assam, West Bengal, Bihar, Coastal Orissa, Rajasthan, Maharashtra, Andhra Pradesh, most parts of Karnataka, Tamil Nadu and Kerala.

9. I. Krishna Murthy [2014] The study was made by the author regarding economic benefits of agriculture tourism. The study concludes that agriculture tourism may help to increase the income of farmers who change the cropping pattern as the result of their agricultural tour.

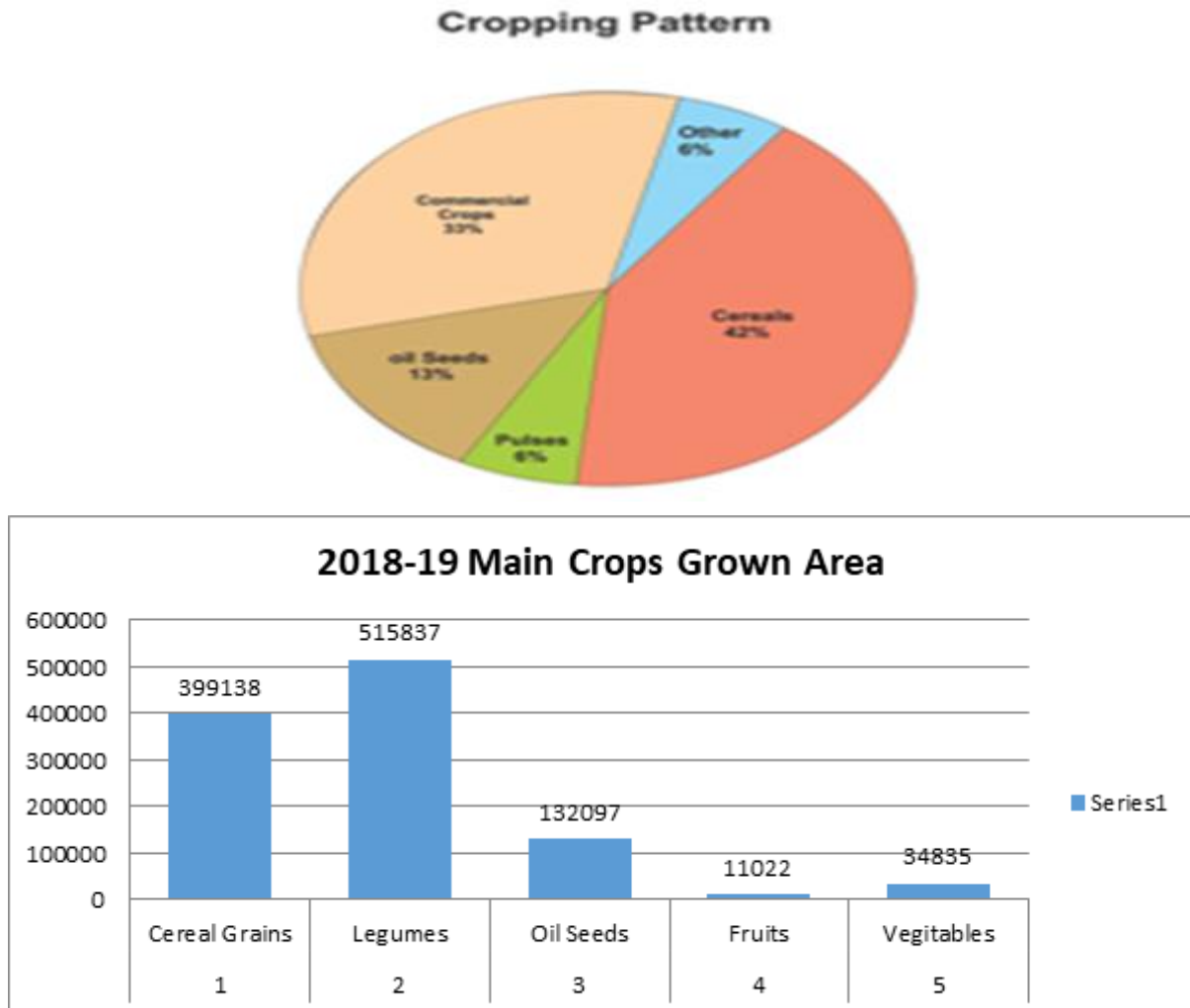
10. Dr. S. Lingappa and Dr. C.J. Itnal [2003] have made the study of drought proofing and contingent crop planning in Northern Karnataka. The study suggests contingent crop plants for Kharif and Rabi seasons in different agro climatic zones of North Karnataka.

IV. CROPPING PATTERN IN BELAGAVI DISTRICT

The district of Belagavi is divided into three agro climatic zones: Northern Dry Zones, Northern Transitional Zone and Hilly Zones. The northern dry zone consists of Athani, Gokak, Raibag, Ramdurg, Saundattitalukas with the average annual rainfall being 571mm is spread over 51 rainy days. The soil is medium to deep black.

The important crops grown are rabi, jawar, bazra, hybrid maize, wheat, sunflower, soyabean, Bengal gram, cotton and sugarcane. The total production of commercial crops in the districts is about 15138864 tonnes [Belagavi District at a Glance, 2011-12]. The Northern Transitional Zone consists of 4 talukas: Belagavi, Hukkeri, Chikkodi and Bailhongal. The annual average rainfall is around 862 mm spread over 59 rainy days. It is predominantly khariff zone. The soils are shallow to medium black with red loamy to clay soil. The important crops grown are jawar, maize, rice, soyabean, groundnut, pulses, tobacco etc. The Hilly Zone mainly consists of Khanapur taluka where the soils are red loamy to laterite with average annual rainfall of 1780mm spread over 90 rainy days. The crops grown in the district are mainly 67% khariff and 31% rabi and only 2% of the area comes under summer.

V. Cropping pattern in Belagavi District



VI. CROPPING PATTERN IN INDIA

The cropping pattern has been defined as “the spatial and temporal combination of crops on a plot” [The Tamil Nadu Agriculture University]. It is also defined as “trends in the share of utilized agricultural area occupied by the main agricultural land area”. It is measured as “the area within the time / net area multiplied by 100”. The term “cropping pattern” stands for the “proportion of area under different crops at a given point of time.” Changes occurring through the time period and factors determining these changes affect the cropping pattern.

The cropping pattern in India is categorized by Kharif and Rabi crops. The main kharif crops are bazra, maize, ragi, groundnut, cotton, etc., and the rabi crops are wheat, sorghum, gram, etc.

VII. CROPPING PATTERN IN KARNATAKA

Karnataka is one of the states predominantly depending on agriculture for its SDP. Nearly 56% of the workers are employed in the agriculture sector. The agricultural production pattern in Karnataka is very much influenced by its geographical and climatic factors. The important crops of Karnataka are mainly divided into food and non-food crops. Area under paddy cultivation is about 14.6 Lakh hectares, ragi cultivation is about 8.32 lakh hectares, jawar cultivation is about 13.82 lakh hectares and wheat cultivation is 2.76 lakh hectares. The area

under millets is about 0.36 lakh hectares with a total cereal area about 54.87 lakh hectares. While Bengal gram has an area of 6.05 lakh hectares, red gram area is about 6.81 lakh hectares with a total pulse area of 23.85 lakh hectares. Groundnut has an area of 9.08 lakh hectares, cotton 4.03 lakh hectares and sugarcane 3.06 lakh hectares [Karnataka State at a Glance, 2008-09].

VIII.FACTORS AFFECTING AGRICULTURE:

Physical environmental factors: Agriculture depends to a great extent on the physical factors of natural environment.

Climate: The agricultural activities of farmers are conditioned by the seasonal and Variations in the distribution of climatic elements.

a)Physical Environmental Factors: Most Important Cropping Patterns Cropping Pattern mean the proportion of area under different Crops at a point of time, changes in this distribution overtime and factors determining these changes. Cropping pattern in belagavi is determined mainly by rainfall, climate, temperature and soil type. Technology also plays a pivotal role in determining Crop pattern. The multiplicity of cropping systems has been one of the main features of belagavi agriculture. This may be attributed to following two major factors are.....

b)Wind: Wind can have a destructive effect on crops. At its most severe a hurricane physically destroy thousands of acres of farmland. Less severe but also harm winds that dry soils so reducing moisture and increasing the potential for soil.

c)Amount of different gases in the Air: Air in the troposphere comprise of 21% oxygen, 78% nitrogen and 1% are including carbon dioxide and traces of other gases. Crops require oxygen respiration to produce Energy used in different plant growth and process. during photosynthesis; plants require carbon dioxide to manufacturing.

d)Topography: The angle of slope will affect the type, depth and moisture content of soil. it will also affect the rate of soil erosion.

e)Soil : soil type will influence crop cultivation because different crops prefer different soil. clay soils with their high water retention are well suited to rice whilst sandy soils with good drainage are good for root vegetables. soil type can be influenced through the input of lime, clay or fertilizer but this can be influenced through the input of lime, clay or fertilizer but this can only make limited differences. soil erosion is an important inhibitory physical factors faced by the farmers in the cultivated area.

f)Organic matter: a good supply of soil organic matter is beneficial in crop or forage production consider the benefits of this valuable resource and how you can manage your operation to build or at least maintain the organic matter in your soil.

g)Economic environment: In addition to the physical factors, agriculture land use cropping pattern and agricultural processes of the cultivated area are also largely influenced by the socioeconomic factors.

Nature of holdings: Efficiency of agricultural operation depends to a large extent on the possession and size of landholding of the peasants. The size of landholding and the size of farm decide the degree of risk that a farm operator may bear. the households are classified into different categories.

h)Plants: plants are also used in agriculture to help reduce wind speed. Planting trees in row presents the wind from blowing away the valuable topsoil. in the forest trees act as shelter for many organisms.

i)Science and technology : New technology is always increasing and yields but technology costs money. therefore the gap between the developed and developing world is growing the one exception is green revolution. Agriculture depends to a great extent on the physical factors of natural environment.

j)Transport and communication : Transport is an important factor in determining location of farm types. if a product is bulky such as potatoes then it should be grown close to the market place to cut down on transport costs. if the good is perishable then again it should be grown close to the market place this is not only necessary for the movement of agriculture products but also for the supply of fertilizers, machineries, seeds and other requirements of the farmers. efficient transport system can save time when grains and other crops are being moved from the farmer's home to the market.

k)Climate: The agricultural activities of farmers are conditioned by the seasonal and Variations in the distribution of climatic elements.

I) Humidity and rainfall: Water is obviously a key factor in plant growth. The greater the temperature the greater the amount of water required for plant growth. Variation is important as different crops require water at different times.

Example, Rice is the principle crop in the tropics because it requires Quantities of water, is a very high yield crop and has good nutritional value the addition of consistently high temperatures it can also produce two crops a year.

IX. Factors affecting on cropping pattern in Belagavi Agriculture



X. STUDY AREA:

Belagavi (earlier known as "Venugrama" or the "Bamboo Village") is one of the oldest, strong, prominent and well cultured historical place nestling high in the Western Ghats. The old town area with cotton and silk weavers stands gloriously besides the modern, bustling, tree-lined British Cantonment. Step out of the forts and you have a wide choice of temples and churches to visit. Belagavi has an enviable heritage and offers much to be discovered. It lies in the zone of cultural transition between Karnataka, Maharashtra and Goa with a known antiquity clearly traceable upto 2nd Century A.D. Due to its proximity with the states of Maharashtra and Goa, Belagavi has acquired the cultural flavour of these states and blended it with the local Kannada culture to create a rich heritage, which is unique in its manifestation. It is also known as Malenadu or Rain Country and the vegetation here is verdant green throughout the year. Well, centuries have passed and today it is an entirely different story. Belagavi has now become one of the important and considered district in the state of Karnataka. Belagavi is now marching with a tag of fast growing, redeveloping district with a population of 47,79,661 as per 2011 Census. Belagavi is exactly at the center between Mumbai and Bangalore. So, Stay a while and discover Belagavi. Belgaum is among the 27 districts of Karnataka, situated in the Northwest part of the state. The district is bordered by Maharashtra state to the North, Bagalkot district in the East, Dharwad and Uttara Kannada districts in the South, Goa and Maharashtra state in the west. There are ten taluks in the district namely Athani, Bailhongal, Belgaum, Chikkodi, Hukkeri, Khanapur, Raibag, Ramdurg and Saudatti. The district of Belgaum geographically comes in Malnad region and receives an average annual rainfall of 833 mm. Agro-climatologically the district can be divided into three zones i.e. high rainfall "Hilly zone", "Northern transitional zone" and "Northern dry zone". The district lies between 15° 23' and 16° 58' north latitudes and between 74° 05' and 75° 28' east longitudes. It is situated near the foothills of the Sahyadri mountain range (Western Ghats) and about 100km from the Arabian Sea. The population was about 42 lakhs at the last census in 2001 and the area of the district is about 13415 sq km. Of the total geographical area, 1927 sq km is under forest, and 6273 sq km is nearly about 50% of the geographical area is normally under crops. The Belgaum district is Semi-arid in parts of Athani, Raibag, Gokak, Bailhongal, Ramdurg and Saudatti taluks. Climate in rest of the district ranges from sub-humid to humid.

towards west. Nearly 95 percent of the annual rainfall is received during the period April to October, because of the South-west monsoon. Most of the remaining rainfall is received during November and December under the influence of Northeast monsoon. The district has two major river systems Ghataprabha and Malaprabha which are tributaries of river Krishna. The other rivers Hiranyakesi and Markandeya are tributaries to Ghataprabha. There are two dams, on Ghataprabha at Hidkal and on Malaprabha at Naviluteerth .

Table-1 Taluka geographical area

	Taluka	Geographical Extent Ha	Forest area Ha	Irrigatable area Ha	Non Irrigatable area Ha	No of villages Ha
1	Athani	199500	581	188087	10832	089
2	Bailhongal	112200	7913	92523	11764	126
3	Belgavi	103700	22643	71365	9422	131
4	Chikkodi	126900	547	114095	12258	102
5	Gokak	153900	22284	120089	11527	108
6	Hukkeri	099100	13987	71021	14092	121
7	Khanapur	174900	91309	75476	8115	221
8	Raibag	095800	2647	83498	9655	054
9	Ramadurg	121500	15081	97267	9152	103
10	Soudatti	158100	13432	128146	16522	131
	Total	1345600	190424	1041838	11338	1186

LAND USE PATTERN: Net sown area in the district is 841,900 Hectares, which is 62% of the total geographical area of 1,344,382 hectares of the district. About 31.4% of the 'Net sown' area i.e. 231,300 hectares is sown more than once . Major crops grown in the area are jowar, maize, paddy, wheat, bajra, grams, tur, groundnut, sunflower, sugarcane, cotton, tobacco etc. The district has total area of 13433.00 Sq. Kms.

XI. DATA AND METHODOLOGY

DATA BASE

The study is based on secondary data.the required secondary data has been collected from published sources,books,journals,web pages etc. secondary data has been collected from published sources,books,journals,web pages etc.

Sources of Data: secondary data are used. The data is collected fromPublished sources

XII. Research Findings:

The following are the research findings of the study

- 1)The factors affecting that Physical Environmental Factors technology,climate, etc.
- 2) Wind can have a destructive effect on crops
- 3) Economic environment: In addition to the physical factors,agriculture land use croppingpattern
- 4) Transport and communication :Transport is an important factor in determining location of farm type
- 5)Humidity and rainfallWater is obviously a key factor in plant growth. The greater The temperature the greater the amount of water required for plant growth. Variation is important as different crops require water at different times.Example, Rice is the principle crop in the tropics because it requires Quantities of water, is a very high yield crop and has good nutritional vallage the addition of consistently high temperatures it can also produce two crops a year.

Belagavi district map



XIII. CONCLUSION:

Cropping pattern of belagavi is varies and, study shows the some technical aspects and Government policies are influenced to increase production capacity and diversification of crop combinations. Rational farmer's takes all benefits and grown the multiple crops in a year. In belagavidistrict major Crop is Sugar Cane which benefitted. With the growth of technology, modernization, and changes in consumption pattern and agriculture. in the belagavi has undergone a major shift in the recent past, moving away from the cereal to noncereal crops cultivation. Limitations of the Study In the study area have well water resources compared others taluks in Belgaum district, commercial crops like sugarcane, turmeric, tobacco, cotton are dominant crops. But shortage of rainfall is intends to diversified cropping system. This study covered different crops in cropping pattern in the study area, and crops grown under different type irrigation methods. Directions for Future Research Becoming water scarcity farmers facing more problems and increased food demand result of this create problem the food security. Regarding this water resources are most important valuable resource for human beings, and utilizations modern technology, seeds, fertilizers and pesticides are decline food nutrients. Lack of nutrients adverse effects on human health. Therefore, regarding this changing environment conditions plan, policy and important measures support to farmers' risks influences their cropping pattern decision in agriculture sector. In the view of sustainable agriculture farmers welfare schemes and research is most import.

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TERRORISM IN SOUTH ASIA: INDIA'S FOREIGN POLICY TOWARDS SOUTH ASIA UNDER UPA GOVERNMENT OF INDIA

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ABSTRACT

India is a rising force in Asia and must claim its equal position in the hierarchy of the intergovernmental structure. The global influence of India varied over the years in terms of democracy. But it will only earn that respect if it is done in a way that suits a key Asian power. India's policy has always called the neighborhood idea of expanding homocentric circles around a central axis with historic and cultural commonalities. India's growing economy, strategic position, friendly and diplomatic policies and large and energetic diaspora have won it many allies as opposed to enemies. India's policy focus on its immediate neighboring countries in South Asia has been viewed primarily through the external lens. In this essay, the neighborhood is seen as a mirror in order to classify the political phases of India since its independence. In this effort, some patterns in Indian foreign policy have been established which are divided between the chronologies of Indian governments. The article critically challenges India's immediate neighbors' policy package through interest-based approaches that suit the evolving international political environment. The Cold War years, the conflicting forces of economic globalization and regionalism and the drive towards global multi polarity shaped India's neighborhood policy orientations. The article concludes that India's political philosophy in South Asia is based on adhocism. The study has used a secondary analytical technique backed by literature written in several journals, annual reports, journals and magazines, covering a wide range of Indian Foreign Policy educational articles.

Keywords: Terrorism, foreign policy, economy, power, political, vibrant, diplomatic.

INTRODUCTION

South Asia today mostly addresses the picture of an area suffering from violent religious fanatic that involves groups like the Taliban, al-Qaeda and Lashkar-e Tayyeb (LeT). This is also seen as an area where moist groups riot throughout much of its territory. Groups like the LTTE that have followed their factional agenda can only be greatly undermined. South Asia was a leader in its activities. The trend of terror has shadowed the fact that several South Asian economies are progressing rapidly and can grow much faster if not prevented from often terrorist acts. Terrorism has affected the region in recent decades. However, the global agenda included counter-terrorism after 9/11. While the US handled to defeat terror, South Asia was not equally fortunate. Most South Asian nations continue to face the terrorism problem and the problem has only escalated in various situations. However, in the last one or two years some positive developments have been noted, placing South Asia at a critical connection in which more teamwork will help the region conquer this issue. Terrorism has challenged an accepted description. Since 11/11, however, there seems to be a growing consensus that this should not be allowed to combat a trend that is dangerous to everyone. The reasons of terrorism differ from region to region. Terror groups in South Asia can be divided into three categories:

1. Extremist of the left-wing
2. Religious fundamentalism violence
3. Terrorism because of secessionism

Effect of terrorism on internal political structures

Terrorism has adversely affected internal political structures in countries in South Asia. This promoted militarism, chauvinism and a strong propensity to right-wing extremism. It was a pretext for undermining democracy. While LTTE articulated the Sri Lankan people's legitimate demands as an entity, its degeneration into a terrorist group justified the use of brute force and the implementation of militaristic policy and managed finally to destroy LTBE. While welcomed, this led to an enormous increase in the nationalism of Sinhala, now a political residuum of the Tamil minority and of the Sinhala-dominated Sri Lankan government. Many countries with increased martial power to pact with terrorist gears have similar patterns in Bhutan. Those who had not combat a war for decades had to mobilize their military in order to confront terrorist groups operating on their territory and also to confront the likely threat of Maoists who were vigorous in Nepal. Bangladesh's Rapid Action Battalion (RAB) was also exposed to the increasing threat posed by Islamist extremists.

Economic growth prevents terrorism

Terrorism has cost most countries in South Asia heavily economically. The loss of buildings, plants and crops and a halt to economic activities are the direct costs of terrorism. The indirect costs are variable and result from a general economic loss of trust. For this reason, the economy can't charge external contribution and faces brain

drain, increased military costs, high transaction costs and other deformity of the economy. It refers to most terrorist-affected countries in South Asia. In Pakistan and Afghanistan, Islamic radical groups including the Taliban are now undergoing violence. There has been hardly an industrial development in Afghanistan because it has been engulfed in war for many years, but in some cases even Pakistan which was far better situation than Afghanistan.

Terror Landscape of South Asia

Mostly all country in South Asia is confronted in one form or another by the terrorist problem. Sri Lanka has controlled to remove the LTTE. Although, it rests to be seen how the Government of Sri Lanka handles the situation from here so that no such party comes into play. Nepal is very well balanced, too. The Maoists in Nepal opposed the monarchy. Recently although the monarchy has been abolished, the Maoists are working with other political powers to form a constitution for their nation. Terror has guided to mark its impression even in the Maldives. This country has witnessed an increasing trend in Islamic extremism. In the Sultan Park a bomb exploded, leaving a few people dead. Maldives clash and died in Waziristan. The trouble of the extremism has not been recognized other than by Nasheed, who wishes to act together with his country's defense and safeguard agencies. Bhutan successfully destroyed the ULFA camps and a number of other terrorist organizations in the North-East of India but other reports now show that these people are attempting to assemble on Bhutanese territory. Bhutan is also targeted by the Maoist parties in India and Nepal. India is also facing a major terrorist threat, geographically the largest country in South Asia. In fact, this is a country where all sorts of criminals work. It suffered the most, therefore. India alone has long been owed its fight against terrorism and has been to some widen productive. But a lot remains to be done before this problem is properly controlled. The government works in counter to Islamist militants throughout Bangladesh, but groups like JMB and Huji remain involved. The government has enabled to remove JMB's top leadership, but ranking and record are intact. They continue to throw up new members from time to time. However, the government did well to apprehend them all. Bangladesh is also confronted in certain pockets with the question of left-wing extremism, but recently its presence was reduced. In Pakistan and Afghanistan, however, there is actually the most serious threat of terror. They are present in both these places. In the country Pakistan, they confess themselves the Tehariq-e-Taliban. Many others Islamic groups in Pakistan, some nationalist, and some anti-Indian.

South Asian Counter-terrorism

South Asia is geopolitically a cohesive area of security and a hub for India. India has unique links; to a degree not shared by any of its neighbours, racial, cultural and historical. All of South Asia is currently undergoing internal agitation and upheaval from Afghanistan to Bangladesh, arising from a series of destabilizing causes such as ethnic conflicts, religious fundamentalism and, indeed, strong political divergence. The region was not suited to confront terrorist threats because of a lack of political consent and an effective strategy to build scope in South Asia. Despite commitments to various terrorist agreements, several states in the region continue to give leading or secondary assist and protect to terrorist groups. Some countries believe that another terrorist is a freedom fighter for another person. Such a concept is puerile, and every act of premeditated and illegal outrage and violence against innocent people, regardless of cause and purpose, terror. There are also certain countries that terrorism is a small tool for harming major nations. Such ideas and activism are incapable of combating terror. My experience is that 'terrorism is a double instrument. It is like an evil dog who mugs the very hand that nourishes it. In the 1980s, India lived in Bhindranwale and Sri Lanka's LTTE and Pakistan realized it in the 1980s and 1990s after aiding Afghanistan's Mujahideens and outfits, such as Lashkar-e-Tayyeba. During the Bangalore Summit in November 1986, the leaders of SAARC recognized the severity of the terrorist problem and its negative effect on security and stability in the area. The 'Additional Protocol of 6 January 2004 to the SAARC Regional Convention on Terrorist Repression' revised it to fulfill the Security Council's obligations. The Heads of State agreed again on ways to enforce SAARC Conventions in the fight against terrorism, drugs and psychotropic substances, trafficking in women and children and other transnational crimes. We boldly explicit their obligation to take every possible measure to restrain and counter terrorism, including frontal organizations, and combat illicit drug trafficking, trafficking in human beings and illegal armaments. They stressed the need for the law execution authorities in all Member States to enhance cooperation in preventing, abolishing and implementing crimes under these devices. They also guided SAARC Home Ministers to ensure that the decisions taken are monitored and implemented consistently. The problem is essential as cross-border terrorism can simply be transformed into a traditional national war. India and Pakistan faced these circumstances between 1947-48, 1965, 1971, 1999 and 2001- 02. Also, many people on either side of the border assume that if something like the Mumbai carnage happens again in India on 26 November 2008, it might trigger a war. Every nation in the subcontinent must, therefore, greatly increase its commitment and work seriously to build trust and trust. South Asian nations should take collective action against their territory instead

of protesting or reacting to each other's grievances. Governments, including the culprits of the odious attacks on Mumbai, should not be cynical of globally known cross-border terrorists. Genuine cooperative initiatives will lead, in particular, to progress in border security, an end to terrorist financing and the restriction of terrorist activities. These endeavor are best attempted at bilateral or multilateral level and international monitoring where possible. Experience has shown that extremist people continue to escape as soon as they avoid state funding. Given the lack of trust among governments in the field, greater emphasis should be placed on civil society and private sector operators, who can play an important role in terrorist prevention. The establishment of cooperative regional civil society networks and private-sector investors will help to build faith and lay the foundation for enhanced collaboration among States in the region.

United Progressive Alliance (UPA) Government's Foreign Policy

India's foreign policy under the government of Man Mohan Singh became one of the controversial issues when it came to voting against Iran on its nuclear program at US insistence. For the International Atomic Energy Agency (IAEA) conference, left parties who are partners in the administration of UPA strongly opposed India's movement to vote against Iran. In particular, Prime Minister Man Mohan Singh was led by the Communist Party of India (Marxist) to make a major move affecting the independent foreign policies of the country and its role in the non-aligned movement. The left parties obviously criticize the West. It was really an embarrassing situation for the UPA administration at the centre. There is no question that the UPA government voted against Iran to appease the United States at the Security Council. By voting against Iran with the US, India is part of another "infamous exercise of intimidation and coercion" against a nation with friendly relations and vital energy interests. Iran, which is a signatory to the Nuclear Non-Proliferation Treaty (NPT), has the ability to enrich uranium as well as to develop civilian nuclear technology. In addition to Russia, the United States and three European countries demand that Tehran give up uranium enrichment. Though India, which signed an agreement with Iran on pipeline gas supplies, decided to vote against Iran when the matter was put before the UN Security Council's International Atomic Energy Commission. From the deal, Russia was opposed on several counts by the Iran-Pakistan-India gas pipeline with the belief that "the pipeline would help to create friendly relations between Iran, Pakistan and India. This would massively weaken America's strategic leverage against Iran with India and Pakistan.

The pro-left parties strongly demonstrated public opinion against President George W. Bush during his recent visit in the first week of March 2006. Mr. George W. Bush signed a "historic" nuclear civil agreement in India. Once, the signing of the Indian / USA nuclear agreement caused strong protests and the issue was not only debatable but also contentious for the pro-Left Parties. Because the left parties, supporters of the UPA government, strongly opposed the agreement as a "bad deal" and called it detrimental to the economic and strategic interests of the country. Even Politbureau Member Brinda Karat opposed the deal and said, "By agreeing to the pre-determined arrangement of the US, the UPA government is dragging India into a relationship that does not serve the interests of the Indian people."⁵⁶ In reaction to V.P. Singh, the former Prime Minister of India, however, Man Mohan Singh said, "the government was well aware that there was a urgent need for the agreement. Furthermore, there will be no detrimental effects on nuclear research and development

Foreign Policy of Mr. Narendra Modi to South Asia

In 2014, Narendra Modi urged the leaders of all South Asian Regional Cooperation Association (SAARC) countries to attend his ceremony as Prime Minister. The step emphasized India's importance to its neighbours. Modi's policy on South Asian countries has also been aimed at enriching combination, setting up cultural and religious links and take steps humanitarian and development aid. Given China's increased economic and military presence, too, it is important to see India's growing approach to its neighbours. The following sections discuss the relationship between India and the South Asian countries.

Afghanistan

The warm relations between India and Afghanistan have always been shared; the Modi and Ashraf Ghani years have never been varied. India has accepted growth and improvement aid and major infrastructure projects in Afghanistan, including the construction of the Kabul Parliamentary Construction in New Delhi (opened in December 2015 by Modi) as well as of the Heart Afghan-India Friendship Dam (opened in June 2016). The signing of a trilateral agreement between Iran, Afghanistan and India on the development of the port in Chabahar was a significant step forward in flourishing trade opportunities between New Delhi and Kabul in May 2016. In January 2019 India took over port operations and next month Afghanistan shipped its first export shipment to India via the port. In 2016, for the next five years India promised Afghanistan 1 billion dollars in development aid. In January 2019, both parties signed eleven MOUs on infrastructure and public services for USD 95 million⁸⁵. While the US Government hopes that peace agreement with the Taliban will be successful,

India has continued to support the government's independent and expressed its rejection of any agreement which threatens the democratically elected government's legitimacy. While India sent two observers to the Moscow Taliban Conference after a policy of non-engagement with the Taliban over more than two decades

Bangladesh

India's relations with Bangladesh focused on improving Indian trade, connectivity and transit. In conclusion, during Modi's Dhaka visit in June 2015, India and Bangladesh decided on the accomplishment of the Land Frontier Agreement, dealing with the 41-year-old border dispute between the two countries. Prime Minister Sheikh Hasina launched the "India-Bangladesh Friendship Pipeline Project" from Siliguri to Parbatipur, West Bengal in India and Bangladesh. Furthermore, between Kolkata, Dhaka, and Agartala new railway lines from Dhaka to West Bengal were started. In November 2015, standard operating procedure was laid down for coastal shipping agreement between government officials to make way for eight bilateral waterway services. During bilateral visits, India extended two LOC lines to 17 developments worldwide, including port upgrades, including US\$ 3 billion in 2015 LOC and US\$ 4.5 billion in 2017. One reason India's desire to develop its defense partnership with Bangladesh is the increasing synergy of defense cooperation in China-Bangladesh. India provided defense purchases of US \$500 million in 2017, of which a fraction belonged to China-Bangladesh.⁸⁸

Bhutan

It was in Bhutan that Modi made his first Prime Ministerial visit to India, saying that the decision was a natural one, considering the 'unique and particular relationship of the two countries.' Indian aid projects were initiated by the Prime Minister U Thimpu in this country, along with the establishment of the Supreme Court and the laying of the foundation. India entered and avoided the building, resulting in a standstill. Intense negotiations and strong diplomacy have been under way for 73 days between Bhutan and India. While India's relations with Bhutan are still tightly affected by regional security complexities, hydropower generation is a significant cooperation area and has a potential for future.

Nepal

Modi was the first Indian Prime Minister to visit Nepal in 17th August 2014, increasing the commitment and support of the country. In 2015, following the massive Kathmandu earthquake, India quickly moved into Nepal to restore relief efforts to the country for about 67 million USD. Relationships hit hard when Nepal accused India of blockading the border for nearly six months in 2016 following Madhesi protest. The border closure stopped its access. In the midst of New Delhi's repeated assurances that this blockade had nothing to do with it and KP Sharma Oli's visit to Modi could not convince Nepal. A concerted effort was made during the second term of Oli to strengthen relations. During his visit to Nepal in April 2018, Modi opened a circuit Ramayana and a bus between Janakpur and Ayodhya, distinctly with special emphasis on the cultural and religious ties between the two countries.

Maldives

India suffered as a result of President Abdulla Yameen's 2013 coming to power relations with the Maldives. India strongly opposed its imprisonment of political opponents and magistrates and its opposition to freedom of speech. Relations got to a new level, when the Yameen Government concluded India's Male Airport renovation contract. Mohammad Nasheed has been arrested and detained, a former President who was friendly to India and Yameen, who hosted Beijing. Relations between the two countries have been adversely affected. The new government of Mohamed Ibrahim Solih, which ousted Yameen in October 2018, has once again warmed relations. During Solih's visit to New Delhi, India promised the debt-ridden nation 1.4 billion USD in financial aid and signed four MONUS on mutual cooperation. There is a clear alignment between Modi's aid objectives and the Male government's economic dream⁹⁴.

Pakistan

India has always had a tumultuous relationship with Pakistan; the first term of Prime Minister Modi has not changed; and relations with Islamabad in New Delhi have been tested repeatedly. Whilst Pakistan's Nawaz Sharif Prime Minister was on a surprise visit to Sharif's hometown in December 2014 at Modi's inauguration, both leaders have a short-lived bonhomie. In January 2016, terrorists from Pakistan bombed the Pathankot Air Force Base, killing seven soldiers. The government permitted Pakistani inspectors to visit the attack site and gather proofs after refusing to participate. Despite efforts by India to force Pakistan to accept its culpability, Islamabad continued unpopular and comminatory. After few months, Jaish-e-Mohammad activists attacked Uri's air force base in September, killing 19 soldiers. The government reacted after some days by initiating surgical strikes in Pakistan-occupied Kashmir against terrorist camps. Pakistan predictably rejected any action. The arrest of the former Indian Navy Officer, Kulbhushan Jadhav, on suspicion of "spying" and "destruction activities," caused further damage to bilateral relations, in particular as consular access to Jadhav was refused,

and in an opaque arbitrary trial the military court was sentenced to death. The July 2017 election of Imran Khan brought little improvement. The government sent representatives on the opening ceremony and a moment of animosity when the Khan opened the Kartarpur corridor which connects Gurdaspur with the Indian District, via visa free trips.

Sri Lanka

During Mahindra Rajapaksa 's Presidency, the Modi Government has departed quickly and aggressively to rectify India 's relations with one of its most significant strategic partners. Since 2014, New Delhi and Colombo have strengthened their political commitment with a number of joint visits. Cultural diplomacy has been key to India's participation in Sri Lanka, the establishment of the government of the Ramayana Train and the Indian Buddhist Circuit. During the celebrations on International Vesak Day in May 2017, Modi exalted the cultural links between the two countries. By giving his message on Buddhism, he tried to take away the baggage from Tamil policy and bring it into cultural unity. Of course, India and Sri Lanka remain under economic involvement. It has not been shown to be significant in view of several bilateral visits. In 2017, the MoU signed a roadmap for the future, strengthening economic ties, making Indian investments easier and encouraging economic partnerships. While a Joint Task Force for Fisheries was created and a hotline was established between the coastguards in both countries, there remained a problem with the regular incidents involving the arrest of Indian fishers for poaching across the IMBC

CONCLUSION

At the top of the debate we tend to infer that the Indian Foreign Policy has always considered the neighborhood definition as one of a larger concentration of historical and cultural communities around the core axis. About 22 million people of indigenous origins live and work overseas and establish an imperative bond with the mother country. The security of its welfare and well-being in the laws of the nation in which they reside was a significant part of Indian foreign policy. India has also played a vital and influential role in other international organizations. India, like the other G4 countries, is currently seeking a permanent place in the United Nations Security Council. India's external policy is determined by the key discussions through which its relations with the United States and China fall. India's primary importance, since it is important for any nation, is to maintain traditional protection for its country and its people.

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DEPOSIT MOBILIZATION FROM THE UNSERVED

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INTRODUCTION

In less than a generation, global saving and investment will be dominated by the developing world with India's share in global investments expected to almost double by 2030. No other country except China will be investing more than India globally, says the latest edition of World Bank's Global Development Horizons (GDH) report¹.

By 2039, India will reach its maximum ratio of working to non-working age population with 2.2 working person for every non-working one. But already by the mid-2020, when most of the other developing countries will experience less favorable demographic trends, India will be one of the economies with the highest ratios of working to non-working population. This, jointly with its large population and growing incomes, are the key explanations of why India will become a powerhouse in global savings and investment.

Analysing the above estimate means by 2039 there is going to be significant growth in Income of working population which will in turn culminate into savings as well.

In the line of the above estimate, the Government of India and the Reserve Bank of India have been making concerted efforts to promote financial inclusion as one of the important national objectives of the country. Some of the major efforts made in the last five decades include - nationalization of banks, building up of robust branch network of scheduled commercial banks, co-operatives and regional rural banks, introduction of mandated priority sector lending targets, lead bank scheme, formation of self-help groups, permitting BCs/BFs to be appointed by banks to provide door step delivery of banking services, zero balance BSBD accounts, etc. The fundamental objective of all these initiatives is to reach the large sections of the hitherto financially unserved Indian population².

After nationalisation of major banks in India in 1969, there was a significant expansion of branch network to unbanked areas and stepping up of lending to agriculture, small industry and business. More recently, the focus is on establishing the basic right of every person to have access to affordable basic banking services. One such scheme was announced through a joint effort by Our Prime minister Narendra Modi and the RBI i.e Pradhan Mantri Jan Dhan Yojana (PMJDY)

Pradhan Mantri Jan Dhan Yojana (PMJDY) is a nationwide scheme launched by Indian government in August 2014. In this scheme financial inclusion of every individual who does not have a bank account was to be achieved.

The scheme ensures financial access to everyone who were not able to get benefits of many other finance related government schemes. These financial services include Banking/ Savings & Deposit Accounts, Remittance, Credit, Insurance, Pension which will be made available to all the citizens in easy and affordable mode. Each of these accounts comes with an overdraft facility of Rs 5,000 once the account remains active for six months.

According to the data issued by finance ministry, till September 2014 around 40 million (4 crores) bank accounts have been opened under the Pradhan Mantri Jan Dhan Yojana since the scheme launched.

Guinness World Records recognised the achievements made under PMJDY for opening 18,096,130 accounts by Banks in a week (from 23 to 29 August, 2014) as a part of Financial Inclusion Campaign.

As per the latest figure from March 2020, there are 40.05 crore beneficiaries of this scheme and deposits in Jan Dhan bank accounts are in excess of Rs 1.30 lakh crore. Accounts opened under PMJDY are Basic Savings Bank Deposit (BSBD) accounts with additional features of RuPay debit card and overdraft. There is no

¹ <http://www.worldbank.org/en/news/press-release/2013/06/03/india-by-2030-india-and-china-will-dominate-global-saving-and-investment-says-new-world-bank-report>

² http://www.rbi.org.in/scripts/BS_SpeechesView.aspx?Id=862

requirement of maintaining minimum balance in BSBD accounts. The government also shifted the focus on accounts from "every household" to "every unbanked adult". Department of Financial Services said in a tweet.¹

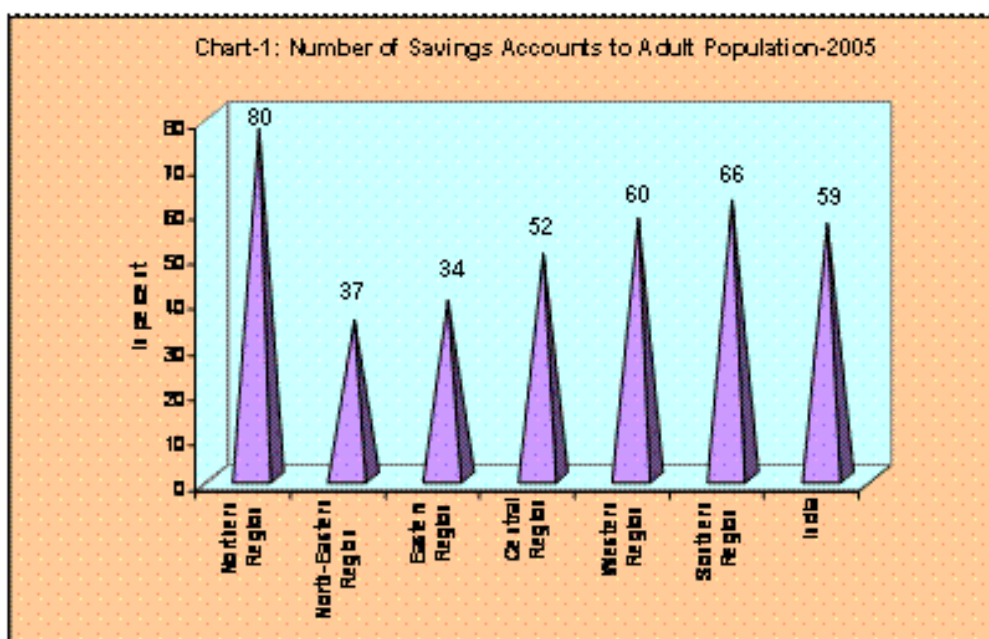
This paper is about highlighting the white space within the downfall economy, for the banking in India. Through this paper I would try to identify the underserved segments through which RBI could benefit from it. The paper would highlight the problem as to why there is a need for RBI to get the deposits from unserved segments. Secondly identification of such segments through secondary research data and finally the conclusion.

IDENTIFYING UNSERVED SEGMENTS

A survey was conducted by World Bank during the year 2018, regarding the populations who have access to financial sector all across India. The extracts of the said survey was analyzed during my research, through which relevant portion were extracted for further analytical process. Due to the availability of authentic and reliable World Bank data (secondary data), extracting primary data was like reinventing the wheel. Strata were built upon the extracted secondary data i.e. population for the research, for accurate and desirable results. The prime focus of the research is to identify the unserved or underserved segments, therefore the relevant facts and figures, were identified, analyzed and then fine tuned according to my desire hypothesis.

Unserved Segment can be thought of in two ways. One is exclusion from the payments system –i.e. not having access to a bank account. The second type of Unserved is from formal credit markets, requiring the unserved to approach informal and exploitative markets. After nationalisation of major banks in India in 1969, there was a significant expansion of branch network to unbanked areas and stepping up of lending to agriculture, small industry and business. More recently, the focus is on establishing the basic right of every person to have access to affordable basic banking services².

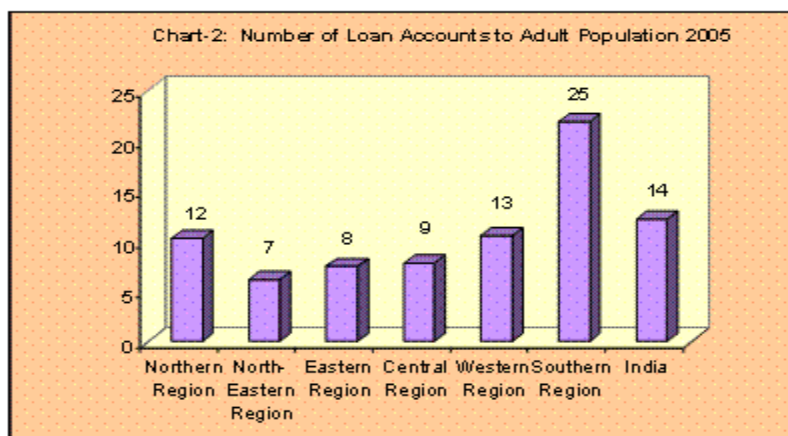
Measures of financial exclusion



One common measure is the percentage of adult population having bank accounts (Chart-1). Going by the available data on the number of savings bank accounts and assuming that one person has only one account, (which assumption may not be correct as many persons could have more than one bank account) we find that on an all India basis 59 per cent of adult population in the country have bank accounts – in other words 41 per cent of the population is unbanked. In rural areas the coverage is 39 per cent against 60 per cent in urban areas. The unbanked population is higher in the North Eastern and Eastern regions.

¹ <https://economictimes.indiatimes.com/industry/banking/finance/banking/bank-accounts-opened-under-pradhan-mantri-jan-dhan-yojana-crosses-40-crore-mark/articleshow/77328277.cms?from=mdr>

² http://www.rbi.org.in/scripts/BS_SpeechesView.aspx?Id=342



The extent of exclusion from credit markets is much more, as number of loan accounts constituted only 14 per cent of adult population (Chart-2). In rural areas, the coverage is 9.5 per cent against 14 per cent in urban areas. Regional differences are significant with the credit coverage at 25 per cent for the Southern Region and as low as 7, 8 and 9 per cent respectively in North Eastern, Eastern and Central Regions.

The extent of exclusion from credit markets can be observed from a different view point. Out of 203 million households in the country, 147 million are in rural areas – 89 million are farmer households. 51.4 per cent of farm households have no access to formal or informal sources of credit while 73 per cent have no access to formal sources of credit. Similar data are not available for non farm and urban households.

Looking at the different sources of credit, it is observed that the share of non institutional sources reduced from 70.8% in 1971 to 42.9% in 2002 and 28% in 2015 and 17% in 2018. However after 1991, the share of non institutional sources has increased; specifically, the share of moneylenders in the debt of rural households increased from 17.5 % in 1991 to 29.6% in 2002 to 36% in 2015 and almost 38% in 2018. In urban areas the share of non institutional sources has come down significantly from 40% in 1981 to around 25 % in 2002 to 18% in 2015 and 11% in 2018.

KEY FEATURES OF SECONDARY RESEARCH DATA

47% men and 53% women (18 and above)

47% housewives form the single largest group followed by 30% self employed and 12% employed

Largely married (71%) and 22% single

Mostly (74%) ordinary members of the household rather than the head of the household

63% rural and 37% urban

31% illiterate, 54% with some primary to intermediate education and 16% graduates and above¹

FINANCIAL ACCESS STRAND

The Access Strand places the adult population along a continuous usage of financial services, both formally and informally.

The financial access strand has four segments, as follows:

1. The “Banked”
2. Those using “Formal Other” financial products and services
3. Users of “Informal” financial products and services, and
4. The “Financially Unserved”

Banked

This group comprises of adults who currently use one or more traditional banking products supplied by a financial institution. This is not an exclusive usage category; adults in this group may also be currently using one or more “formal-other” or “informal” products.

¹ "Census of India 2011; Houselisting and Housing Census Schedule"

Formal Other

This group comprises adults who are currently using one or more formal product supplied by a financial institution other than a bank by a financial institution operating under legal governance. Such products include, for example, insurance, leasing, microfinance, postal financial services etc. These people do not have bank account, but have at least one financial service from a regulated non-bank financial service provider. Thus, this is also not an exclusive usage category, as people in this segment may also be using one or more “informal” products.

Informal

This group consists of any adult who does not have a bank account or a formal-other service, but uses one or more of “Informal” products that operate without legal governance. Examples include borrowing from a money-lender, shopkeeper or participating in a savings committee. This is exclusive usage – the adults in this segment do not currently use any formal products i.e. “Banked and Formal Other”.

Financially Unserved

These are those adults who are unserved from all financial services – Banked, Formal Others and Informal.

The Banked and Formal Other segments together make up people who are Formally Included. Adding those who use informal services exclusively broadens this group to those who are Financially Served. The latter are financially served in the sense that they are using financial services from either the formal or informal sectors, or both. The remaining adult population, the fourth segment i.e. the Financially Unserved, are the ones who do not have any services from any of the formal and informal sources. They are usually using sub-optimal alternatives or solutions such as sending money by hawala/hundi (informal means of money transfer), saving at home, and borrowing from family and friends.

CURRENT FINANCIAL MARKET SITUATION

According to the data gathered people having bank accounts are merely 11% while another formal sector serves only the 1% adult population of our country. This means that only 12% in total is under a threshold of documented economy while the flow of money through undocumented area is 88%. OPPORTUNITY!!!!

ACCESS STRAND ACROSS GENDER

The issue of financial exclusion is most severe along gender lines. There are wide gaps between men and women who are banked, informally served and the financially unserved.

ACCESS STRAND BY EDUCATION

Clearly, the choice of being banked improves progressively with level of education. However, at the same time informal services are very popular across educational groups, though less popular among those with graduate level of education and above, and very low among the post graduates. Moreover, across all educational levels there are large groups of people who are financially unserved. In fact, more post graduates are financially unserved (22%) than those who are availing informal financial services (9%).

ACCESS STRAND BY PROVINCE

The issue of financial exclusion is most severe in West Bengal (84%) followed by Chandigarh (61%). All other provinces have access to some form of financial service, be it formal or informal. In all categories of access West Bengal lags far behind than other provinces.

The access scenario looks relatively bright in Jammu and Kashmir (JK). In order to receive governmental livelihood support, people were required to open a bank account where aid could be deposited.

FINANCIAL ACCESS SALIENT FEATURES

Financial inclusion remains a distant dream for a majority of Indians. Even after 20 years of banking sector privatisation, today only 35% of the Indian population has formal bank accounts compared to an average of 41% in developing economies. In a country where nearly 70% of the population lives in villages, a significant segment of about 6,50,000 villages do not have a single bank branch.¹ More than half of the adult population that is financially unserved comprises predominantly of housewives and students.

The informal sectors is predominantly being used by men with less education and working in low paying jobs in the informal sector, agriculture and daily wages.

¹ http://articles.economictimes.indiatimes.com/2014-02-27/news/47739737_1_new-bank-licences-insurance-sector-financial-inclusion

The issue of access is most pronounced along gender lines. Women by far have less access to all kinds of financial services (formal and informal) as compared to men. Large majority of women are financially unserved altogether.

Financial exclusion not only from any kind of formal but also informal financial services is most severe in the rural areas.

There is high co-relation between education and being banked. However, at the same time there are large number of people who are not availing any kind of financial service (formal and informal) across educational groups – even among the graduates and post graduates.

Almost twice as many people are banked in urban than rural areas. Otherwise the issue of exclusion and access to formal and informal services is similar in urban and rural areas.

Single people tend to be most outside the financial services net (formal and informal) as compared to married and widowed.

FINANCIAL LITERACY

In terms of overall financial literacy, India is at the bottom among 16 countries in the Asia-Pacific region with 59 index points, according to the annual MasterCard's index for financial literacy. The index is based on a survey conducted between April 2018 and May 2018 with 7,756 respondents aged 18-64 years.

The survey polled consumers on three aspects—basic money management (50% weight), financial planning (30% weight) and investment (20% weight)—to arrive at the overall financial literacy index. On individual parameters, India scored 50 index points in basic money management, which was lowest among 16 countries.

However, given the small sample size and locations chosen for the survey, it may not be a true reflection of the things on ground. "The sample is not too big and India is a large country with diverse lifestyle approaches. So I am not sure how far will this be true for pan-India," says Ranjeet S. Mudholkar, vice-chairman and chief executive officer, Financial Planning Standards Board India.

Nevertheless, the survey does show lack of penetration of financial products and literacy in India compared with other nations included in the survey, which needs to be taken note of.¹

INTEREST IN FINANCIAL MATTERS AND SOURCES OF FINANCIAL INFORMATION

A considerable mass of adult Indians is interested in financial matters. Overall 71% follow financial news "sometimes, often and always" rather than never. However, the level of financial literacy among the overall adult population in India is very low as depicted by the previous table.

The differentiating factors across the four segments show:

Banked population relies largely on newspapers and colleagues at work.

Financially Unserved and informally served depend on elder brother, father and other family members.

The informally served also depend on local community forums like jirga for their information while those in the "formal other" segment depend on shopkeepers.

Surprisingly, television and radio are quite on the peripheries across the Access Strand.

AREAS IN WHICH TRAINING IS WANTED BY ACCESS STRAND

Training interests of the informally served, financially unserved and those using other formal services revolves around understanding basic money management and financial concepts such as preparation of household and personal budgets, how to save, and how to calculate profit on a bank account. Whereas the banked are only marginally interested in learning about the products offered by banks.

SALIENT FEATURES OF INFORMAL PRODUCT USERS AND FINANCIALLY UNSERVED

The category of unbanked users having usage of informal products has the following characteristics:

Most of them are Self-employed on daily wages within the informal sector.

Male has the majority for usage of informal products.

¹ <http://www.livemint.com/Money/FKCIInDmM8VblAc2TPd1jKL/Financial-literacy-in-India-very-low-says-survey.html>

This sector contains people having jobs related to:

Agriculture;

Laborer/Worker for Daily Wages;

Self-employed (Formal Sector);

Cart Holder/Hawker;

Services Selling Workers i.e. Carpenter, Barber, Ironsmith etc

Unemployed - Looking For A Job

Majority of them are from Punjab and Sind.

Informal users are mostly fall in category of married.

Education-wise - 4 To 9 Classes, Primary Complete.

And lastly they all are from rural area.

The characteristics of financially unserved users are:

Surprisingly Female leads this segment in a majority.

These females are mostly housewives and singles.

Employment Status: Housewife - Earn Income - Yes

Employment Status (Single): Student - Earn Income - No

Marital Status: Single or widowed

West Bengal and NWFP

Education-wise these are Illiterate.

Resides in Rural areas.

According to the survey conducted by MasterCard's index for financial literacy ,48% of informal users say that they would like to have their own bank account while 31% of Financially unserved people would like to have a bank account. This means that almost 25 million people of both categories like to have bank account.

WHY PEOPLE ARE UNBANKED?

If 25 million of these people would like to have a bank account then what are the reasons that they are still unable to get involve with any of the bank. But before we go deeper into the unbanked people problems we should know why the 11% banked population use bank for:

The above table gives solid evidence that banks are being used primarily for the basic and necessity based reasons rather than for any sophisticated, value added and productive reasons. This can be further verified that the percentages for relatively more sophisticated, productive or convenience based reasons such as accessing a business loan, money transfers, earning an income or payment of utility bills have been stated by very few respondents.

Further analysis reveals that urban areas are more towards the money safety than rural. Also the rural areas want to be more into the business relation and to access personal loans.

Now coming back to the unbanked reasons, the following table gives the right idea:

Access related reasons, interestingly, are not the most important reasons for being unbanked, than income related reasons are. Nevertheless people who have cited choice and access related reasons are significant and is a more ready potential market for banks. These segments need to be studied and analyzed closely so that their reasons for being unbanked can be addressed in a more targeted fashion. Contrary to the expectations, socio cultural reasons have been cited by a mere 12% women as a barrier to being banked!

HOW DO PEOPLE RECEIVE THEIR INCOME ?

India is predominantly cash based economy outside the formal economic structures. 92% of the adult Indiais receive their income in cash and almost half of the people say that "some" of this income goes into a bank while 1/3 say that "None" of it is deposited in a bank!

SAVINGS AND INVESTMENTS**SBP CONCLUSION**

Although National savings as a proportion of GDP increased 40 bps during FY17 to 14.3 percent, the savings rate in India is the lowest among neighboring countries. Moreover, this minor increase was primarily attributed to the surge in workers' remittances during the year as domestic savings as a percent of GDP declined from 11.5 percent in FY08 to 11.3 percent in FY17. The decline in savings during FY17 is primarily attributed to the sharp reduction in overall economic activities and strong inflationary pressures in the economy.

SALIENT FEATURES OF SAVING AND INVESTMENTS

56% of the total adult population saves or invest either formally or informally. However, 53% save informally while formal savers are only 3%.

Saving at home is the most widely practiced across all segments

The top 4 means of saving across India are all informal. Only 8% of those who save do so with a bank.

Even though people perceive government associated financial institutions as secure, only 2% are investing in Prize Bonds, and 1% in National Savings Schemes.

Almost a quarter of the adult population (23%) saves through Committees. Contrary to expectations, committees are an urban (38%) phenomenon rather than rural (14%) with nearly equal popularity among men and women (about a quarter each)

INFORMAL WAYS OF SAVING USED BY BANKED

Even among the banked people, saving at home is very popular among the banked - across urban and rural areas. Same goes for participation in savings committees, which are more popular among the banked urban rather than the banked rural people. Investments in land and livestock are more popular means of saving among the banked rural and among men rather than in urban areas and among women.

REASONS FOR SAVING

There is a lot of overlap as to the reasons for savings, that is why the circle overlap so much

It is clear however that the financially unserved and informal save for more essential things than the banked who save for future retirement/holidays etc.

PERCEPTION

In thinking about the financial service providers, what come more to peoples mind are the prerequisites for transacting with them rather than their services. The typical service features that consumers seek from commercial banks and other financial service providers have scored low. This reinforces the findings of the focus group discussions regarding weak client service orientation of commercial banks. People's perception about security of money at the banks is high which also conforms to an important reason that the banked have stated for having a bank account.

As for informal financial service providers, the top perception statements for committees and money lenders relate to no requirement of documentation, and formalities. This is in striking contrast to the perceptions regarding the formal sector providers. Additionally, more people trust the informal sources as compared to the formal financial institutions. As compared to the formal service providers, relatively speaking satisfaction with the informal service providers is high.

FINANCIAL ACCESS FRONTIER

The frontier is a tool used to un-pack areas where opportunity exists to bank the un-banked. The analysis is based on reasons for not being banked although some duplication of response is possible, however the tool gives a good indication of where focus of attention should be.

FINANCIAL MARKET DEVELOPMENT FRONTIER

So finally now, our frontier tool has identified the unserved segment of the population and that is the informally served segment which is now an opportunity. This segment can be divided into two parts:

Market Enablement zone

Market Development Zone

Market enablement zone is that segment which needs refinement in terms of the perception towards banking while market development zone is ready to serve zone, i.e the bank should start working on the products for such sub-segment to cater their needs.

CONCLUSION

Technology can be harnessed to help expand geographical outreach and overcome low literacy levels. Physical access can be increased via new technology solutions such as branchless banking and mobile banking. Simplified financial processes and procedures, client segmentation and product diversification can help lower costs and manage risks better. Summing up the whole data analysis, best formula that comes to ones mind is rapid scaling up of access via technology, literacy gains, and financial re-engineering of processes.

Client segmentation is one way that would allow institutions to better tailor products to client needs as well as reduce costs and manage risks more efficiently.

RBI Governor Raghuram Rajan made an important observation about the limits to which financial inclusion can be “pushed”. Speaking at an IMF event in Lima on October 8, 2015, Rajan talked about how, beyond a point, financial inclusion, especially one led by a drive to make easy credit available for the poor and hitherto unbanked, can actually have a negative impact on the financial stability of the whole system¹.

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AN EXPLANATORY STUDY ON ELECTRONIC BANKING IN INDIA: MODERNIZATIONS, CHALLENGES AND OPPORTUNITIES

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ABSTRACT

Banking is the sustenance of a financial system of the country. A strong banking sector can be termed as lifeline of an economy. Therefore, it is not wrong to say that present and future of an economy entirely depends upon the success and development of banking industry of that economy. Banks are the institutional bodies that accept deposits and grant credit to the entities and play a major role in maintaining the economic stature of a country. E-Banking is the one of the major part of E-Financing. Internet banking refers to the deployment over the Internet of retail and wholesale banking services. In India, the Reserve Bank of India (RBI) is the apex banking institution that regulates the monetary policy in the country. E-banking is a safe, fast, easy and efficient electronic service that enables you access to bank account and to carry out online banking services, 24 hours a day, and 7 days a week. With this service we can save our time by carrying out banking transactions at any place and at any time, from our home or office, all we need is internet access. In today's era of information and technology an economy cannot achieve the target of sustainable development by following traditional banking method. So it has become mandatory for developing country like India to increase automation in banking industry. E-banking has helped the banking industry in several new ways but the biggest advantage that it has imparted to this sector in developing countries especially country like INDIA is related to improving customer relations. According to expert studies by 2020 average of India will be 29 year and these young Indian consumers are entirely base on internet banking. Therefore Indian banks are in desperate need to do innovation and provide Indian consumers a world class internet banking capability. This paper is an attempt to study the need of innovation in India in field of e-banking and also try to put light on the available benefits, opportunities and current challenges faced by banking sector to boost up E-banking in India.

Keywords- E-Banking, ATMs, Information Technology Etc.

INTRODUCTION

In India innovation in banking sector was began since 1991 with introduction of liberalization and globalization processes as result of it E- Banking came into progress. This Information Technology revamps the entire banking sector. E- banking drastically and rapidly altered the way of client banking, banks started providing different services related to cash deposits, cash withdrawals that to through electronic means. Due to this I.T revolution the number of electronic transactions are increasing day by day and world has emerged as a cyber world where each and everyone is connected through internet. E- Banking made the mobility of foreign funds and investment possible which turned world into global market and this market is growing so fast that it has almost abolished the effect of national boundaries. It is not wrong to say that this I.T innovation in banking sector in form of E-banking has introduced new business paradigm in country like in India. In past three decades the operational efficiency of Indian banks has increased to several folds, now the time taken by the banks in performing different transaction has been reduced, with this advancement competition among banks has also increased. Every bank is trying to use as much latest technological innovations in order to facilitate its customers. One of the key features in this regard is innovation banking or e- banking, which a lot of banks are currently providing in India. Internet Banking or E-Banking refers to a system that allowing individual customers to perform various banking activities from different sites like their home, office and other locations via internet based secured networks. Through Internet or online banking traditional banks are enable customers to perform all routine transactions, such as account transfers, balance inquiries, bill payments and stop-payment requests, and some even offer online loan and credit card applications. Internet banking is a web-based service that enables the banks authorized customers to access their account information. It permits the customers to log on to the banks website with the help of bank's issued identification and personal identification number (PIN). The banking system verifies the user and provides access to the requested services, the range of products and service offered by each bank on the internet differs widely in their content. The popular services provided by E-banking are ATMs, telebanking, internet banking, mobile banking, anywhere and anytime banking etc. Technology adoption in banks has shifted banking more of a capital intensive, fixed cost industry from a labour intensive, variable cost industry. The concept of e-banking is till date evolving, it still involves lot of innovation that are taking place every day. There are many opportunity and challenges which are available in e- banking in Indian banking systems

E-Banking: The Concept Electronic banking is defined as “Delivery of bank’s services to a customer at his office or home by using Electronic technology can be termed as Electronic Banking.” Finland was the first country in the world who took a lead in E-banking. In India, ICICI bank was the first bank that initiated E-banking as early as 1997 under the brand name “Infinity”. Online Banking or E-based banking is also known as Cyber banking, home banking, and virtual banking and includes various banking activities that can be conducted from anywhere. E-banking allows customers to do financial transactions on a secured website operated by the institution, which can be a retail bank, virtual bank, credit union, building society, it also includes RTGS, NEFT, ECS, Credit cards and debit cards, Cheque truncation, ATM, Tele banking, Internet banking and Mobile banking. According to Daniel electronic banking can be simple define as the delivery of bank's information and services by banks to customers via different delivery platforms that can be used with different terminal devices such as a personal computer and a mobile phone with browser or desktop software, telephone or digital television

REVIEW OF LITERATURE

The following is brief review of literature done by different researchers worldwide in the area of e-commerce.

Maiyaki and Mokhtas (2010) shown in their research that there is no relation in between population statistics and choice of banks. It was also found that statistically there is a significant relationship between age and choice of banks.

Selvam and Nanjappa (2011), in their study, examined customers’ awareness and satisfaction about e-banking.

Trivedi & Patel (2013) analysed the problems faced by customers while using e-banking facilities in India. It observed that most of the customers know about the e-banking services offered by their bank. The study found that there is a significant difference amongst different problems identified while using e-banking services. It also found that some problems affect more and some problems affect less in use of banking services. It concluded that all the reasons are not equally responsible for not using e-banking services

Gupta & Mishra (2012) examined the new emerging trends of E-banking in Indian banking industry. The study found that there are many challenges faced by banks in E-banking and there are many opportunities available with the banks. It concluded that banking sector will need to master a new business model by building management and customer services. It also suggested that banks should contribute intensive efforts to render better services to their customers.

Chavan (2013) described the benefits and challenges of Internet banking in an emerging economy. It observed that online banking is now replacing the traditional banking practice. It showed that online banking has a lot of benefits which add value to customers’ satisfaction in terms of better quality of service offerings and at the same time enable the banks gain advantage over the competitors. It also discussed some challenges in an emerging economy.

The study showed that only 28 (Approx.) per cent banking clients were using internet banking after evaluating the population characteristics. It found that there was no significant relationship in between age and use of cyber banking. It also depicted that there is no relation in between gender and the adoption of internet banking. It observed that qualification in terms of education and income of the respondents were playing the role in the acceptance of online banking.

RESEARCH METHODOLOGY

The present study is descriptive in nature. The secondary data has been used for the study It is collected from RBI (Reserve Bank of India) bulletin, annual reports of RBI and, Report on trend and progress of banking in India, various reputed journals, newspapers and websites of RBI.

METHODS OF DATA COLLECTION

Secondary Data collection was done

CURRENT SCENARIO OF INTERNETBANKING / E-BANKING IN INDIA

In entire Indian banking system, Electronic Banking has turn emerged as an important part. The concept of e-banking is of to some extent latest origin in India. Traditional model of banking i.e. branch based banking was widespread till 1990s, and after that non-branch banking services began. IT Act, 2000, was created by government of India with effect from the 17th October 2000. A Committee was laid down to study various aspects of Internet banking. The committee had paid enough consideration on three most important areas of Internet banking, Security issues, legal issues and regulatory issues. Recommendations and guiding principles of Working committee was acknowledged by Reserve Bank of India and accordingly plans were issued to banks

to employ internet banking in India Table exhibit a few facts related to electronic banking with respect to its present scenario. Table shows evidence for ATM, POS (Point of sale) and electronic cards (credit and debit cards) sited and sanctioned by the schedule commercial banks (SCBs) in India as on December 2014. escalating number of mobile banking users in India were also being shown in the table.

OBJECTIVES OF THE STUDY

- To understand the need and benefits of E-banking in Indian economy.
- To study the recent financial Innovations, Challenges and Opportunities in e- banking in India.

NEED AND BENEFITS OF E-BANKING

Banking has witnesses many innovations in last 3 decade and one of the major among it is e- banking which was result of information and technological revolution. These IT revolutions changed the entire working of banking sector as e- banking gave birth to new type of financial services which was created by the intersection of tradition retail financial services with the internet. E-banking provides provision of performing basic banking services or transaction through web. In recent time E-banking has spread rapidly all over the globe. All Banks are making greater use of E-banking facilities to provide better service and to excel in competition. The spread of E-banking has also greatly benefited the ordinary customer in general and corporate world in particular. The following points summarize benefits of e banking.

Benefits to Customers General consumers have been significantly affected in a positive manner by E-banking. Many of the ordinary tasks have now been fully automated resulting in greater ease and comfort.

- Customer's account is extremely accesses able with an online account.
- Customer can withdraw can at any time through ATMs that are now widely available throughout the country.
- Besides withdrawing cash customers can also have mini banks statements, balance inquiry at these ATMs
- Through Internet banking customer can operate his account while sitting in his office or home. There is no need to go to the bank in person for such matter.
- E-banking has also greatly helped in payment of utility bill. Now there is no need to stand in long queues outside banks for his purpose.
- All services that are usually available from the local bank can be found on a single website. • The Growth of credit card usage also owes greatly to E-banking. Now a customer can shop worldwide without any need of carrying paper money with him
- Banks are available 24 hours a day, seven days a week and they are only a mouse click away.

Benefits to Banking Industry

Banking industry has also received numerous benefits due to growth of E-Banking infrastructure. There are highlighted below:

- The growth of E-banking has greatly helped the banks in controlling their over heads and operating cost
- Many repetitive and tedious tasks have now been fully automated resulting in greater efficiency, better time usage and enhanced control.
- The rise of E-banking has made banks more competitive. It has also led to expansion of the banking industry, opening of new avenues for banking operations.
- Electronic banking has greatly helped the banking industry to reduce paper work, thus helping them to move the paper less environment.
- Electronic banking has also helped bank in proper documentation of their records and transactions.
- The reach and delivery capabilities of computer networks, such as the Internet, are far better than any branch network.

INITIATIVES TAKEN BY THE GOVERNMENT OF INDIA FOR DEVELOPING THE INTERNET BANKING

- With the objective of promotion and encouragement of the applications of E-Banking, various initiatives have been taken by RBI and Indian Government IT ACT 2000 was conceded by GOI w.e.f. October 17,

2000 which paid attention to give legal recognition to electronic transactions and supplementary means of electronic commerce.

- Constant analysis of E-Banking legal requirements by RBI, so as to further make certain that financial solidity of Nation may not be influenced by E-Banking Challenges.
- Vision Document 2011-17, was framed by Dr. K.C. Chakrabarty Committee including members from IIM, IDRBT, IIT and Reserve, which presents an analytical road map i.e. strategy to enhance the relevance of IT in the banking sector [RBI (2011), "IT Vision of Reserve Bank of India 2011-2017"]
- Endeavors To Make Payment System more safe and sound By RBI. Banks has been therefore advised to make its safety feature stronger in e-banking. It was being admitted by RBI that applying alternate channels of payments like Mobile Banking, ATMs involves an extra responsibility of Banks to guarantee safe & secure transactions. (RBI Annual Report (2013).
- RBI allowed National Payments Corporation of India (NPCI) to elevate the number of mobile banking services and increase the IMPS (Immediate Payment Service) channels like ATMs, internet, mobile etc. Besides this, efforts are being made by NPCI to take more mobile network operators with the intention that mobile banking services can be made accessible through a common platform. (RBI Annual Report (2013).
- The Basel Committee on Banking Supervision's (2001) has enlightened risk management principles for electronic banking. They primarily spotlight the extension and tailoring the existing risk-management plan to the electronic banking structure

CHALLENGES IN INTERNET BANKING

However, despite the benefits of online banking, there is also a number of distinct issues and challenges in the online banking sector. These are highly significant both for banks that offer online banking, but also for their customers, who depend on the banks to operate effectively. Online banking marketers need to know these challenges so that they can efficiently navigate them. Here are some of the top issues and challenges in the online banking sector that marketers need to be aware of:

Traditional Banking Habits

Despite the benefits of online banking, more than 50 percent of Indians adults do not participate in it at all. This happens mainly because traditional banking is what many people are used to and it can take time for them to break habits. So, online banking marketers should focus on ways to convince traditional banking users to start using online banking services.

Security

Security is one of the most significant challenges for online banking marketers. This is because, in the past, if a robber was going to steal a person's bank savings, he or she would have to break into the bank vault, and make a daring escape with the money. This was an extremely difficult prospect and involved a lot of danger and risk.

Transaction Difficulty

It can be significantly more difficult and time consuming to deposit or withdraw money from an online bank. Not only do online banks often have fewer ATM's than their traditional counterparts, but it also can simply take longer amounts of time for deposits to be processed and put into a bank account.

Technical Issues

Because online banks rely so heavily on their online platforms, this means that they can generate substantial losses if their systems crash or if there are bugs in their code. A single technical issue that causes a bank to be down for a day could cost the bank millions in losses.

Small Budgets

Many startups have to operate on shoestring marketing budgets before they grow to a larger size. Obviously this can be a major challenge. If your marketing budget is small, then you need to focus on the priority expenses.

OPPORTUNITIES RELATED TO INTERNET BANKING

Opportunities of E-Banking Several Channels: Banks can offer so many channels to access their banking and other services such as ATM, Local branches, Telephone/mobile banking, video banking etc., to increase the banking business.

Bill Payment Services: E-banking can facilitate payment of electricity and telephone bills, mobile phone, credit card and insurance premium bills as each bank has tie-ups with various utility companies, service providers and insurance companies, across the country.

Increasing Internet Users & Computer Literacy: To use internet banking it is a very important or initial requirement that people should know internet technology so that they can easily adopt internet banking services. The fast increasing internet users in India can be a very big opportunity and the banking industry should encash this opportunity to attract more internet users to adopt internet banking services.

Creating high-value digital services to customers: Customer behaviors and expectations have changed radically over the last decade. The trend towards Digital is visible across the board, with the banking industry at the forefront. Customers can access banking services anytime and anywhere, using the channel of their choice. Customers can perform basic banking transactions by simply sitting at their office or home through Smart phone, PC or LAPTOP. Customers can get drafts at their door steps through e-mail call. Thus E-banking facilitates home banking

Competitive Advantage: The benefit of adopting e-banking provides a competitive advantage to the banks over other players. The implementation of e-banking is beneficial for the bank in many ways as it reduces the cost to banks, improves customer relation, increases the geographical reach of the bank, etc,. The benefit of e-banking has become opportunities for banks to manage their banking business in a better way.

Competence: Banks can become more efficient than they already are by providing Internet access for their customers. The Internet provides the bank with an almost paper less system. E-banking creates strong basic infrastructure for the banks to embark upon many cash management products and to venture in the new fields like e-commerce, EDI, etc.

Quality Banking: E-banking release innovative vistas for providing well-organized monetary and quality service to the customers. E-banking allows the opportunity of improved quality and an enlarged range of services being made available to the customers.

CONCLUSION

Online banking is one of the most significant developments for the banking industry in its long history. However, despite the many benefits that online banking provides to customers, there are also a number of major concerns and challenges for marketers in the online banking sector. Traditional banking habits, security, technical issues, transaction difficulties, and small marketing budgets are all major challenges that online banking marketers will have to reconcile if they are to succeed in this field. However, demand for this industry continues to be very strong. So it is likely that online banks will only grow more advanced and successful as they strive to resolve their marketing challenges.

The e-banking revolution has fundamentally changed the business of banking by scaling borders and bringing about new opportunities. In India also, it has strongly impacted the strategic business considerations for banks by significantly cutting down costs of delivery and transactions. Compared to developed countries, developing countries face many impediments that affect the successful implementation of e-banking initiatives. In this paper, we have identified some such impediments in the Indian context. Thus, all the channels of banking will co-exist with the E-banking facilities. Right now with low and lack of adequate security, infrastructure and internet penetration, it is significant to take necessary actions to enhance E-banking.

With the passage of time, Concept of E-Banking has got consideration in Indian context. E-Banking services have been effectively implemented by many public and private sector banks as it is profitable for Consumers as well as banks. The Role of information and technologies has been exceptional in endorsement of e-banking. Many financial innovations like ATMs, credit cards, RTGS, debit cards, mobile banking etc. have completely changed the face of Indian banking. But still there is a need to have more innovative solutions as even now also e-banking is faces many challenges like , i.e., Risks regarding security, privacy, trust factor, lack of knowledge among consumers in relation to e-banking, unsupportive infrastructure, Low level of computer literacy among existing staff, etc are acting as obstruction in the implementation of e-banking facilities.

Government of India in synchronization with many public banks & financial Institutions are making an attempt to create an E-banking which is more safe, reliable and protected. This paper also highlights the opportunities that are available in India for the development of e-banking. Key opportunities can stated in terms of untapped rural markets, competitive advantage held to Banks, increasing internet users, efforts initiated by government of India, etc.

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WOMEN'S PARTICIPATION IN INDIAN POLITICS AFTER INDEPENDENCE

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ABSTRACT

Women's participation in politics is a valuable issue. Equality for all human beings, men and women, is provided by democracy. In Indian politics, participation of men is greater than women. However, now women's participation in politics is enhanced than in older times. Various qualities such as decision-making process, political consciousness, and political activism are left impact on involvement of women in politics. According to constitutional provisions, the government can reserve seats for women. Various articles of The Constitution of India help women to participate in politics. 10.8% is highest value of women involvement in parliament, since 1952 involvement of women is not enhanced. Many women candidates are not provided seat by political parties pursuing that they are not capable of winning elections, whereas the winning ratio of women is better than men.

Keywords: Democracy, Constitutional provision, Lok Sabha, Election, Rajya Sabha

1. INTRODUCTION

Democracy provides equality to all human beings According to constitutional declarations equal rights of freedom and liberty is a valuable aspect of all human being, this process is conducted without presence of any negative factor such as religion, race, language, sex, and color, birth, and another status. However, in almost all societies of the world, women suffer from the inferiority of men. The political participation of women is mainly treated as an empowerment of women who are lacking in opposition and power. In the present scenario, empowerment and emancipation of women are directly linked with participation in politics. According to 73rd amendment act it is mandatory for government to reserve seat, posts and chairperson for women. India ranks 20 from bottom in the world in representation of woman in Parliament. One of the earliest women organizations was Bharat Stree Mahamandal, which formed in 1910.

2. POLITICAL PARTICIPATION

electoral campaigning, right to vote, holding party positions, co-decision making, membership of political parties, attending party meetings, power-sharing, and co-policy making at all levels of governance of the state are involved in political participation. Using participation process, individuals are able to find out their target and implement perfect way to achieve their desired target. According to Rai (2017), 19th century reform movements are treated as a root of political participation of women. Several social reformers such as Iswar Chandra Vidyasagar, Behramji Malabari, Mahadeva Govinda Ranade, Rajaram Mohan Roy think that enhancement of consciousness and education of women are able to control various social evils.

Availability of democratic value can evaluate political participation and empowerment process of women. An umbrella of democracy is a prerequisite process; participation and empowerment of women depend on this factor (Mitra 2017). Empowerment is not only a characteristic this process is involved in effective change. Empowerment directly depends on political participation. The selection of rulers and formation of public policy depends on various voluntary activities of members of society. Political participation is a basic component of the political system. Individuals can be authentic in the political system with the help of the political participation process. Proper and important system of Indian politics is participation of woman in Panchayati Raj. Participation of women in local area politics is a promotion method of consciousness, awareness, and development approach.

This process is able to provide training to participate in wider politics. The natural qualities of women such as honesty, sense, and affection of duty help political parties and political leaders. Bhalotra et al. (2018) stated that, wider socio-political problems are maintained by natural qualities of women. In 1948, the 10th December Universal Declaration of Human Rights was adopted, which directly had an impact on women's participation in politics and women empowerment. Women mainly carry forward the tradition, values, and norms of society; they are unable to play non-traditional roles. Women empowerment is involved in maintaining this factor and increasing participation of women in politics. Three directions are involved in emancipation of women such as providing proper education towards women, providing them fundamental political rights, and adopting necessary laws for social reforms.

3. PARTICIPATION OF WOMEN IN POST INDEPENDENT PERIOD

Women are able to participate in democratic process after independence with the help of national movement and various foundations. The Government of India introduced various social, economic and legal measures, which are involved in the enhancement empowerment of women after independence. Therefore, in state and national politics women are able to play significant role. Presence of women was very little (2%) in the first assembly after independence (Prillaman 2017). Therefore, Durgabai, a veteran Gandhian, Renuka Roy, social worker; Masuma Begum, later become the Minister of Social Welfare; Radhabai Subbarayan, who was a member of First Round Table Conferences are included as a women member. According to a government report, speeches of women in the assembly are carefully listened to by men. In 1947, Rajkumari Amrit Kaur became Union Health Minister. In 1959, Sucheta Kriplani was selected as a general secretary of Congress, labor minister of Uttar Pradesh on 1962, and Chief Minister of United Province in form 1963-1967.

In 1947 Vijayalakshmi Pandit was selected as a representative of the UN and appointed as an ambassador to the USSR and then she was also appointed as an ambassador of the US. In 1953 Vijayalakshmi Pandit was elected as president of the United Nations General Assembly. Till 1980 women started to hold 4-5 % seats in Lok Sabha, after 1980 reservation of seats for women was increased to 7-8%. 7-10 % of seats are held by women in Rajya Sabha. In 16th Lok Sabha, 61 women were represented, which is considered the highest in history. Now, 29 women members are present in Rajya Sabha. The foundation of political participation of women was laid down by national movement (Bleck and Michelitch 2018). After independence, the government provided opportunities for women to participate in democratic processes.

4. CONSTITUTIONAL PROVISIONS

After independence, India became a republic country. A parliamentary form is adopted by the constitution of India. Lower houses and upper houses such as Lok Sabha and Rajya Sabha are present in parliament. Most important document was created in 1950 by The Constitution of India, is consider as a most important document which is able to maintain various factor such asliberty,justice, and equality to all citizens. All citizens' justice, economic, social, political, liberty of thought, faith, expression, and belief are secured by the constitution of India. The equality treatment of women is maintained by the constitution of India and adopts various measures to maintain educational, political, and socio-economic disadvantages. Various provisions is taken to maintain equality perspective between men and women, these provisions are described below:

Article 14: In Indian Territory law and equal protection law is introduced by this article. The absence of any discrimination by law or any administrative factor is maintaining by this article.

Article 15: discrimination about race, sex, religion, caste, and place of birth is prohibited by Article 15. Every form of discrimination is guaranteed by this article. Few special provision is created for state that can provide benefit for children and women, which is stated by Article 15(3)

Article 16: Opportunity of citizen is ensure by this article, to maintain this factor by employing any institute under state. According to this article it is important to maintain various factor regarding descent, caste, sex, race, religion, place of birth and others, be eligible for, this article maintain employment criteria under any states.

Article 39- a) sufficient resources for livelihood is guaranteed by this article.

Article 39- b) this article maintain discrimination in work time and maintain same time and money for men and women both.

Article 39- c) according to this article economic necessity cannot force any citizen to enter any occupation. Health, strength, and abuse of children-related issues are maintained by this article.

Article 42: Article 23 and 25 of the Universal Declaration of Human Rights is also related with this article Rights. This article is able to maintain human work and maturity relief.

Article 51- main duty of Indian citizen is to promote harmony and spiroty towards all Indian and spread positives. To renounce practices derogatory to the dignity of women, transcending religious linguistic and religious or sectional diversities are maintained by this article.

Reservation for women in the Panchayati Raj institution is maintained by the 73rd Constitutional Amendment. Also, Article 243- (D) (2) government should reserve 1/3 seats for women who belonging to S.C. and S.T.

Article 243-(d) (3): It is important to maintain proper reservation for woman, which is not less than 1/3 of total number of seats. In panchayet this allotted seats are provided rotation wise towards different constituencies. This article is mainly involved in the extension of political reservations for women.

Article 243-(D) (4): to elect offices reservation is extended by this article. Office of the chairperson of any panchayat is reserved for S.C. and S.T. various law provide to maintain this type of manners of women.

Combination of liberal democracy and communitarian perspective is able to maintain constitutional framework of India. These kinds of constitutional provisions are an independent witness of women's participation in politics. Article 325 and 326 provide information about political equality and rights to participate on political activities, which help women to participate in politics.

5. REPRESENTATION OF WOMEN IN LOK SABHA INDIA.

After independence framework of Indian politics is changed and women are try to involve with this. Various less conventional activities are maintain by women such as peace movement, anti-alcohol campaign environmental movements, and other revolutionary movements. According to Patel (2018), due to this information, it is easy to determine that women are capable of influencing the state. However, politics is treated as a very inhospitable for women, which is considered as a male related field where entry of women is strictly restricted. Representation of women in parliament and state assembly is very low; is representation percentage of women in parliament is 10.8%. Few seats are given to women, however, which are not provided by maintaining women's strength and population. The participation of women in Lok Sabha and Rajya Sabha is depicted in Figures 1 and 2.

Year	Members in Lok Sabha		
	Total Members	Female	Percent
1952	499	22	4.41
1957	500	27	5.40
1962	503	34	6.76
1967	523	31	5.93
1971	521	22	4.22
1977	544	19	3.49
1980	544	28	5.15
1984	544	44	8.09
1989	517	27	5.22
1991	554	39	7.04
1996	543	39	7.18
1998	543	43	7.92
1999	543	49	9.02
2004	539	44	8.16
2009	543	59	10.87

Figure 1: Representation of women in Loksabha

(Source: Vaishnav 2017, p.452)

This figure provides information about the participation of women in Lok Sabha concerning the total number of seats (Vaishnav 2017). 4.4 percent of women participated in 1952, which slightly increased in 1957, this year this number increased til; 5.4 %. In 1962, 6.76 percent of women participated. However this number decreased in 1967, 5.93percent of women participated in this year. In 1971 was 4.2% and in 1977 was 3.49%, which is treated as the lowest percentage of women participation. In 1980 were 5.15. In 1984, this percentage increased impressively, 8.09 percent of women participated in this year. 7.04% was in 1991, 7.18 % in 1996, 7.92 % in 1998, and 9.02 in 1999. Again participation of women decreased in 2004, 8.02 percent of women participated in this year. At last, in 2009, 10.87 % of women participated (Kapoor and Magesan 2018). According to this figure, it is observed that women representation in Loksabha is very low, till 2009, women representation is unable to cross 11%.

Year	Total Seats	Members		Percentage
		Males	Females	
1952	219	203	16	7.31
1957	237	219	18	7.59
1962	238	220	18	7.56
1967	240	220	20	8.33
1971	243	226	17	7.00
1977	244	219	25	10.25
1980	244	220	24	9.84
1984	244	216	28	11.48
1989	245	221	24	9.80
1991	245	207	38	15.51
1996	245	204	19	7.76
1998	245	230	15	6.12
1999	245	226	19	7.76
2005	245	218	25	10.20
2006	242	218	24	9.92
2008	241	219	23	9.54

Figure 2: Representation of women in Rajya Sabha

(Source: Kapoor and Magesan 2018, p.256).

Representation of women in Rajya Sabha is higher than Lok Sabha, due to the nomination of women members and indirect election. Participation of women in Rajya Sabha is provided in Figure 2. The above figure denotes that representation of women in Rajya Sabha has not properly developed since 1952.

6. Women Contestants in General Election

Year	Males	Females	Total	Females (%)	Males winning (%)	Females Winning (%)
1952	1831	43	1874	2.3	26.08	51.16
1957	1473	45	1518	3	31.7	60
1962	1915	70	1985	3.5	24	50
1967	2302	67	2369	2.8	21.3	44.8
1971	2698	86	2784	3	18.5	24.4
1977	2369	70	2439	2.8	22.1	27.1
1980	4478	142	4620	3	11.5	19.7
1984	5406	164	5570	2.9	9.2	25.6
1989	5962	198	6160	3.2	8.5	13.6
1991	8374	325	8699	3.7	5.9	12
1996	13353	599	13952	4.2	3.8	6.7
1998	4476	274	4750	5.7	11.2	15.7
1999	3976	278	4254	5.8	12.3	17.3
2004	5050	355	5405	6.5	9.8	12.6
2009	7514	556	8070	6.8	6.4	10.6

Figure3: Women are contesting during various elections

(Source: Sarkar 2018, p.256).

This above figure denotes that the number of men in elections is greater than women. From 1952 to 2009, 2.3 % to 6.8 5 women were contesting an election, which is very low. Even among total contestants, 93. %is male. However, surprisingly the winning percentage of women is better than men (Sarkar 2018). According to the figure, in 1952, 51.16% female won where the winning percentage of males in 26.08%. Besides, in 2004, 9.8 percent of men won, where the winning percentage of women was 12.6%. 10.6 % of women won in the 15th Lok Sabha election. However, political parties are denied to provide tickets to their woman candidates pursuing that they are unable to win. According to these figure percentages of women winning is greater than men.

Year	No of Women Ministers
1952	3
1957	3
1962	5
1967	5
1971	3
1977	2
1980	8
1984	5
1989	1
1991	5
1996	5
1998	4
1999	9
2004	10
2009	9

Figure 4. Women minister in various cabinets of the Government of India

(Source: Kumar and Prakash 2017, p.356)

Above figure provides information about participation of women in parliament since 1952. It is observed that in ministries participation of women is very low; in addition, representation of women is affected by less important portfolio. Local government, health, welfare, etc. this result is also the same as state government. According to Kumar and Prakash (2017), the position of women in Indian politics is treated as an unrecognized factor, except for those belonging to very elite political families and close to high profile political leaders, who are established in their glamour and their profession. These factors can help women to enter politics. Based on current political culture in the country it is easy to state that participation in politics is very difficult. They have to work hard to show their dignity and passion about politics. To prove themselves sometimes women work ultimately than, any male political leader. After also upper department of party no provide any credit. In Seven South East Asian Counties a valuable survey was conducted by UNESCO. This study reveals that women are unable to represent impressively awareness, voting, decision making, participation, party meeting, membership, election and contesting. Women remain in the periphery of influence and power which is noted by this study of UNESCO.

7. In-state legislature

Woman representation in the state legislature is not impressive. In state assemblies average percentage of women participation is 7.23%. Highest percentage of women is represented in Rajasthan 14% and lowest in Goa 2.5 percent. Few states are conducted without women representation for example, no woman representation in the assemblies Nagaland, Union Territory of Pondicherry and Mizoram. According to state legislatures,

gender discrimination is able to leave an impact on women participation in contesting elections, this problem is increased due to poor representation of women in India.

Sl. No	Name of the state / UT	Year	Total No. of Seats	Women Members	Percentage
1	Andhra Pradesh	2009	294	34	11.56
2	Arunachal Pradesh	2009	60	2	3.33
3	Assam	2011	126	14	11.11
4	Bihar	2010	243	34	13.99
5	Chattisgarh	2013	90	10	11.11
6	Delhi	2013	70	3	4.29
7	Goa	2012	40	1	2.50
8	Gujarat	2012	182	16	8.79
9	Haryana	2009	90	9	10.00
10	Himachal Pradesh	2012	68	3	4.41
11	Jammu & Kashmir	2009	87	3	3.45
12	Jharkhand	2009	81	8	9.88
13	Karnataka	2013	224	6	2.68
14	Kerala	2011	140	7	5.00
15	Madhya Pradesh	2013	230	30	13.04
16	Maharashtra	2009	288	11	3.82
17	Manipur	2012	60	3	5.00
18	Meghalaya	2013	60	4	6.67
19	Mizoram	2013	40	0	0.00
20	Nagaland	2013	60	0	0.00
21	Orissa	2009	147	7	4.76
22	Punjab	2012	117	14	11.97
23	Pondicherry	2011	30	0	0.00
24	Rajasthan	2013	200	28	14.00
25	Sikkim	2009	32	4	12.50
26	Tamil Nadu	2011	234	17	7.26
27	Tripura	2013	60	5	8.33
28	Uttarakhand	2012	70	5	7.14
29	Uttar Pradesh	2012	403	35	8.6
30	West Bengal	2011	294	34	11.56
Total			4120	347	7.23

Figure 5: Women member in legislative assemblies and their percentages

(Source: Rai and Spary 2018, p-382)

In the case of economical degradation, protests against police repression, price rise protests, etc. women are coming out and conduct campaign. However, their effort is bounded in limited political activities. Due to lack of proper training and leadership quality they are unable to maintain this strength for national work (Rai and Spary 2018). Now, it is observed that to contest any election in India muscle power and money power is mandatory, which is not a fruitful solution. In every aspect of life, women are treated as subordinate to men, due to their low esteem, secondary status and many women are denied entry in political decision-making.

8. CHALLENGES

Few effective challenges are observed during participation of women in politics, these challenges are described below:

- In many cases, rough life of politics is hated by many women. Few women can endure hardship which is provided by politics. However, they are unable to change social and traditional attitudes and thinking about women in society
- Problems are related to party bucking. Political parties are denied to provide more seats to women candidates.
- The cultural environment is mainly maintained by men. Along with this, instability of political environment, criminalization of politics, etc are treated as the main challenges of women participation in politics.

9. CONCLUSION

Based on this paper it is concluded that importance of Indian women in the national-building process of India has been as important as men. Women play various roles such as politics, social work, supporting a cause, handling administration, literature, and running business. Women are coming out for various issues such as the

anti-alcohol campaign, peace movement, anti-alcohol campaign, environmental movements, and other revolutionary movements. For Indian women involvement in politics is a difficult factor. Since 1952, participation of women in Lok Sabha and Rajya Sabha is not satisfactory.

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AMBEDKAR'S THOUGHTS ON ISLAM AND INDIAN MUSLIMS

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ABSTRACT

Islam emerged in India in the early seventh century AD. There are differences of opinion about the story of the spread of Islam in India. Some have called it a 'story of invasion, plunder and destruction' or a 'Sword theory'. Someone has brought forward the theory of Brahmin oppression and social emancipation as a prelude to the advent of Islam. Some have highlighted the mysticism of Sufi saints or Pirs. However, Ambedkar identified Indian Islam as the destroyer of Buddhists and Brahmins. Realizing the essence of Islam, he came to the conclusion that inequality, discrimination and evil practices exist in Islam as well as in Hinduism. Islam is also evil due to its narrowness. So he left Hinduism and converted to Buddhism instead of Islam. The purpose of this paper is to explore Ambedkar's views on Islam and Indian Muslims.

Keywords: Islam, Sword theory, mysticism, inequality, discrimination, Hinduism, Buddhism

INTRODUCTION:

Dr. Bhimrao Ramji Ambedkar is one of the leading personalities of modern India. He was deeply involved in the Indian social, cultural and political movements. We find the expression of his many thoughts. He is regarded as the liberator of the Dalit class for his outstanding contribution to the Dalit liberation movement. The Dalit community also called him the modern Buddha. He tried to establish social justice for the Dalit class by reforming Hinduism by eliminating the existing social inequality, discrimination and evil practices in the Hindu religious system, but he failed. So, disgusted with Hinduism, he expressed his desire to renounce Hinduism at the Yeola religious conference held in Nagpur in 1935. It was during this time that he came into contact with Islam, realizing the essence of different religions, and developed his own thinking about Islam and Indian Muslims. He identified Indian Islam as the destroyer of Buddhists and Brahmins. He saw Islam as a 'Political Force' not as a mystical or 'Spiritual Force'. In this view, the destruction of Buddhism and Brahmanism in pre-colonial India was the goal of Islam. His views on Indian Muslim became clearer when the Pakistan resolution was adopted at the 1940 session of the Muslim League in Lahore. Ambedkar supported the proposal. In his well known book, 'Pakistan or The Partition of India' he has clearly shown that Hindus and Muslims cannot co-exist and hence British India had to be partitioned *after* an exchange of population into two separate Hindu and Muslim nations. In this book, Ambedkar tries to show how Islam and Indian Muslims created various problems in Indian society and polity. However, in the colonial era, Ambedkar sometimes sided with the Muslim League in opposition to the Indian National Congress, and sometimes to protect the interests of the Dalits, he opposed both the National Congress and the Muslim League and sided with the British. Towards the end of his life, he renounced Hinduism and converted to Buddhism instead of Christianity or Islam. Our discussion is about the various repercussions of Babasaheb Ambedkar's thoughts on Indian Islam.

OBJECTIVES, METHOD AND MATERIALS

The objective of this paper is to discuss Dr. Ambedkar's viewpoint of Islam and Indian Muslim. Information has been collected from the internet, published papers and various books. Historical and analytical methods have been used to write the paper.

DISCUSSION:

Islam entered India in 712 AD with the defeat of the Indus king Dahir. The conquest of Islam in mainland India began. In the beginning, the main goal of Islam was to oppose paganism in India. According to Ambedkar, this led to the decline of Buddhism and Brahmanism in India and paved the way for the arrival of Islam in the country. According to him, Brahmanism, like Buddhism in India, was also a target of Islam. However, even though Buddhism became extinct, Brahmanism survived, because they took the path of compromise with the help of state power.

According to Ambedkar, not only Buddhist and Brahmin ruled states but also Buddhist institutions like Nalanda, Vikramshila, Jagaddal and Avantipuri were destroyed by Muslim invaders. Due to the persecution of these Muslim invaders, a large number of Buddhist monks were forced to flee to Nepal, Tibet and other places outside India. Buddhist monks were destroyed by the swords of Muslim invaders.

So Ambedkar's decision was that Islam attacked Buddhism and Brahmanism in India. But fortunately or unfortunately Brahmanism is able to sustain its existence but Buddhism is on the path of decline. In this context, Ambedkar has mentioned three important aspects. These are

i) After the Muslim invasion of India, Brahmanism was compromised with the state or under its patronage, but Buddhism was deprived of it.

ii) The Buddhist Union and the Buddhist priests were completely destroyed by the attack of the Muslim invaders. In his own words – “such was the slaughter of the Buddhist priesthood perpetrated by the Islamic invaders. The axe was struck at the very root. For by killing the Buddhist priesthood Islam killed Buddhism”. On the other hand, it was not possible for Islam to completely eradicate the Brahmin priesthood like the Buddhist priests.

iii) Buddhism was attacked by Muslim invaders as well as Brahmanical rulers. So some Buddhists were forced to convert to Islam.

However, it is clear from the above statement that Ambedkar has supported the “Sword theory” in the spread of Islam in India.

Ambedkar’s thoughts and views on Islam became more apparent when the “Pakistan resolution” was raised at the Lahore session of the Muslim League in 1940, and Ambedkar supported the resolution. Ambedkar not only supported the proposal but also pointed out the solution. He sought a permanent solution to the communal problems of the state in India with the state of Pakistan through demarcation of borders and exchange of people. Because he realized that neither Hindus nor Muslims want to be under anyone’s control or that they don’t have that kind of mentality. In the words of Ambedkar – “The Muslims feel that to acceptance Central Govt. for the whole of India is to consent to place the Muslim provincial Govt. under a Hindu Central Govt. and to see the gain, secured by the creation of Muslim provinces, lost by subjecting them to the Hindu Govt. at the centre.”

Disgusted with Hinduism, Ambedkar expressed his desire to renounce Hinduism at the “Yeola Conference” held in Nagpur in 1935. In 1935, he publicly proclaimed, “I was born a Hindu because I had no control over this but, I shall not die a Hindu.” At this time, after realizing the essence of all religions, he relied on Buddhism instead of Islam, because to him Buddhism was the only rational religion. He believed that real social justice existed within Buddhism. In Buddhism, the Buddha has never been portrayed as a “Messenger of God” like Hazrat Muhammad or Sri Krishna. Rather, the Buddha was a common man and the main purpose of Buddhism was to give equal status to the common man. Ambedkar promoted Buddhism as a political alternative and wanted to use it religiously to put the Dalit class on a solid footing. So, despite being a Hindu, he left Hinduism and instead of believing in Islam, he converted to Buddhism in 1956 along with millions of Scheduled Castes.

Ambedkar believed that Hindu-Muslim were two separate cultures – they could never become “One Nation”. According to Muslim Canon Law the world is divided into two camps, Dar-ul-Islam (abode of Islam) and Dar-ul-Harb (abode of war). A country is Dar-ul-Islam when it is ruled by Muslims. A country is Dar-ul-Harb when Muslims only reside in it but are not rulers of it. That being the Canon Law of the Muslims, India cannot be the common motherland of the Hindus and the Musalmans. It can be the land of the Musalmans - but it cannot be the land of the 'Hindus and the Musalmans living as equals'. Further, it can be the land of the Musalmans only when it is governed by the Muslims. The moment the land becomes subject to the authority of a non- Muslim power, it ceases to be the land of the Muslims. Instead of being Dar-ul-Islam it becomes Dar-ul-Harb. So in the end Ambedkar removed himself from Islam. His arguments in this regard are –

Firstly, Ambedkar regarded Islam as a ‘foreign culture’ with which Indian culture had no spiritual connection. So even though he left Hinduism, he did not want to deviate from Indian culture. That’s why he converted to Buddhism, which was a completely indigenous culture. So he saw the process of conversion to Christianity or Islam as a nomenclature of alienation. In this context, his statement is – “.....if the Depressed Classes join Islam and Christianity, they not only go out of the Hindu religion, but they also go out of their original culture.”

Secondly, like Hindus, Indian Islam also has caste system. According to Ambedkar, “The Mohammedans themselves recognize two main social divisions, i) *Ashraf* or *Sharaf* and ii) *Ajlaf*. *Ashraf* means ‘noble’ and includes all undoubted descendants of foreigners and converts from high caste Hindus. All other Mohammedans, including all occupational groups and all converts of lower ranks are known by the contemptuous term *Ajlaf*, ‘wretches’ or ‘mean people’... In some places a third class, called *Arzal* or lowest of all is added. With them no other Mohammedan would associates, and they are forbidden to enter the mosque [and] to use the public burial ground. Within these groups there are castes with social precedence of exactly the same nature as one finds among the Hindus.” That is to say, he realized that the caste system of Hindu society had penetrated into Islam in a very subtle way. For this reason, Ambedkar did not consider Islam to be a viable alternative to Hinduism.

Thirdly, for all his bitterness against Hindu society, Dr. Ambedkar's verdict on Muslim society is even harder: "There can thus be no manner of doubt that the Muslim society in India is afflicted by the same social evils as afflict the Hindu society. Indeed, the Muslims have all the social evils of the Hindus and something more. That something more is the compulsory system of *Purdah* for Muslim women." He strongly condemned the *purdah* system in Islam. He also objected to the question of polygamy in India. According to him, the Muslim society in India is not deviating from the social ills that afflict the Hindu society on the issue of women.

Fourthly, although there was talk of a widely practiced brotherhood in Islam, Ambedkar had a question about that. According to him, "Hinduism is said to divide people and in contrast Islam is said to bind people together. This is only a half truth. For Islam divides as inexorably as it binds. Islam is a close corporation and the distinction that it makes between Muslims and non-Muslims is very real, very positive and very alienating distinction. The brotherhood of Islam is not the universal brotherhood of man. It is brotherhood of Muslims for Muslims only". In the same way the ideal of their Ummah is the unity among the believers; non-believers do not fall into this category. So, Islam can never allow a true Muslim to adopt India as his motherland and regard a Hindu as his kith and kin, even every Musalman in India to say that he is a Muslim first and Indian afterwards. To the Muslims a Hindu is a Kaffir. A Kaffir is not worthy of any respect. He is low-born and without status.

However, on the basis of the above argument, Ambedkar distanced himself from Islam and converted to Buddhism instead of Islam. In fact, Ambedkar wanted to choose religion by reason rather than by birth, and as a result he adopted rationalist Buddhism.

CONCLUSION

Ambedkar was a true nationalist, he choose the path of anti-British and associated with it the anti-caste system or anti-untouchability movement. So Hinduism and society became the target of his attack. He also attacked Islam for the same reason. According to him, the goal of Islam in India was to take place religiously; not politically. The main goal was to spread Islam by evicting Brahmins and Buddhists. Like Hinduism, Islam has social inequality and discrimination. Evil practices of Hinduism such as caste system, polygamy etc. are equally exist in Islam. Inhumane practices like 'purdah' practice exist in Islam. So he renounced Hinduism and converted to Buddhism instead of Islam. Because he realized that the evil practices of Hinduism and Islam were absent in Buddhism and liberty, equality and brotherhood existed.

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A SYSTEMATIC LITERATURE REVIEW: IMPLEMENTATION OF LEAN MANUFACTURING TOOLS IN VARIOUS SECTORS

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ABSTRACT

The implementation of Lean Manufacturing is majorly carried out in the automobile sector but it is a stereotype it can be only implemented in the automobile sector. Various sectors of manufacturing industries have already adopted the lean philosophy. Still many sectors based in the various regions have not adopted this philosophy due to the perception of high investment cost and the uncertainty of the outcomes. Lean Manufacturing implementation leads to more stress at top level rather than the lower level people. New methodologies are being adopted by the various organization throughout the globe in the search of the result of improvement in the various parameters of the performance and Lean Manufacturing is one of them but the still the large number of organizations in the small sectors are not able to adopt the Lean Manufacturing because of the to the fear of the cost of implementation and the scared return of investments of Lean Manufacturing. In this research paper, Authors have carried out the systematic literature review on the implentation of lean manufacturing tools in various sectors. It is observed that lean manufacturing tools like VSM, 5S, Kaizen are the popular tools which are used commonly in various sectors.

Keywords: Lean manufacturing, manufacturing sector, lean manufacturing tools.

1. INTRODUCTION

In the current scenario; sectors, organizations and industries related to manufacturing are facing some issues related to of thinking are rising of the competitive manufacturing practices and traditional manufacturing practices are getting obsolete. Another issue is related to the variation in the demand from the customer within the short span of time resulting tremendous increment in the bargaining power of the customers which made the customer more demanding by asking the product for minimal cost. To overcome such issues, the industries are trying to meet the customers demand by trying to eliminate waste and by minimizing the cost. One of the technique to eliminate waste and for the cost minimization is Lean Manufacturing and in many regions the industries are trying to adopt the philosophy of Lean Manufacturing and this is giving the benefit of meeting the dynamic customer demand in the market.

Many industries gets successful after implementation of Lean Manufacturing in various field which makes them competitive at global level with USP of lower cost of the product, quality product and shorter procurement, manufacturing and delivery lead time. Although it is a touch difficult for the organization to reengineer their conventional practices into the Lean Manufacturing especially when there is a complex assembly is involved, this reengineering has given good results to many industries. Lean Manufacturing is not only a lower level management involved practice but also the commitment from the all the level of employee is essential especially the commitment from the top management in building the strategy and giving proper attention to the process, facilities and method. In the next sections, the systematic review of lean manufacturing tools and its application in various sectors is explained.

2. LITREATURE REVIEW

Following are the literature reviews which states the implemntation of lean manufacturing tools in various manufacturing sectors with their outcomes.

Saravanan G. et al. [2018]: The researchers have used the Lean Manufacturing tools in agriculturally based equipment and machines in Muththamizh industries. The researchers have used VSM for developing the current state map and future state map. This resulted in the reduction of lead time, reduction in inventory and defects which lead to improvement in productivity.

Shah D. et al. [2018]: The researchers aim at elimination of wastes and non-value adding activities at every stage in order to provide maximum costumer's satisfaction. The researchers have applied the Lean Manufacturing tools in a plastic manufacturing industry. The researchers have focused on the implementation of lean tools to eliminate the seven wastes, reducing the current lead time, inventory levels and cycle time to find out the ratio of value adding process to the total lead time of the product in the plastic manufacturing industry.

Lute V. V. et al. [2017]: The researchers have reviewed the implementation of Lean Manufacturing processes through a case of post processing of the junction box in a discrete manufacturing industry. The researchers have

used the VSM technique to overcome the delays and to minimization of lead time to meet the supply and demand of customers.

Ghushe S. et al. [2017]: The researchers have used various Lean Manufacturing tools in the coir product manufacturing industry. The researchers have used VSM and have developed the current state maps for the identification of the wastes and unnecessary inventories. The researchers have also developed the future state maps. The researchers have also used the other Lean Manufacturing tools like Kaizen and Poka-Yoke which resulted in the reduction in the lead time and increment in the productivity.

Ramesh B. K. et al. [2016]: The researchers have implemented the techniques of Lean Manufacturing in automobile component manufacturing industry. To map the current states of the process, the researchers have used VSM technique then after identification, the researchers systematically eliminated the non-value adding activities. Also the researchers have made the simulated model of the future processes. Also the researchers have implemented the Lean Manufacturing through the modifying the layouts.

Agrahari R. S. et al. [2015]: This research paper aims at implementation of Lean Manufacturing in small scale industry. The main objective of this research paper is to minimize the waste on the shop floor. This research paper shows the application of VSM. In this research paper the researcher has taken the case study of V. M. Auto parts Pvt. Ltd. The researcher claims at by identifying waste and its sources, the present and future value stream maps are developed to improve the production. The researchers have also claimed at enhancement of flow process or cycle time by minimization of various non-value adding actions and times such as bottlenecking time, waiting time and material handling time.

Ingale M. V. et al. [2014]: This research paper focuses on the methodological approach which connects the Lean Manufacturing, VSM and MTM. In this research paper the researchers have used the conceptual framework of work measurement, basic most and applied it in the pump manufacturing industry in Maharashtra. This research paper focuses on the redesign of manufacturing workplaces and redesign of production process to reduce the lead time. The research paper also focuses on improvement of facility layout, material handling system and shop floor process which aims at reduction of wastes and minimizing the non-value adding things.

3. Summary of Implenatation of Lean Manufacturing tools in Various industries.

Following table shows the summary of literature review of the implementations of lean manufacturing in various industries.

Author	Industry Domain	LEAN MANUFACTURING tools used
Saravanan G. et al.	Agriculturally based equipment and machines manufacturing industry	VSM
Ramesh B. K. et al.	Auto parts manufacturing industry	VSM
Agrahari R. S. et al.	Automobile industry	VSM
Prasath C. et al.		SMED, Jidoka and Heijunka
Mahendran S. et al.		JIT, 5S, TQM
Karikalan R. et al.	Automotive welding fixtures manufacturing industry	Pareto diagram, cause and effect diagram, bin system and KANBAN
Chadalavada H. et al.	Battery manufacturing industry	VSM, FIFO, Kan-ban
Supriyanto H. et al.	Bicycle manufacturing industry	lean six sigma
Sundharesalingam P. et al.	Coconut oil manufacturing industry	Warehouse management system and 5S techniques
Goyal S. et al.	Coil manufacturing industry	5S
Ghushe S. et al.	Coir product manufacturing industry	VSM. Poka-yoke, Kaizen
Kumar A. et al.	Compressor manufacturing industry	5S, Kaizen, VSM, OEE
Pandya H. B. et al.	Crank shaft manufacturing industry	VSM, Kaizen
Bharat R. et al.	Delivery value manufacturing industry	VSM, FIFO
Lute V. V. et al.	Discrete manufacturing industry	VSM
Jaiswal T. P. et al.	Foundry industry	5S, benchmarking, TPM and SMED

Chowdhury S. et al.	Furniture manufacturing industry	SMED, Gemba and Short interval control
Kumar B. S. et al.	Garment industry	Kaizen, VSM and Cellular layout
Vijaykumar G. et al.		5S, DMAIC and Pareto analysis
Kumar T. S. et al.		VSM, Kaizen
Vinodhini A. et al.	Health care sector	Kaizen
Balsubramanian P. K. et al.	Horn manufacturing industry	Fuzzy logic
Rao G. V. P. et al.	Milk homogenizer machine manufacturing industry	5S, Gemba walk, Kaizen
Singh M. D. et al.	Pipe manufacturing industry	Visualization, 5S and Kaizen
Khan J. G. et al.		Survey method and interview
Sharma K. M. et al.	Plastic grains manufacturing industry	VSM, Kaizen
Shah D. et al.	Plastic manufacturing industry	VSM
Brijbhushan et al.	Precision machining industry	Multiple activity chart, Pareto chart, PDCA cycles, cause and effect diagram and control charts
Ingale M. V. et al.	Pump manufacturing industry	VSM, MTM
Narke M. M. et al.		VSM
Hathwar S. et al.		VSM, 5S, selective inventory approach
Patel N. S. et al.	Radiator manufacturing industry	VSM, 5S
Ishak F. K. et al.	Repair shop	VSM
Dinesh N. et al.	Sheet metal industry	VSM
Sujatha Y. et al.	Silk production industry	VSM
Khatri N. et al.	Spur gear manufacturing	5S, Kaizen & Six sigma
Sharma N. et al.	Steel industry	Survey method/ interview
Soni A. et al.	Steel industry	Root cause analysis and fish bone diagram
Vijayshri M. et al.	Testing laboratories	Kaizen
Sweety et al.	Textile industry	VSM
Gupta V. et al.	Tire manufacturing industry	Waste minimization
Visakh M. J et al.		VSM, ARENA simulation and Taguchi method

Table 3.1 : Summary

5. CONCLUSION

It was observed that the researchers based on the various location have implemented the various Lean Manufacturing tools in the various different manufacturing industries and services based on the different products. The researchers have implemented the Lean Manufacturing tools in the manufacturing industries like Agriculturally based machines manufacturing industry, Auto parts manufacturing industry, Automobile industry, Automotive welding fixtures manufacturing industry, Battery manufacturing industry, Bicycle manufacturing industry, CNC machining shop, Coconut oil manufacturing industry, Coil manufacturing industry, Coir product manufacturing industry, Compressor manufacturing industry, Crank shaft manufacturing industry, Delivery value manufacturing industry, Discrete manufacturing industry, Foundry industry, Furniture manufacturing industry, Garment industry, Health care sector, Horn manufacturing industry Milk homogenizer machine manufacturing industry, Pipe manufacturing industry, Plastic grains manufacturing industry, Plastic manufacturing industry, Precision machining industry, Pump manufacturing industry, Pump manufacturing industry, Radiator manufacturing industry, Repair shop, Sheet metal industry, Silk production industry, Spur gear manufacturing, Steel industry, Testing laboratories, Textile industry, Tire manufacturing industry etc. From the study of literature, It can be conclude that lean manufacturing tools like VSM, 5S, Kaizen are the popular tools which are used commonly in various sectors. It also observed that lean manufacturing tools are implemented in various sectors but still exploration of lean manufacturing tools are not done some sectors like paper based product manufacturing industries.

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THE ROLE OF INDUSTRY MENTORSHIP AND ALUMNI ENGAGEMENT IN BRIDGING THE EMPLOYABILITY SKILL GAP

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ABSTRACT

The employability gap continues to challenge Indian B-Schools, where academic excellence often fails to translate into workplace readiness. This study explores how structured industry mentorship programs and alumni engagement initiatives are emerging as powerful tools to bridge this gap. Moving beyond curriculum reform, the research emphasizes the influence of real-world mentoring, industry interaction, and alumni-guided career pathways on the holistic development of employability skills among management students. The study adopts a triadic skill framework—Managerial, Technical, and Human (Behavioral) to evaluate the outcomes of sustained mentoring interventions. Data was collected from B-Schools in Mumbai using structured questionnaires and semi-structured interviews with faculty, corporate mentors, and alumni. The findings aim to guide academic institutions in institutionalizing mentorship ecosystems that align with industry standards, promote peer-driven learning, and accelerate career readiness in a competitive employment landscape.

Keywords: Employability Skills, Industry Mentorship, Alumni Engagement, Management Education

INTRODUCTION

In contemporary academic and employment discourse, employability extends beyond mere job acquisition to encompass a dynamic suite of skills and attributes that enable graduates to adapt, perform, and evolve within rapidly changing workplace environments. These skills frequently classified under employability skills include soft skills, leadership aptitude, professional ethics, critical thinking, and workplace adaptability. As industries increasingly demand “workplace-ready” graduates, academic institutions are urged to embed career-oriented competencies within the core fabric of their learning ecosystem.

For B-Schools, which are responsible for grooming future managers, strategists, and entrepreneurs, bridging the employability gap is no longer just a curricular challenge. It is a structural mandate. While experiential learning and classroom reform have made progress, a critical yet underexplored dimension is the strategic use of industry mentorship and alumni engagement. These two external, experience-driven forces are becoming instrumental in preparing students for the nuanced realities of the workplace.

This study highlights the need to align employability enhancement not just through internal pedagogical strategies, but through external mentorship ecosystems that provide exposure, direction, and social learning. Alumni and industry mentors serve as living repositories of workplace insights, offering practical knowledge, networking opportunities, and career navigation strategies often missing in classroom instruction.

- **Industry Mentorship:** Mentors from the industry contribute not just through advice but by offering **contextual exposure**, insights into role expectations, leadership development, and adaptability training. These interactions foster industry-linked thinking and strengthen decision-making and problem-solving skills in realistic environments.
- **Alumni Engagement:** Alumni, having walked the same academic corridors, provide relatable guidance and act as career accelerators through internships, referrals, and informal coaching. Their involvement bridges generational learning gaps and instills self-efficacy, confidence, and foresight among students.

The study explores how B-Schools can systematize and scale the integration of industry-aligned mentorship and alumni-led initiatives to enhance core employability skill sets across three primary domains: Managerial, Technical, and Human (Behavioral), thus fostering a future-ready, mentorship-enabled graduate workforce.

STATEMENT OF THE PROBLEM

One of the enduring challenges in management education is the widening employability skill gap between what B-Schools impart and what industries expect from job-ready graduates. Despite curriculum reforms and the growing emphasis on skill development, a substantial portion of MBA graduates remain underprepared for the demands of the professional world, lacking in practical insights, confidence, and decision-making acumen.

While pedagogical interventions such as internships and case studies have improved employability outcomes to some extent, the absence of sustained industry mentorship and structured alumni engagement continues to limit student exposure to real-world corporate expectations. Many B-Schools do not leverage the immense potential

of their alumni networks or formalize mentor-mentee structures with industry professionals thus missing an opportunity to cultivate workplace-relevant learning beyond the classroom.

This misalignment between academic preparation and industry reality hinders students' career adaptability, professional identity development, and readiness for complex, cross-functional work environments. Without consistent guidance from seasoned professionals and relatable alumni experiences, students often struggle to navigate career transitions or make informed choices aligned with market needs.

Therefore, this study is both relevant and necessary, as it examines the strategic importance of industry mentorship and alumni engagement as vehicles for experiential guidance, career alignment, and employability enhancement. It aims to offer a scalable framework for B-Schools to institutionalize mentorship ecosystems that complement academic learning with industry relevance, thereby bridging the existing employability divide.

LITERATURE REVIEW

The increasing gap between academic output and industry expectations has led researchers to explore alternative, more integrated solutions to foster employability. Two promising interventions—industry mentorship and alumni engagement are receiving growing attention as effective bridges to align institutional learning with real-world application.

Kolb (1984), in his seminal work "*Experiential Learning: Experience as the Source of Learning and Development*", established the foundation for learning through experience. His experiential learning model continues to influence approaches such as mentoring and coaching in educational design.

Yorke and Knight (2004) emphasized the need to embed employability into the curriculum by building learning frameworks that simulate workplace realities. Their report encouraged institutions to use reflective practices, which are often embedded in mentoring and alumni engagement processes.

Rothwell and Arnold (2007) developed the *Self-Perceived Employability Scale*, noting that mentorship improves students' perception of their employability by enhancing workplace insight and confidence—factors often influenced by alumni interactions and industry mentoring.

Andrews and Higson (2008) reported that while employers value academic knowledge, they increasingly prioritize soft skills such as communication, teamwork, and adaptability. These skills are more effectively transferred through **mentor-guided learning** than through traditional lectures.

Garraway et al. (2011) examined the role of workplace learning and found that academic-industry collaboration, including mentorship programs, significantly improves students' ability to transfer classroom knowledge to practice.

Lester and Costley (2010) emphasized work-based learning frameworks, arguing that mentorship helps contextualize theoretical knowledge through professional practice, thus making students more competent and career-ready.

Cox (2005) explored mentoring in higher education and identified that mentors provide not just guidance but also **social capital**—access to networks and insider knowledge critical to career success, often offered by engaged alumni.

Kram (1985) in her early study on mentoring relationships described how mentors contribute to psychosocial development and career progression, particularly in professional education settings.

Tymon (2013) highlighted the value of alumni testimonials and career sharing sessions in enhancing the career aspirations and self-belief of undergraduates, reinforcing the role of alumni in employability discourse.

Wheebox (2016) in its India Skills Report pointed to the low employability of graduates and called for **stakeholder partnerships**, including alumni bodies and corporate mentors, to actively co-develop employability strategies with academia.

OBJECTIVES OF THE STUDY

- To assess the current level of integration of industry mentorship programs in B-Schools as a tool for employability enhancement.
- To evaluate the role and effectiveness of alumni engagement initiatives in supporting student career readiness.

- To explore how mentorship contributes to the development of managerial, technical, and behavioral (human) skills among management students.
- To analyze the perceptions of faculty, alumni, and industry mentors regarding their collaborative role in reducing the skill gap.
- To provide strategic recommendations for institutionalizing mentorship and alumni-based models that align with industry expectations and improve graduate employability.

RESEARCH METHODOLOGY

The present study is based on descriptive research and adopts a mixed-method approach, combining both primary and secondary data to explore the effectiveness of industry mentorship and alumni engagement in enhancing employability skills among B-School students.

PRIMARY DATA COLLECTION

Primary data was collected from faculty members, industry mentors, and alumni associated with 20 leading B-Schools in Mumbai. A structured questionnaire was distributed during in-person visits. The questionnaire consisted of both quantitative items (Likert scale) and open-ended questions, categorized under:

- Level of integration of mentorship and alumni initiatives
- Perceived impact on managerial, technical, and behavioral (human) skills
- Challenges and best practices in implementing mentorship ecosystems

Additionally, in-depth interviews were conducted with a subset of 10 corporate mentors and 8 alumni to gather qualitative insights into their mentoring experience and its effect on student development.

SECONDARY DATA COLLECTION

- Academic literature on mentoring, alumni networks, and employability
- Government and industry reports such as the *India Skills Report (2016)*, AICTE white papers, and NASSCOM talent reports
- Institutional documents such as placement reports, alumni newsletters, and mentorship program manuals from B-Schools

SAMPLE DESIGN

- **Sampling Technique:** Purposive Sampling (targeting institutions with active mentorship or alumni engagement programs)
- **Sample Size:** 20 B-Schools, 40 academic respondents, 10 mentors, 8 alumni
- **Geographic Focus:** Mumbai Metropolitan Region

DATA ANALYSIS AND INTERPRETATION

Primary data collected from 20 B-Schools in Mumbai—through structured questionnaires and interviews was analyzed using descriptive statistics and qualitative pattern analysis. The findings are categorized under three main themes: Mentorship Integration, Alumni Engagement, and Skill Development Impact.

1. Integration of Industry Mentorship Programs in B-Schools

Type of Mentorship Activity	Percentage of B-Schools Implementing
Guest lectures by industry mentors	85%
One-on-one mentorship (career guidance)	55%
Structured mentorship programs (multi-year)	25%
Evaluation/feedback from mentors	40%

Interpretation:

Most B-Schools invite industry professionals for guest sessions (85%). However, only **25%** offer structured

mentorship programs that span multiple semesters, indicating a lack of depth in engagement. Feedback mechanisms are limited to fewer than half of the institutions.

2. Alumni Engagement Initiatives

Alumni Activity Conducted	Percentage of B-Schools Practicing
Alumni guest sessions / webinars	80%
Alumni-led placement mentoring	60%
Alumni-involved curriculum design	35%
Alumni-driven internships / projects	42%

Interpretation:

Alumni engagement is common, especially through webinars (80%) and placement mentoring (60%). However, less than half involve alumni in project creation or curriculum development—an area with high potential for enhancing relevance and industry alignment.

3. Impact on Employability Skills (Rated by Respondents)

Respondents rated the perceived effectiveness of mentorship and alumni initiatives in developing employability skills on a 5-point scale:

Employability Skill Area	Mean Rating (out of 5)
Communication & Interpersonal	4.4
Problem-Solving & Decision-Making	4.1
Industry Awareness & Adaptability	4.3
Confidence & Career Orientation	4.5
Leadership & Teamwork	4.0

Interpretation:

Mentorship and alumni involvement are perceived to have strong positive effects, especially in improving career clarity (4.5), communication skills (4.4), and adaptability (4.3)—key components of human and managerial skills

4. Qualitative Feedback Themes

Based on open-ended responses and interviews, the following themes emerged:

Theme	Frequency Mentioned
Students lack structured mentor guidance	High
Alumni can better relate to student challenges	High
Need for continuous rather than ad hoc engagement	Moderate
Institutional coordination with alumni is weak	High

Interpretation:

Respondents called for creating formal mentor-mentee frameworks, strengthening alumni chapters, and moving beyond one-off events to institutionalized, scalable engagement models.

RECOMMENDATIONS OF THE STUDY

1. Institutionalize Structured Mentorship Programs

B-Schools should move beyond occasional guest sessions and design formal mentorship frameworks involving industry experts. These should include mentor orientation, timelines, tracking mechanisms, and feedback loops to ensure consistency and impact.

2. Leverage Alumni Networks Strategically

Alumni should be treated as long-term strategic partners, not just event speakers. Institutions can create alumni mentoring boards, promote peer-to-peer learning models, and integrate alumni into placement guidance and internship facilitation.

3. Embed Career Mentorship into Curriculum

Mentorship components should be integrated as credit-based modules where students reflect on guidance received and apply it to career planning, goal setting, and skill development.

4. Use Digital Platforms for Continuous Engagement

B-Schools should adopt dedicated alumni and mentor engagement platforms (such as MentorCloud, AlmaConnect, or LinkedIn Learning Circles) to maintain year-round interaction between students and industry professionals.

5. Train Mentors and Track Outcomes

Institutions should train mentors on student engagement best practices and design dashboards to measure mentorship effectiveness in terms of confidence, career clarity, and job readiness.

6. Encourage Cross-Batch Alumni Learning Sessions

Promote inter-batch sessions where alumni from different graduating years conduct career storytelling sessions, provide domain insights, and review student projects to enhance relevance.

7. Policy-Level Support from AICTE/UGC

Policy bodies should incentivize institutions to demonstrate sustained mentorship and alumni engagement by integrating such initiatives into institutional assessment frameworks like NAAC or NBA accreditation.

SUMMARY TABLE OF RECOMMENDATIONS

Area of Focus	Recommendation
Mentorship Structure	Develop formal, structured mentor programs
Alumni Role	Create alumni-led mentorship ecosystems
Curriculum Integration	Embed mentoring as a credit module
Tech-Driven Engagement	Use digital tools for alumni interactions
Assessment	Measure impact using dashboards
Policy Advocacy	Include in national accreditation metrics

CONCLUSION

The study has clearly revealed that industry mentorship and alumni engagement are not just supplemental initiatives but are essential drivers in enhancing the employability of B-school graduates. As the expectations of industry evolve and competition intensifies, students require not only academic knowledge but also the ability to adapt, decide, lead, and collaborate skills best nurtured through mentorship and peer learning from real-world professionals.

Through structured analysis of data collected from B-Schools in Mumbai, the research confirmed that institutions with active mentorship and alumni networks observed stronger student outcomes in terms of career clarity, soft skill development, industry readiness, and self-efficacy. However, gaps remain in the scalability, depth, and assessment of such programs across institutions.

This study contributes significantly to the discourse on employability by reframing it from a curriculum-driven challenge to a community-driven solution, emphasizing the need for B-Schools to institutionalize long-term, consistent, and digitally-enabled engagement with their alumni and industry mentors.

Ultimately, if strategically implemented, mentorship ecosystems can bridge the persistent skill divide, ensure smoother transitions from campus to corporate life, and establish sustainable models of collaborative education in India's management education landscape.

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MANUSCRIPT SUBMISSION

GUIDELINES FOR CONTRIBUTORS

1. Manuscripts should be submitted preferably through email and the research article / paper should preferably not exceed 8 – 10 pages in all.
2. Book review must contain the name of the author and the book reviewed, the place of publication and publisher, date of publication, number of pages and price.
3. Manuscripts should be typed in 12 font-size, Times New Roman, single spaced with 1" margin on a standard A4 size paper. Manuscripts should be organized in the following order: title, name(s) of author(s) and his/her (their) complete affiliation(s) including zip code(s), Abstract (not exceeding 350 words), Introduction, Main body of paper, Conclusion and References.
4. The title of the paper should be in capital letters, bold, size 16" and centered at the top of the first page. The author(s) and affiliations(s) should be centered, bold, size 14" and single-spaced, beginning from the second line below the title.

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5. The abstract should summarize the context, content and conclusions of the paper in less than 350 words in 12 points italic Times New Roman. The abstract should have about five key words in alphabetical order separated by comma of 12 points italic Times New Roman.
6. Figures and tables should be centered, separately numbered, self explained. Please note that table titles must be above the table and sources of data should be mentioned below the table. The authors should ensure that tables and figures are referred to from the main text.

EXAMPLES OF REFERENCES

All references must be arranged first alphabetically and then it may be further sorted chronologically also.

• Single author journal article:

Fox, S. (1984). Empowerment as a catalyst for change: an example for the food industry. *Supply Chain Management*, 2(3), 29–33.

Bateson, C. D., (2006), 'Doing Business after the Fall: The Virtue of Moral Hypocrisy', *Journal of Business Ethics*, 66: 321 – 335

• Multiple author journal article:

Khan, M. R., Islam, A. F. M. M., & Das, D. (1986). A Factor Analytic Study on the Validity of a Union Commitment Scale. *Journal of Applied Psychology*, 12(1), 129-136.

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- **Text Book:**

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S. Neelamegham," Marketing in India, Cases and Reading, Vikas Publishing House Pvt. Ltd, III Edition, 2000.

- **Edited book having one editor:**

Raine, A. (Ed.). (2006). *Crime and schizophrenia: Causes and cures*. New York: Nova Science.

- **Edited book having more than one editor:**

Greenspan, E. L., & Rosenberg, M. (Eds.). (2009). *Martin's annual criminal code: Student edition 2010*. Aurora, ON: Canada Law Book.

- **Chapter in edited book having one editor:**

Bessley, M., & Wilson, P. (1984). Public policy and small firms in Britain. In Levicki, C. (Ed.), *Small Business Theory and Policy* (pp. 111–126). London: Croom Helm.

- **Chapter in edited book having more than one editor:**

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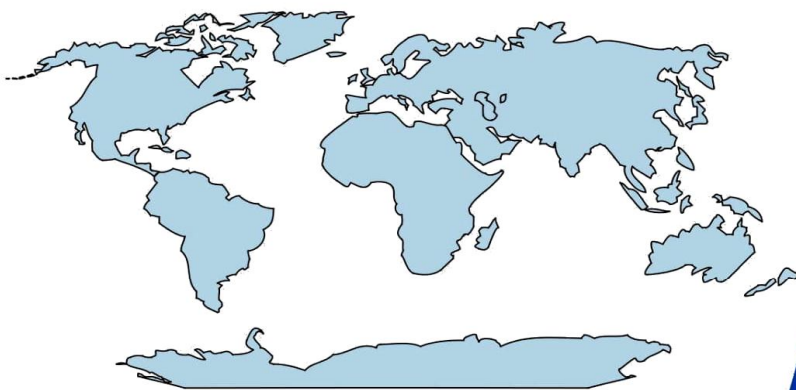
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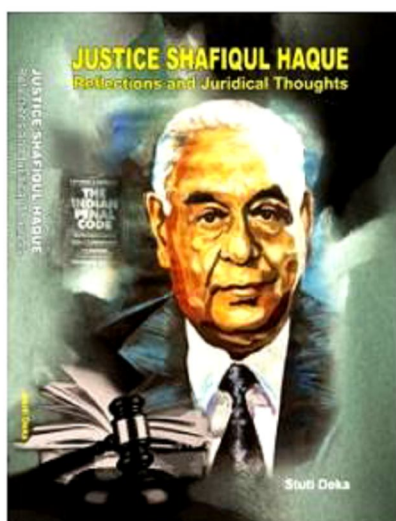


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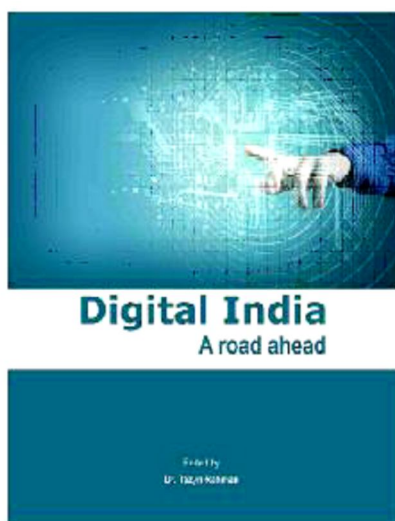
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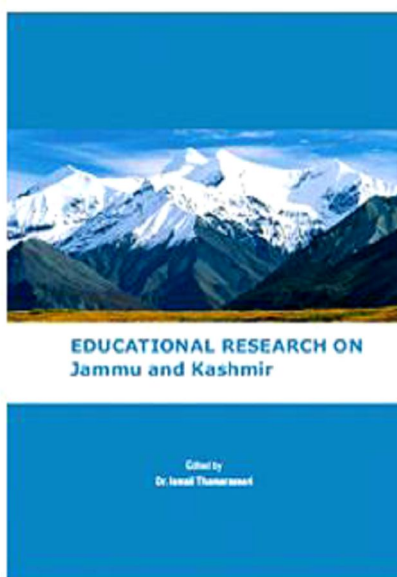
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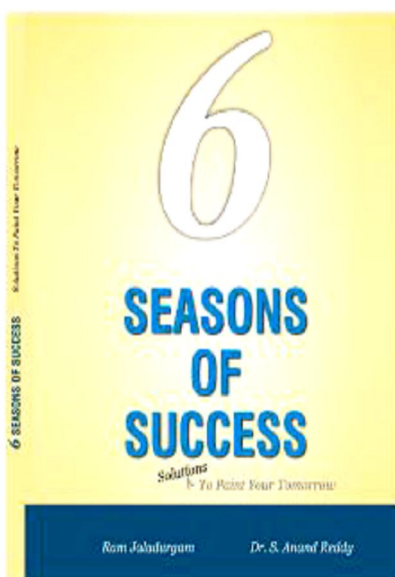
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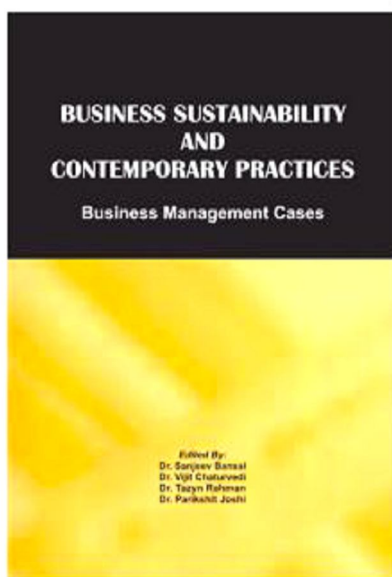
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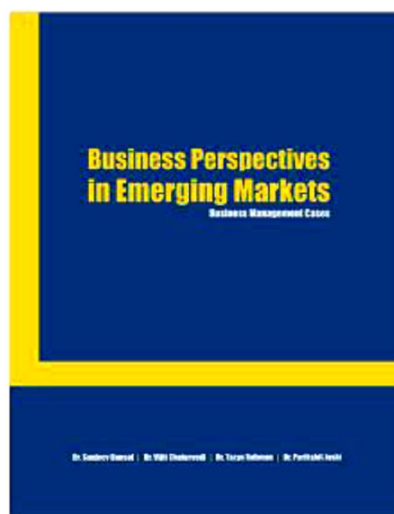
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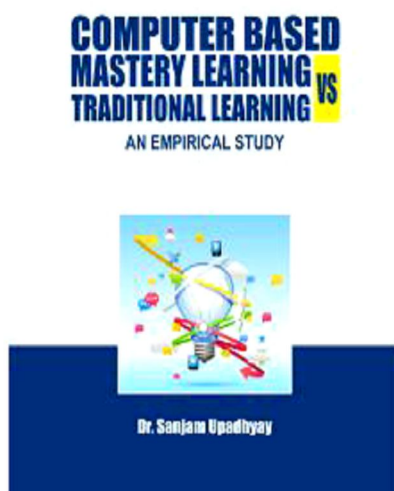
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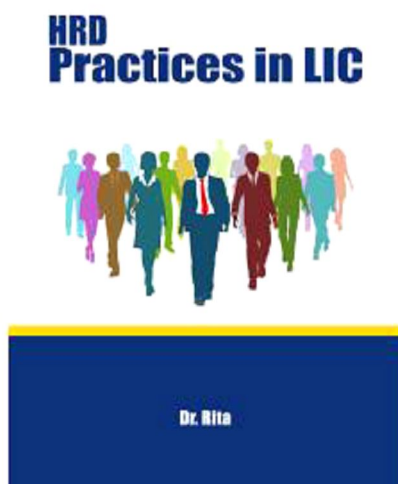
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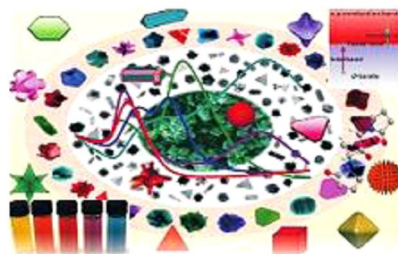
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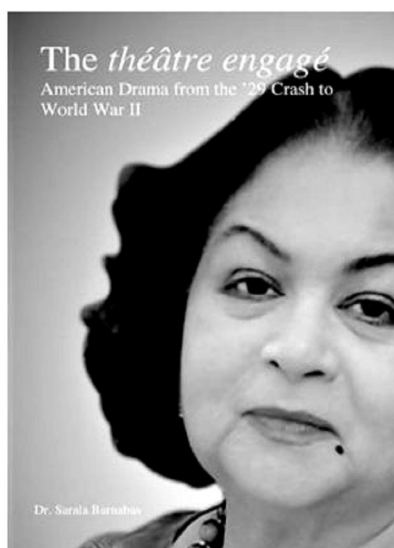
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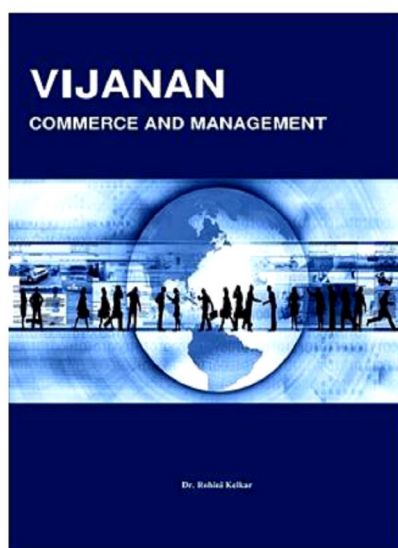


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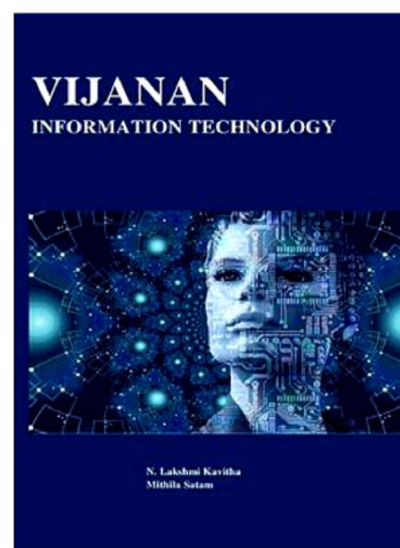
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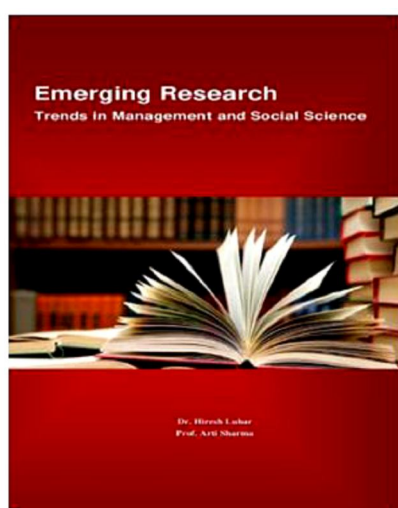
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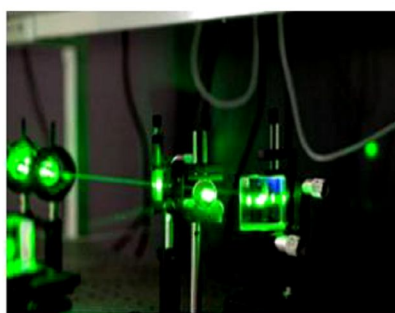


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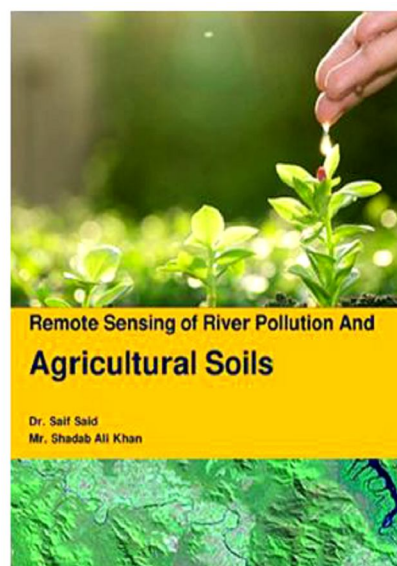
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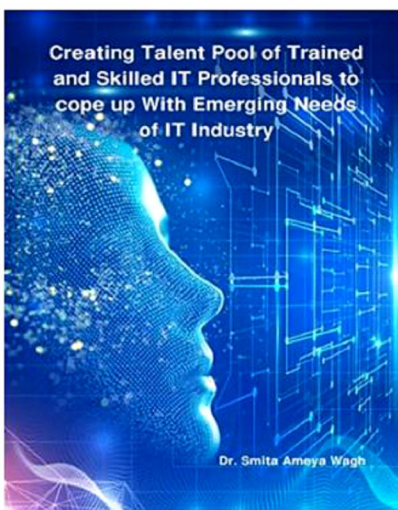
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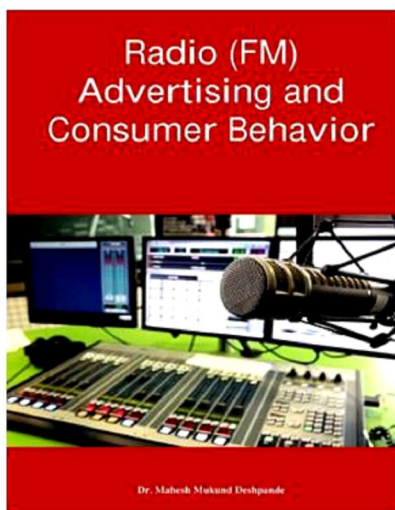
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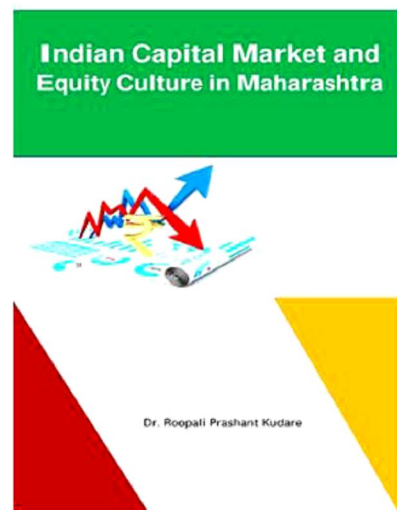
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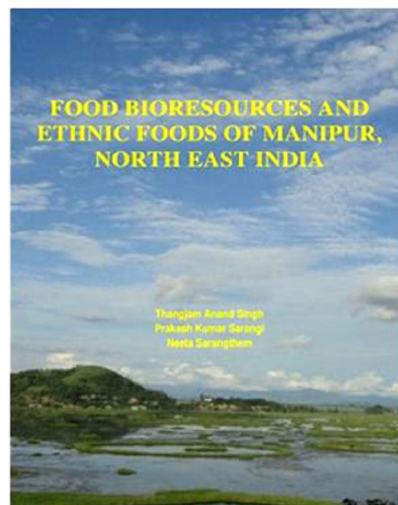
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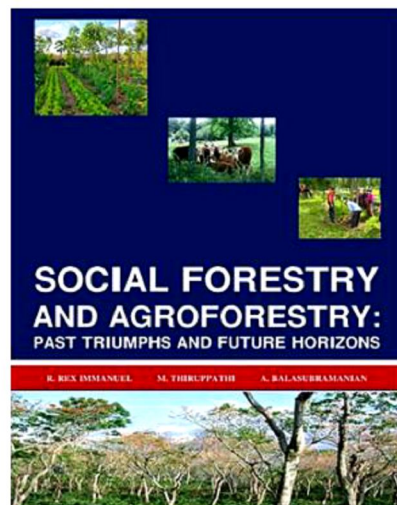
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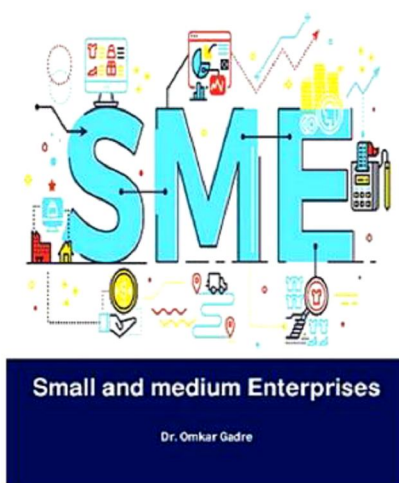
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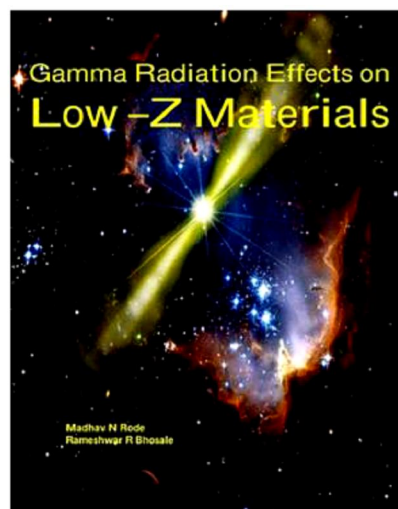
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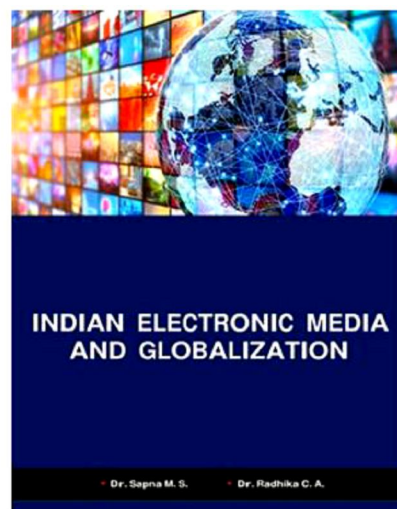
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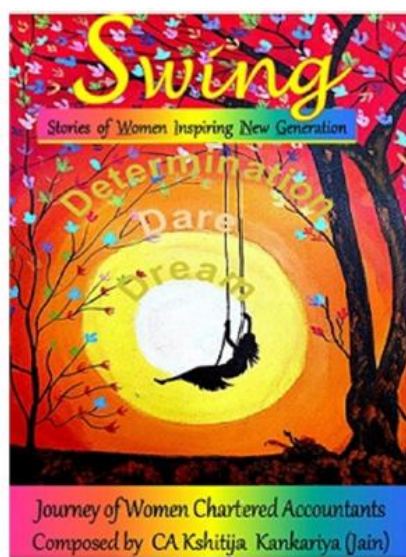
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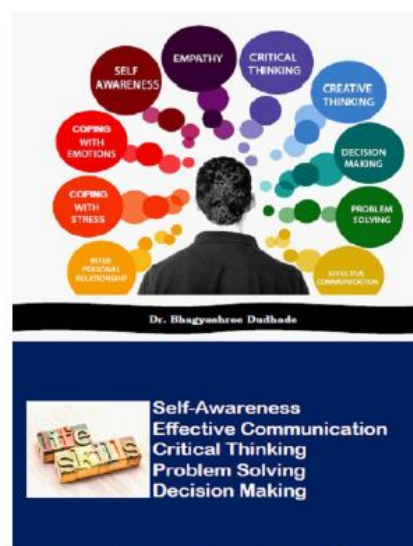


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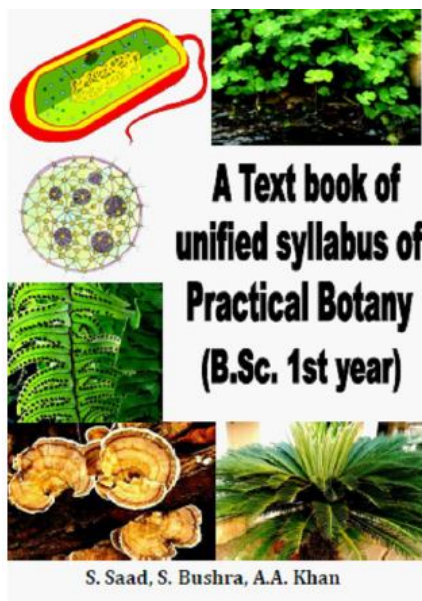
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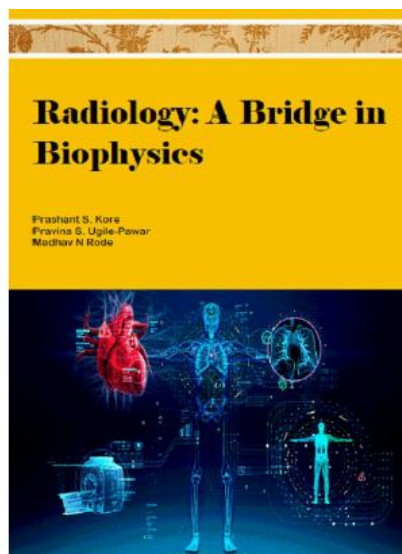
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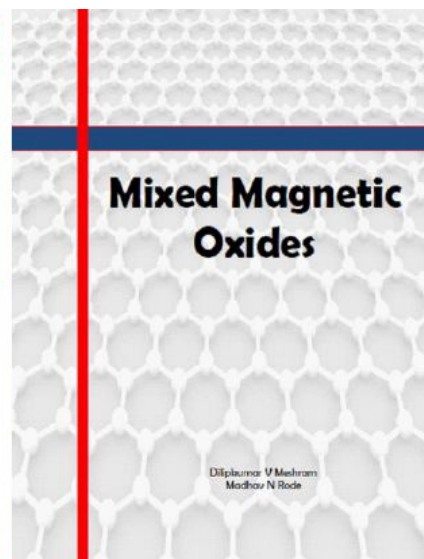


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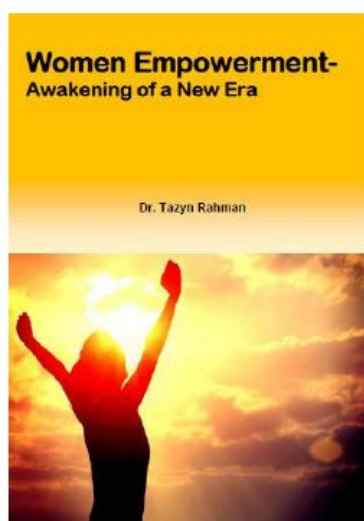
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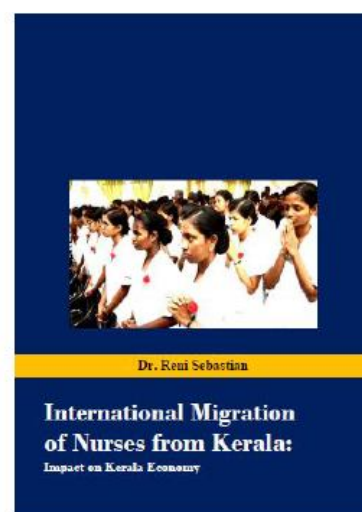
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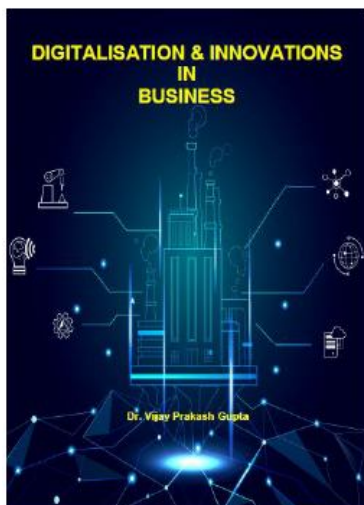
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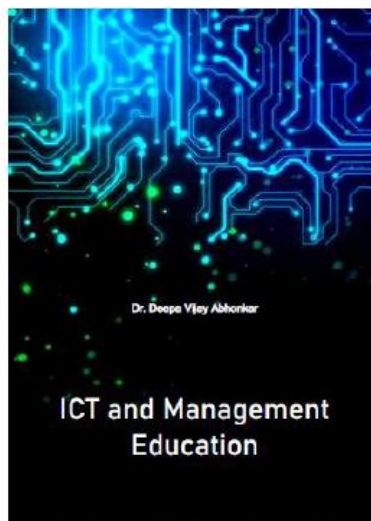


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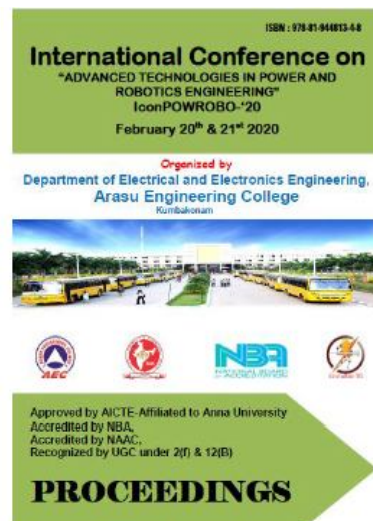
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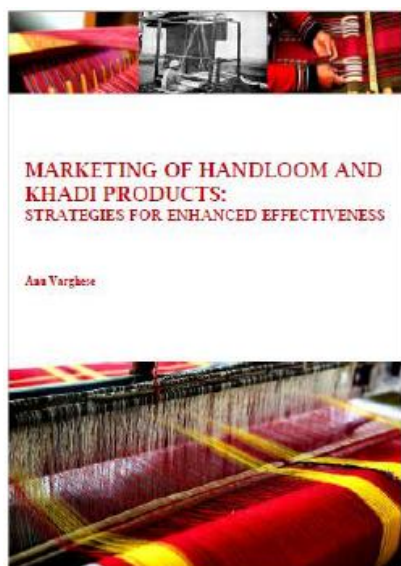
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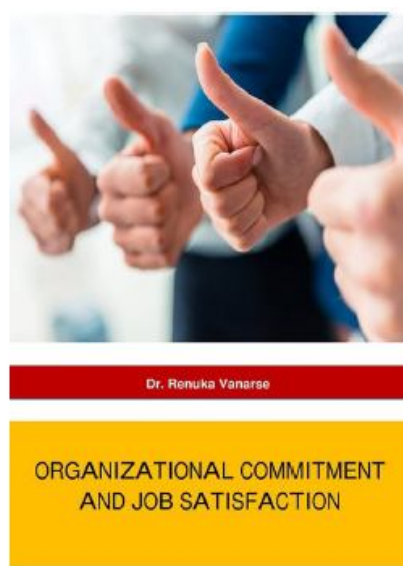
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