"EFFECTIVENESS OF SALES PROMOTIONFORTITANIUM DIOXIDE PIGMENT, A STUDY BASED ON SELECTED CUSTOMERS IN THIRUVANANTHAPURAM, DISTRICT."

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ABSTRACT

Now a day their lots of both product and services are launching day by day. And the Marketing tool for the various product and services are also different. There is no doubt that one of the major factors of the selling and the pricing of the product or service is because of its marketing. Sales Promotion has now been adopted all over the worldas a factors for the movement of the product. This study envisages finding out "The Effectiveness of Sales Promotion for Titanium Dioxide Pigment". This study explored the major factors that may influence the effectiveness of Sales Promotionfor Titanium Dioxide Pigment, Mahatma Gandhi University, and Kerala. Descriptive research design was used for the study. This paper is an account of the quantitative research study based on primary data derived through structured instrument.It was found that because it is a Government firm they can only use only 2 technique of sales Promotion dependent on various factors like Gov. rules, Low price, reliable, security and privacy, time saving, safety. The article concludes by considering the implication for future research.

Keywords: Effectiveness of Sales Promotion, Travancore Titanium Products, Titanium Dioxide

1.INTRODUCTION

Today marketing environment is a dynamic one. Sales promotion is a major factor in marketing environment. It is the marketing disciplines that utilize a variety of incentive techniques to structure sales related programs targeted to customers and 1 or sales levels that generate specific, measurable action or service. Sales promotion refers to those sales activities other than personal selling advertising and publicity that stimulate short term sales. The basic purpose to enhance on the spot buying by customers through several incentives such as free samples gifts, discount coupons, price contest, demonstrations, organizing shows etc. encourage customers for greater purchase of particular product.

Sales promotion is the dissemination of information through a wide variety of activities other than personal selling advertising and publicity which stimulate consumer purchasing and dealer

effectiveness. The objective of sales promotion is to get quick sales of products. It is a direct approach to include consumers to buy a product or service immediately by temporarily changing the existing price value relationship of the product of services. Sales promotion is a device to promote sale to meet a certain target. It is mean for both the end users at the services and the channels found instrumental in promoting the service.

Travancore Titanium product limited in Trivandrum district is a major producer of titanium dioxide pigment, which has been successful in creating sales promotional techniques for increase the overall sales.

The specific discounts and promotional offers, which are available at regular intervals, make the format unique and distinct. The consumer experiences a new level of standard in price, convenience, comfort, quality and store services levels.

The research paper aims to know the Effectiveness of Sales Promotion for Titanium Dioxide Pigment.

2.Sales Promotion and the Potential Impact of Culture

2.1 Types of Sales Promotion

The majority of past studies on the effectiveness of consumer sales promotion have focused on monetary sales promotions (Dickson and Sawyer, 1990; Dhar and Hoch, 1996; Hoch, Dreze and Purk, 1994). However, in practice, a range of both monetary and non-monetary sales promotions are used (Campbell and Diamond, 1990; Tellis 1998), and there are important differences between them. Monetary promotions (e.g., shelf-price discounts, coupons, rebates and price packs) tend to provide fairly immediate rewards to the consumer and they are transactional in character; non-monetary promotions (e.g., sweepstakes, free gifts and loyalty programs) tend to involve delayed rewards and are more relationship-based.

In assessing the effectiveness of sales promotions, it is necessary to examine both types. 2.2 Benefits of Sales Promotion Sales promotions can offer many consumer benefits. Past studies have concentrated on monetary saving as the primary consumer benefit (Blattberg and Neslin, 1993). However, there is evidence to suggest consumers are motivated by several other benefits, including the desire for: savings, quality, convenience, value expression, exploration and entertainment. These benefits are further classified as either utilitarian or hedonic (Babin, Darden and Griffin, 1994; Hirschman and Holbrook, 1982). Utilitarian benefits are primarily functional and relatively tangible. They enable consumers to maximise their shopping utility, efficiency and economy. In general, the benefits of savings, quality and convenience can be classified as utilitarian benefits. By contrast, hedonic benefits are more experiential and relatively intangible. They can provide consumers with intrinsic stimulation, fun and pleasure. Consistent with this definition, the benefits of value expression, exploration and entertainment can be classified as hedonic benefits.

2.3 Promotion Types and Promotion Benefits

Based on the distinction between the types of sales promotions and promotion benefits, ChandonWansink and Laurent (2000) showed that monetary promotions provide more utilitarian benefits whilst non-monetary promotions provide more hedonic benefits. These relationships are a matter of degree rather than absolutes; for example, coupon promotions (i.e., a monetary promotion) may still provide some hedonic benefits such as the enjoyment in redemption, although its main benefit of saving is utilitarian (Mittal, 1994).

2.4 Congruency Theory and Sales Promotion The basic principle of congruity states that changes in evaluation are always in the direction that increases congruity with the existing frame of reference (Osgood and Tannenbaum, 1955). In other words, people have a natural preference for consistent information. The principle has been examined in many marketing contexts, including studies of brand extensions and advertising appeals. Applying the congruity principle to sales promotions, it is expected that sales promotions will be more effective when they provide benefits that are compatible with the benefits sought from the promoted product. The relevance of this principle is evident from some past studies of sales promotions. For example, Roehm, Pullins andRoehmJr (2002) showed that loyalty programs are more successful if they provide incentives that are compatible, rather than incompatible, with the brand. Likewise, Dowling and Uncles (1997) suggest the effectiveness of loyalty programs is enhanced if program benefits directly support the target product's value proposition. Congruency effects for sales promotions were directly tested and confirmed by Chandon, Wansink and Laurent (2000), who showed that: (a) monetary promotions are more effective for utilitarian products as they provide more utilitarian benefits, which are compatible to those sought from utilitarian products; and (b) non-monetary promotions are more effective for hedonic products as they provide more hedonic benefits, which are compatible to those sought from hedonic products. For example, price cuts are more effective than free gifts for influencing brand choice of laundry detergent (i.e., a utilitarian product), whereas sweepstakes are more effective than price cuts for influencing brand choice of chocolates (i.e., a hedonic product). However, it is noted that there are other factors that may impact on the congruency effects, including the product life cycle, purchases situations and consumer demographics. Another possible factor is culture, which is the focus of this study.

2.5 Culture and Ethnic Groups

Culture is difficult to define, but typically it is seen as a set of norms and beliefs that are shared amongst a group of people and that provide the guiding principles of one's life (Goodenough, 1971; Kroeber and Kluckholn, 1952; Schwartz and Bilsky, 1987 and 1990).

Here, culture is defined as the way of life of people grouped by ethnicity, including shared norms and beliefs that can impact on behavior. This definition is appropriate for several reasons. Firstly, it implies that culture encompasses all the norms and beliefs of a society – it is the total way of life in a society. As Triandis (1989) suggests, these societal norms and beliefs will ultimately have an impact upon the

dispositions and behaviours of society members. Thus, the definition allows for the possibility of culture to have an impact on consumerbehaviour.

Secondly, the definition is flexible in allowing for different levels of culture. This is evident by the notion of "society" within the definition, which means culture is not necessarily restricted to a country basis. This is important given the focus of this study is not on national culture. Furthermore, it has been suggested that equating culture with nations can be inappropriate (Lenartowicz and Roth 1999; Usunier, 2000). Instead, culture can be conceptualised at different levels and in a variety of contexts (Dawar and Parker 1994;

Hofstede, 1991) For instance, culture defined by age or music, as in youth or jazz culture.

RESEARCH OBJECTIVE

"A study onthe Effectiveness of Sales Promotion for Titanium Dioxide Pigment in Thiruvananthapuramdistrict"will be accomplished by the following objectives:

- To study the Effectiveness of Sales Promotion for Titanium Dioxide Pigment.

- To know the different sales promotional techniques followed by the firm.

RESEARCH QUESTION:

In this research, through the literature study and survey method, I have found answers for the following questions:

1) How effective are the sales promotion techniques of Titanium Dioxide Pigment?
2) Which are the techniques used for sales promotion of Titanium Dioxide Pigment?

LITERATURE REVIEW

In a time when customers are exposed daily to a nearly infinite amount of promotional messages, many marketers are discovering that advertising alone is not enough to move members of a target market to take action, such as getting them to try a new product. Instead, marketers have learned that to meet their goals they must use additional promotional methods in conjunction with advertising.

Other marketers have found that certain characteristics of their target market (e.g., small but geographically dispersed) or characteristics of their product (e.g., highly complex) make advertising a less attractive option. For these marketers better results may be obtained using other promotional approaches and may lead to directing all their promotional spending to non-advertising promotions.

Finally, the high cost of advertising may drive many to seek alternative, lower cost promotional techniques to meet their promotion goals.

Sales promotions are used widely in many industries and especially by marketers selling to consumers. We will see that the objectives of sales promotion are quite different than advertising and are specifically designed to encourage customer response.

According to one study, the marketing environment has shifted from the "Positioning Era" of primarily "pull" marketing, driven by creative ideas and heavy media advertising, to a "Marketing Mix Era" in which push and pull are more evenly balanced. The study attributes this shift to: (1) consumer factors (consumers having learned or been taught by marketers various promotion-using behaviors); (2) marketing mix factors (as a stimulus to demand, advertising may be declining in marginal productivity, compared to consumer and trade promotion); and (3) trade factors (consolidation in fewer, larger accounts has increased the trade's bargaining power.)

There is a gap between actual practice in the use of promotions (as described by managers)and what these same managers describe as best practice.

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. Research methodology is the way of doing a research or it is a plan which a researcher prepares well in advance before the data collection. The objective of this research paper is to observe the effectiveness of Sales Promotion for Titanium Dioxide Pigment, in Travancore Titanium product limited at Trivandrum district. With the help of it a researcher tends to overcome the difficulties which could possibly occur at the time of conducting theresearch. A survey method was adopted in this study. The source of data collection has been primary as well as secondary.The source of secondary data has been journal articles, research papers, Ph. D thesis etc.

RESEARCH TYPE	Descriptive research
SAMPLING TECHNIQUE	Descriptive research
SAMPLE UNIT	Local customers of Trivandrum district
SAMPLE SIZE	50
TOOLS FOR DATACOLLECTION	Questionnaire
TOOLS FOR DATA ANALYSIS	Percentage analysis method

CONCLUSIONS

The study on Effectiveness of Sales Promotion for Titanium Dioxide Pigment in Travancore Titanium Products Limited, Thiruvananthapuramis study with care and special effects have been taken to make the study as specific as possible. The methodology typical proof to show that the study is scientific.

From the study, it is clear that most of the customers are satisfied with their product, price and quality. This study is also clearly states that the customers are expecting to improve their service. So the company can take an action to improve the service. The customers are giving more important for more quality with price of the product. A good quality of service create weightage of the concern.

There is considerable interest and debate over the effectiveness of sales promotion. Previous studies have shown that sales promotions are more effective when they provide benefits that are congruent with those of the promoted product. This study explores and extends the congruency framework by analysing the impact of culture at another group level. The purpose is to investigate the popular assumption that cultural differences exist at this level and to see whether these differences have an impact on sales promotion effectiveness. It is found that despite the existence of cultural differences at a next level, culture does not appear to have a significant impact on consumer responses to sales promotion. It is also found that the congruency effects between product and promotion type are weak and may be non-existent in some cases. Finally, the study also provides evidence that further validates a scale used for the measurement of culture.

The study revealed that sales promotion has an influence in the purchase decision of consumers. It was realized that consumer may not go through the entire decision making process anytime they want to purchase a service or product. This may eventually prevent the consumer from going through all the stages of decision making because of experience and available information to him. Sales promotion there for is an inevitable promotional tool for firms if they really want to maintain or increases their market share. The sales promotion practice in the industry draw is consumers to the product and makes them to impulse purchase.

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PROMOTING YOGA TOURISM: AN EXCLUSIVE TOOL TO DIVERSIFY TOURISM MARKET IN HARIDWAR

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ABSTRACT

With the rapid rise in levels of per capita income and availability of more leisure time among working classes, tourism has emerged as the largest industry worldwide. Modern day travelers are not just limited to the conventional activities of sight-seeing, admiring natural beauty, etc. but they want to experience the unique features of destination and come out of their environment bubble. Therefore, promoting Special Interest Tourism (SIT) in a planned manner is a need of hour to foster the development of tourism sector especially in developing nations. Having spiritual appeal with wellness and adventure in SIT, Haridwar is a popular tourist destination in Uttarakhand state of India. There are large number of yoga centers in Haridwar offering an absolute platform to domestic as well as foreign travelers for meditation and yoga practice. This paper analyses the role of yoga centers in destination promotion and diversification of tourism market in Haridwar. More over this study aims todevelop marketing strategies for promoting the practice of yoga and meditation amongst tourist in Haridwar.Primary as well as secondary sources were used to achieve the objectives. Tourist visiting yoga centers of Haridwar were interviewed to identify their preferences in the area of yoga and wellness activities. The results drawn from the study reveal an overwhelmingly significant role of yoga centers in destination promotion and declares yoga tourism as an exclusive tool for diversification of tourism market in Haridwar.

Keywords: Destination Promotion, Diversification, SIT and Spiritual Appeal.

INTRODUCTION & REVIEW of literature

India is a renowned asspiritual guru of the world. Yoga and meditation are important contribution of India to the world in spiritual field. These practices have been spreading world wild for the last few centuries. Large number of travelers from different corners of world visit India to feel the essence of spirituality ad get benefited out of it. Yoga and meditation has emerged as one of the significant tool for comprehensive wellness of people and ever increasing number of travelers are visiting India to learn and practice it through yoga centers. Haridwar is one of the important destinations in India where most of the travelers visit to feel and understand its spiritual aspect. Yoga and meditation practice is inviting a sizable number of tourists to Haridwar and yoga centers play a vital role in the entire process.

Dillette, Douglas, &Andrzejewski (2019) challenges that yoga tourism would provide positive psychological well-being both during and after the trip.

Sharma &Nayak (2019) recommended that emotional experiences along with satisfaction would influence revisit to the centers of wellness tourism and particularly yoga centers. Authors have found that experiences create an image of the destination, thus, in turn, encourage the tourists to repeat their trip.

Tuzunkan (2018) identified that age group does not have impact in participating wellness tourism activities. Fashion and spiritual health arre important factors for promoting wellness tourism. Ibid also studied behavioral intention and motivational factors of tourists in wellness tourism.

Draft Indian Tourism Policy (2015) says, Yoga is India's gift to the world which holds the concept of self-realization. Yoga has attracted travelers from all over the world over the years. If marketed properly, Yoga has the potential to bring significant number of long stay travelers to India.

The Wellness Tourism, which is a type of tourism allied with the 'goal of maintaining or enhancing one's personal well-being has become a $439 billion industry worldwide within the $3.2 trillion global tourism industry, representing 14 % of all tourism spending. It is estimated to have a trillion dollars' worth of economic impact' **(Carolyn Gregoire,2013**).

As defined by **Koncul (2012),** wellness tourism is "a state of health, which comprises an overall sense of well-being and looks a person as comprising body, mind and soul, lifestyle and self-responsibility for health to see paramount in the search for a better quality of the life".

As far as medical treatment is concerned, it must be admitted that modern science is valuable and yoga could also be used in combination with other scientifically sound medical treatments **(Sharma, et al., 2008).**

As opined by **Lehto et al. (2006)** yoga tourism "has appeared and grown with the 'travel to feel well' trend and can be seen as a subset of wellness tourism". Nowadays people are surrounded by lots of stress within everyday life. Therefore, yoga seems to be an ultimate solution to bring "a powerful relief for the increasing stress and pressures that ail individuals in contemporary society".

Kelly and Smith (2006) add a sub classification between wellness and yoga tourism, defining yoga tourism as spiritual tourism.

The difference between illness and wellness is the starting point for describing yoga tourism as health tourism. Many authors classify yoga tourism as a niche of well-being practices **(Lehto, Brown, Chen, & AM, 2006).**

It is depicted in a report by **Dixit (2005)**, tourists visiting Haridwar can be categorized into three major categories. These tourist classes are: (i) Pilgrims / Religious tourists, (ii) Pleasure tourists / Holiday Makers, (iii) Special interest tourist.

As rightly said by **Chatterjee&Dhatta (1939**), Yoga according to Indian philosophy is a dynamic or practicable form of its prototype called Samkhya. It is the philosophy of Samkhya that in various ways and varying degrees have induced the systems evolved later and yoga is not an exception to this. The Samkhya theory is studied to understand the concepts behind yoga and its practices and also to foresee position of self in context of world around us.

OBJECTIVES

To identify the role of yoga centers in tourism promotion at Haridwar.

To analyze the preference of domestic and foreign travelers visiting yoga centers of Haridwar.

To develop marketing strategies for promoting yoga tourism.

To offer valuable recommendations in order to accelerate the pace of tourism growth and diversification in Haridwar.

Need for the study

Haridwar is an important tourist destination in Uttarakhand for Indian as well as foreign travelers and is highly dependent on yoga and other spiritual practices. Its natural landscape is dominated by the Shivalik range of Lower Himalayas and The Ganges which provides substantial scope for sustaining yoga, meditation and other spiritual activities. The rising interest of foreign and domestic visitors towards wellness tourism at this destination is a matter of concern. The motivation, needs and expectations of travelers visiting yoga centers of Haridwar are studied in this paper to cater them accordingly. As expectation and satisfaction of traveler moves together, hence it is important to understand their expectations first and then to offer them products/packages accordingly to satisfy them. The aim of study is to understand the role of yoga centers in destination promotion and analyzing preference of travelers visiting these centers. It helps to develop an accurate marketing strategy for promoting yoga tourism in Haridwar which thereby reveals the significance of this study.

RESEARCH METHODOLOGY

- The study commenced with identification of some important yoga centers of Haridwar that are popular among tourists.
- A study of the activities/courses offered to tourists at these yoga centers and types of Yoga promoted by centers were analyzed.
- The research objectives will be achieved through analysis of secondary sources like published literature by yoga centers, books, existing research, magazines etc. along with an in-depth interview of respondents using questionnaire and schedule.
- Tourists visiting yoga centers of Haridwar for spiritual/yoga purpose and management of yoga centers were interviewed through anunstructured questionnaire to identify the role of yoga centers in destination promotion and develop some marketing strategies accordingly.

- Primary data was gathered with the objective of understanding the 'role' of Yoga centers in attracting and facilitating tourists.
- This study also attempts to find outthe preferences of domestic and foreign travelers visiting yoga centers of Haridwar through a schedule/questionnaire. Further, these responses collected from two groups (domestic and foreign travelers) were analyzed to find out whether there exists any significant difference between their preferences while in yoga centers of Haridwar.Following table shows the number of proposed, collected and valid samples.

| Methods Employed	Samples Proposed		Samples Collected		Samples Valid	
	DT	FT	DT	FT	DT	FT
Schedule	0	0	43	8	36	8
Questionnaire	250	250	128	29	104	23
Total	250	250	171	37	140	31
Total (DT+FT)	500		208		171	

DT: Domestic Tourist   FT: Foreign Tourist

FINDINGS AND DISCUSSIONS

India is known as the spiritual guru of the world due to its wide range of intangible attractions offered by its glorious and vibrant culture. In recent decades, yoga has attracted the attention of tourists from different corners of world to visit India and experience yoga, meditation and other related practices. Situated in Shivalik range of Lower Himalayas in the Uttarakhand province of North India, Haridwar is one of the famous destination for tourists interested in yoga. A large number of Yoga centers have flourished in this destination catering to the wellness needs of domestic as well as foreign travelers.

ROLE OF YOGA CENTERS IN DESTINATION PROMOTION

The yoga centers in Haridwar have different legal status; some of these are registered as a Non-profit organization like trust or a Non-Governmental organization (NGO) or as a private entity. Some of them are also registered as a Hotel or resort, having a private ownership. In some cases, the names of centers are indicative of some particular aspects of Yoga or any particular concept adopted from Yoga literature. Most of the centers were found offering accommodation and food along with yoga practice. After having discussions with various stakeholders, it was found that most of these centers offer a specific course to travelers, which is referred by them as well as visitors as Yoga Teachers Training (YTT) programs. These programs are aimed at providing proper yoga classes to participants by focusing on both theoretical and practical aspects of yoga. On the completion of program these

participants get certificate to become a yoga teacher/trainer and work internationally.Another type of offering includes regular yoga or meditation classes to visitors from different nations having length of stay from one week to more than a month period.Yoga therapy is also provided by centers to their participants. In addition, centers also offer classes on a particular type of yoga like Ashtanga Yoga, Sankhya Yoga, Hatha Yoga etc.
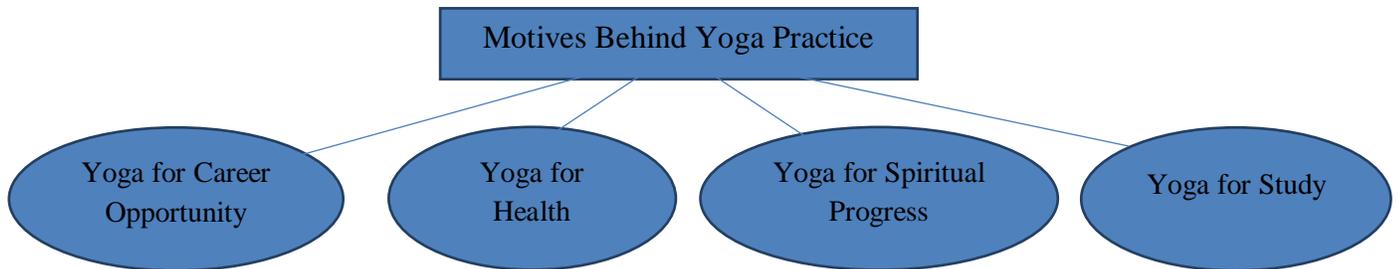
Source: Author's own source.

Figure-1: Various Motives behind visiting Yoga centers

After a detailed interview with the participants, teachers and management at various yoga centers of Haridwar, it was found that there are four major motives of travelers visiting yoga center i.e. health, career opportunity, spiritual progress and studying yoga philosophy.

With the rising levels of per capita income and increasing number of people in middle income group of society at global level, people are becoming more and more health conscious. Moreover, they have enough leisure time to travel to destinations that provide world class wellnessservices. India could be a best choice for people around the globe to visit and take advantage of its unique and alternative forms of treatment like Ayurveda, Yoga Therapy, Unani, Homeopathy etc. The Yoga centers in Haridwar offers different type of yoga and meditation classes to travelers visiting here with wellness motive. These centers also guide and escort travelers to explore the destination and experience its rich culture, natural beauty and heritage.

Yoga centers play a vital role in promoting destinations. The length of stay of most of the tourist visiting yoga centers is more than a week because learning proper procedure, technique and concept of particular kind of wellness activity like yoga, meditation, etc. is a bit time consuming process. Participants, especially foreigner practice yoga at center for a fixed duration in day and rest of the time they spend in exploring natural, architectural, heritage, historical, religious, and other aspects of destination. Sharing experience while in destination with their kith and kin through social media help in destination promotion in the experiential phase of participants. In pre-consumption phase, the wide range of literature published by yoga centers in their websites helps tourists in destination promotion. This literature also allows tourists to make decision on destination choice first and then center's choice. Finally, in reflexive phase, tourists' word of mouth along with their feedback and review in various websites, blogs and social media offers a room foe destination promotion.

India offers a diverse basket of healthcare services and rejuvenation amenities to

tourist(seeking medical treatment) at reasonable prices. Some of the different forms of healthcare tourism offered in the country includes yoga, meditation, ayurveda, allopathy, naturopathy, unani, etc. which make India the unique destination. People are increasingly realizing the value of such alternative forms of treatment that focus on naturally curing body. In India there is also a dedicated department to focus on the development of education and research in these unique therapies. Yoga is on the top among these and in recent years it is getting popularity at global level. Now people from outside India also started practicing Yoga to heal their body and mind with this powerful therapy. Realizing the potential to develop and promote Yoga Tourism as the niche tourism products among international tourists, the Ministry of Tourism, Government of India, has also initiated to make proper plan and policies to promote Yoga as a main Tourism Product.

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India offers a wide range of healthcare services and rejuvenation amenities to tourists from around the globe at reasonable price. Yoga, Meditation, Ayurveda, Unani, Siddha, Homeopathy, etc. are unique selling proposition (USP) of India. These alternative forms oftreatment have extremely high scope of attracting tourists from around the globe to visit India and experience these treatments. Developing yoga, meditation and other related practices in the religious destinations like Haridwar, Rishikesh, Vrindavan etc. through yoga centers will undoubtedly attract large number of foreign and domestic travelers to these destinations. Moreover, instead of being dependent on merely one form of tourism i.e. religious,development of such alternative forms of treatment will diversify the tourism market of these destinations.

PREFERENCES OF TRAVELERS (DOMESTIC V/S FOREIGNER) VISITING YOGA CENTERS

Identification of preferences and their analysis is a foremost and necessary task before designing any service and supplying them. In order to satisfy the tourists, it is necessary to design and supply services according to their preferences. To identify the preferences of travelers on various aspects of yoga a schedule/questionnaire was used to collect responses fromdomestic travelers and foreign travelers visiting yoga centers of Haridwar. A total of 140 valid responses were collected from domestic tourists (DT) and 31 from foreign (FT) tourists. They were asked to reflect their preference by responding to a set of 18 questions in a 5 point Likert scale. Following responses were collected on the 18 major questions asked to the two groups (domestic tourists and foreign tourists):

Statements	Strong Disagree (1)		Disagree (2)		Undecided (3)		Agree (4)		Strongly Agree (5)		Total		Mean Value	
	DT	FT	DT	FT	DT	FT	DT	FT	DT	FT	DT	FT	DT	FT
Health is main concern behind visiting yoga center	32	0	31	2	19	6	32	12	26	11	140	31	2.921429	4.032258
Spiritual Progress is main concern behind visiting yoga center	29	8	22	4	19	5	33	8	37	6	140	31	3.192857	3
Career opportunity is main concern behind visiting yoga center	21	6	19	3	17	6	46	8	37	8	140	31	3.421429	3.290323
Studying Yoga Philosophy is the main concern behind visiting yoga center	22	7	25	4	37	7	27	6	29	7	140	31	3.114286	3.064516
Mental Relief is the main concern behind visiting yoga center.	19	3	16	4	35	5	18	9	52	9	140	31	3.485714	3.451613
Attending Regular Yoga Classes is the major preference while in Yoga center.	11	3	12	3	17	5	47	11	53	9	140	31	3.85	3.645161
Attending Yoga Therapy Classes is the major preference while in Yoga center.	49	2	47	4	11	1	14	12	19	12	140	31	2.335714	3.903226
Attending Meditation Classes is the major preference while in Yoga center.	22	2	20	3	25	2	39	12	34	12	140	31	3.307143	3.935484
Specific field like Sankhya Yoga, Hatha Yoga etc. is the major preference while in Yoga center.	46	8	49	7	11	4	16	6	18	6	140	31	2.364286	2.83871
Quality of accommodation at center influences decision regarding center's choice.	27	0	16	4	36	3	29	15	32	9	140	31	3.164286	3.935484
Surroundings of center influences decision regarding center's choice.	17	2	18	2	11	5	42	12	52	10	140	31	3.671429	3.83871
Quality of Food & Beverages at center influences decision regarding center's choice.	39	3	43	1	10	5	22	15	26	7	140	31	2.664286	3.709677
Quality of Teaching & Training at center influences decision regarding center's choice.	8	2	11	3	3	5	55	10	63	11	140	31	4.1	3.806452
Hygiene & Sanitation at center influences decision regarding center's choice.	12	0	8	2	11	1	49	16	60	12	140	31	3.978571	4.225806

Accessibility of destination/centre influences decision regarding destination's/centre's Choice.	21	4	16	3	19	4	40	12	44	8	140	31	3.5	3.548387
Art, Architecture, History & culture of Destination influences decision regarding destination's Choice.	27	2	18	2	21	3	35	9	39	15	140	31	3.292857	4.064516
Natural beauty of destination/centre influences decision regarding destination's/center's Choice.	24	5	21	4	21	4	35	12	39	6	140	31	3.314286	3.322581
Spiritual appeal of destination/centre influences decision regarding destination's/center's Choice.	27	4	18	4	19	4	35	13	39	8	138	33	3.297101	3.515152

Source: Primary data collected by author

Analysis: As depicted in above table,most of the foreign tourists are giving more importance to health, they believe that yoga can also be a good medication whereas, domestic tourists hold mixed view in regards to this statement. Most of the foreigners are interested in attendingregular yoga classes. Both domestic and foreign tourist utilize yoga as a fitness tool, but it seems that both the groups are not interested in learning the theory behind of yoga. Quality of food is an important factor that is considered by foreign tourists while selecting yoga center. Foreign tourists also pay a specific importance to art, architecture, history and culture of the destination while preferring their yoga centre. In addition, quality of accommodation provided byyoga center influences the decision of most of the foreign travellers but it is not the case with their counterparts. This is the reason many foreign tourist book luxury hotels for comfortable stay and visit yoga center just to attend classes.

When a comparison is made between foreign tourists and domestic tourists, the following factors are getting equal importance to both of them:

(a) Spiritual Progress
(b) Career Opportunity
(c) Study on Yoga Philosophy
(d) Mental relief
(e) Regular yoga classes
(f) Surroundings of the centre
(g) Quality of teaching
(h) Hygiene and sanitation
(i) Accessibility of destination / centre
(j) Natural beauty of the destination / centre, and
(k) Spiritual appeal of the destination / centre.

Hypothesis test for analysing preferences of foreign travellers and domestic travellers

H_0: There is no significant difference between the preferences of foreign tourists and domestic tourists.

H_A:There exist a significant difference between the preferences of foreign tourists and domestic tourists.

To test the above stated hypothesis, Mann-Whitney U test was appliedat 5% level of significance on the mean values of samples collected from the two groups of travelers namely,foreign tourists and domestic tourists. In order to calculate the mean for particular kind of preference among entire group, weights were assigned to the responses in following manner:

Strongly Disagree=1
Disagree=2
Undecided=3
Agree=4
Strongly Agree=5

Mean Value (DT)	Mean values (FT)	Mean values in Ascending order (DT)	Ranks (DT)	Mean values in Ascending order (FT)	Ranks (FT)
2.921429	4.032258	2.335714	1	2.83871	4
3.192857	3	2.364286	2	3	6
3.421429	3.290323	2.664286	3	3.064516	7
3.114286	3.064516	2.921429	5	3.290323	11
3.485714	3.451613	3.114286	8	3.322581	16
3.85	3.645161	3.164286	9	3.451613	18
2.335714	3.903226	3.192857	10	3.515152	21
3.307143	3.935484	3.292857	12	3.548387	22
2.364286	2.83871	3.297101	13	3.645161	23
3.164286	3.935484	3.307143	14	3.709677	25
3.671429	3.83871	3.314286	15	3.806452	26
2.664286	3.709677	3.421429	17	3.83871	27
4.1	3.806452	3.485714	19	3.903226	29
3.978571	4.225806	3.5	20	3.935484	30.5
3.5	3.548387	3.671429	24	3.935484	30.5
3.292857	4.064516	3.85	28	4.032258	33
3.314286	3.322581	3.978571	32	4.064516	34
3.297101	3.515152	4.1	35	4.225806	36
			R_1=267		R_2=399

RESULT DETAILS

For domestic Travelers (DT)	For Foreign travelers (FT)	For DT and FT Combined
Sum of ranks (R_1): 267	Sum of ranks(R_2): 399	Sum of ranks (R_1+ R_2): 666
Mean of ranks: 14.83	Mean of ranks: 22.17	Mean of ranks: 18.5
Expected sum of ranks: 333	Expected sum of ranks: 333	Standard Deviation: 31.607
Expected mean of ranks: 18.5	Expected mean of ranks: 18.5	
U-value(U_1): 96	U-value(U_2): 228	
Expected U-value: 162	Expected U-value: 162	

FORMULA USED

$$U_1 = R_1 - n_1(n_1+1)/2$$

FORMULA USED

$$U_2 = R_2 - n_2(n_2+1)/2$$

Out of the two calculated values of U (U_c), smaller one is used. Hence Calculated U value=**96**

Critical value of U (U_α) at 5% level of significance=**99**
Since $U_c < U_\alpha$ So, null hypothesis is rejected.
Therefore, it can be declared by the means of above statistical analysis that**there exist a significant difference between the preferences of foreign tourists and domestic tourists.**

MARKETING STRATEGIES TO PROMOTE YOGA TOURISM

For expanding the existing markets of Yoga tourism and develop new markets for this particular segment of India tourism, an exclusive marketing strategy is required. Given below are some steps that may be adopted by various government, non-government and private entities engaged in service provision, growth and development of Yoga form of tourism in India.

- **Identification of Potential visitors** is must to start with. These visitors must be identified on the basis of authentic research and not on the basis of supplier's perception. Modern techniques of demand forecasting may be utilized to identify the customers who could have a valid reason to visit yoga centers at various destinations of India and experience its unique yoga and other spiritual & wellness practices.
- **Determination of Motivation, Needs and Expectations(MNE)** is necessary to provide value for money satisfaction to visitors. Mainly, there are two types of visitors one who are motivated due to spiritual reasons and other due to health reasons. Determination of needs and expected level of satisfaction is also equally important because we would be able to satisfy a particular kind of visitor only when we are aware of his needs and expectations.

- **Reach your Target Market** through innovative and effective marketing strategies. Marketing strategy must be innovative and effective to compete in the highly competitive and modern globalized markets. Such techniques will allow us to cover bigger markets and will also help to diversify existing markets.

- **Setting up of Responsive websites** to facilitate customers. Responsive websites are one that are compatible with all kind of devices and can change size according to the user's device. Such websites allow customers to conveniently use the website in their smartphones, tablets and computers. Modern looking websites with efficient utilization of various audio-visual aids would attract buyers. In addition, content must be updated regularly as per the needs of buyers. Make sure that your website is indexed by google and people can easily find it on the first page of their search engine.

- **Create Social Media Presence** to get more eyes on your products and services. It is the era of technology where social media play a vital role. Be it young or old, everyone in the modern society spend a good amount of their time in social media platforms like Facebook, WhatsApp, Instagram, twitter, snapchat, skype etc.Therefore, social media could be an effective tool to facilitate your advertising work and makes information easily accessible for larger number of people.

- **Start a Blog** and regularly write post to introduce your visitors with beautiful destinations and its related activities. Modern day travelers are interested to read about the unique and exciting aspects of the destination and share their opinions and discuss on various components related to destination in an informal tone.

- **Use Word-of-Mouth Marketing** as it can grow customers and increase their loyalty. When customer recommend a particular yoga center to their kith and kin (through simple conversation or post on social media), it has the high probability to attract new customers. Word-of-mouth marketing may be negative also if your current customers are not adequately satisfied with your service provisions. Hence it is a matter of concern. To gain from word-of-mouth try to provide your customers with best possible experience.

- **Offer Unique Incentives** like student packages (as youths are less interested towards spiritual practices), coupons, "Bring a Friend" days, Specific group discounts, lunchtime classes for corporates (as companies are investing in employees wellbeing and they may offer yoga classes to their employees at lunchtime for health and relaxation purpose), etc. to attract more and more visitors to the yoga centers.

- **Consider Local Community** that will provide employment opportunity to them on the one hand and as localities they are best equipped with all the information in regards to spiritual, natural, cultural, historical and other aspects of destination on the other hand. So, they can provide best guide and escort facility to the participants of yoga centers while in destination. Community participation will also ensure the sustainability of yoga centers and destination.

Conclusion and recommendations

India being the spiritual leader of the world and yoga as one of its most important contribution in the field of spirituality, there exist an extremely high possibility for destinations like Haridwar, Rishikesh, Vrindavan, Varanasi etc. tobecome a hub of Yoga, Ayurveda, Homeopathy, Unani, and other alternative/indigenous methods of treatment. Developing yoga tourism in Haridwar will break the

monotony of religious tourism and diversify tourism market of Haridwar by attracting large number of foreign travelers from different nations to visit yoga centers of Haridwar. These yoga centers in religious destinations like Haridwar not just teach and train yoga and other wellness practices but also offers a wide range of other facilities to their visitors like providing accommodation, F&B, guide facility, escorting, etc. These services offered by yoga centers make the travel and stay of participants convenient and hassle free and produce opportunity for yoga centers as well as destination to gain from word-of-mouth publicity. In order to diversify and expand India's wellness tourism markets, concerned government, non-government and private authorities must plan out an effective marketing strategy and implement it to develop the brand image of country at international level.

- To enhance the inflow of domestic as well as foreign travelers to Haridwar and other destinations in Uttarakhand state of India, the infrastructure and superstructure of destination should be improved.
- There is a need to promote and encourage private sector entities in field of travel and tourism to develop e-tourism facilities and modern management practices in Uttarakhand.
- In spite of having exemplary tourism products Uttarakhand is unable to create its brand image in international market. To grab its vast tourism potential and acquire a place in tourism map of the world, there is an urgent need for this state to come out with an outstanding marketing strategy.
- Yoga centers should publish their tourist information brochure in major foreign languages for the convenience of visitors.
- Tourist information centers are available only at few spots in Haridwar. These information centers should be made available at various places like railway stations, bus-terminals, ashrams, etc. In addition, all the centers must be connected to each other for quick availability of information.
- Information centers instead of being located only at major destinations of region should be made available at various national and international gateways.
- Hygiene and security arrangements are also equally important to improve image of India in front of foreign visitors and make their stay safe and comfortable.
- Public-private partnership (PPP) is a need of hour to accelerate growth of yoga tourism in India. PPP will help to remove financial and policy related hurdles in the path of growth and development of yoga tourism in India.
- Travel agents and tour operators selling yoga packages should co-ordinate with worldwide travel companies to face increasing competition. Tie-up with foreign institutions and travel companies is necessary to assure large number of international footfalls at various yoga centers of India.
- Destinations like Haridwar, Rishikesh, Vrindavan etc. should organize some international wellness events every year to attract foreign tourist to take advantage of India's large number of alternative forms of treatment like Yoga, Ayurveda, Homeopathy, Unani, Siddha etc.

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CHALLENGES IN IMPLEMENTATION OF GOODS AND SERVICE TAX (GST) IN INDIA

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Abstract: The concept of Goods and Service Tax popularly known as GST was introduced on 1st July, 2017. The GST will have a 'dual' structure, which means it will have two components- the Central GST and the State GST. GST is expected to simplify tax administration, ensure 'Ease of Doing Business' and promote 'Make in India.' On bringing GST into practice, there would be amalgamation of Central and State taxes into a single tax payment. It would also enhance the position of India in both, domestic as well as international market. At the consumer level, GST would reduce the overall tax burden, which is currently estimated at 25-30%. The paper highlights the background, Challenges in Implementation of Goods and services Tax in India.

Keywords: Goods and Service Tax; Indirect Tax; Challenges;

Introduction: The idea of GST in India was proposed by Atal Bihari Vajpayee in 1999 and a committee was set up under the leadership of Asim Das Gupta the then finance minister of West Bengal to design a GST model. It was supposed to be implemented from 1st April 2010 under flagship of P Chidambaram the then finance minister of UPA government but due to political issues and conflicting interests of various stakeholders it did not came into force. In May 2016 the constitutional amendment bill for GST was passed by Lok Sabha and deadline of 1st April 2017 to implement GST was set by Arun Jaitley the finance minister of India. Finally the goods and service tax was launched at midnight on 1st July 2017 by the president of India, Pranab Mukherjee and Prime minister of India, Narendra Modi. Experts have enlisted the benefits of GST as under:

1. It would introduce "one country one tax"
2. It would absorb all the indirect taxes at the central and state level thus eliminating the cascading effect of tax.
3. Higher threshold for registration which will exempts many small traders and service providers.
4. It would bring down the prices of goods and services which in turn will help the companies as consumption will   increase
5. In the GST system, when all the taxes are integrated it would eliminate the number of compliances like return filling
6. It would help to eliminate the separate tax imposition on goods and services which requires the transaction to split its value among goods and services leading to greater complications
7. It would wider the tax regime by covering all the sectors including the unorganized sectors thus widening the tax base. This would lead to better and more revenue collection by the government.
8. GST would simplify the working procedures and would minimize the tax burden of E-commerce and logistics companies
9. Employment generation for youths as GST trained experts

Tax policies play an important role on the economy. The main source of revenue for government of India is from tax. Direct and indirect taxes are the two main source of tax revenue. When the impact and incidence falls on same person it is called direct tax. When the impact and incidence falls on different person that is when burden can be shifted to other person it is called indirect tax. The indirect tax system is currently mired in multi-layered taxes levied by the Centre and state governments at different stages of the supply chain such as excise duty, central sales tax (CST) and value-added tax (VAT), among others.

Goods and Services Tax (GST) is most ambitious and biggest tax reform plan, which aims to stitch together a common market by dismantling fiscal barriers between states. It is a single national uniform tax levied across India on all goods and services. In GST, all the indirect taxes will be subsumed under a single regime. The GST taxation laws will put an end to multiple taxes which are levied on different products, starting from the source of manufacturing to reaching the end consumer. GST works on the fundamental Principle of "One Country One Tax".

Literature of Review:

Ehtisham Ahmed and Satya Poddar (2009) studied, "Goods and Service Tax Reforms and Intergovernmental Consideration in India" and found that GST introduction will provide simply and transparent tax system with increase in output and productivity of economy in India. But the benefits of GST are critically dependent on rational design of GST.

Dr. R. Vasanthagopal (2011) studied, "GST in India: A Big Leap in the Indirect Taxation System" and concluded that switching to seamless GST from current complicated indirect tax system in India will be a positive step in booming Indian economy. Success of GST will lead to its acceptance by more than 130 countries in world and a new preferred form of indirect tax system in Asia also.

Agogo Mawuli (May 2014) studied, "Goods and Service Tax-An Appraisal" and found that GST is not good for low-income countries and does not provide broad based growth to poor countries. If still these countries want to implement GST then the rate of GST should be less than 10% for growth.

Pinki, Supriya Kamma and Richa Verma (July 2014) studied, "Goods and Service Tax- Panacea For Indirect Tax System in India" and concluded that the new NDA government in India is positive towards implementation of GST and it is beneficial for central government, state government and as well as for consumers in long run if its implementation is backed by strong IT infrastructure.

Monika Sehrawat and Upasana Dhanda (2015) in "GST in India: A key tax reform" concluded that introduction of GST will undoubtedly boost the Indian economy but focus should be given on rational design of GST model and timely implementation.

Nitin Kumar (2014) studied, "Goods and Service Tax- a Way Forward" and concluded that implementation of GST in India help in removing economic distortion by current indirect tax system and expected to encourage unbiased tax structure which is indifferent to geographical locations.

Research Methodology: The Research Scholar used an exploratory research technique based on past literature from respective journals, annual reports, newspapers and magazines covering wide collection of academic literature on Goods and Service Tax. According to the objectives of the study, the research design is descriptive in nature. Available secondary data was extensively used for the study.

Objectives of the Study:

01. To study about the Challenges of Introduction of Goods and Service Tax (GST in India).
02. To Study on Prospects in Implementation of Goods and services Tax (GST) in India

Need for GST:

1. The main reason behind introducing GST is to improve the economy of the nation.

2. VAT rates and regulations differ from state to state. And it has been observed that states often resort to slashing these rates for attracting investors. This results in loss of revenue for both the Central as well as State government.

3. On the other hand, GST brings in uniform tax laws across all the states spanning across diverse industries. Here, the taxes would be divided between the Central and State government based on a predefined and pre-approved formula. In addition, it would become much easier to offer services and goods uniformly across the nation, since there won't be any additional state-levied tax.

4. GST rollout missed several deadlines due to disagreement among many states over certain important issues on the new tax reform. However GST is scheduled for a nation-wide rollout on July 1st, 2017

Features of GST:

1. GST is one indirect tax for the entire nation, which will make India "one unified common market".

2. It will replace multiple taxes like VAT, CST, Excise Duty, Entry Tax, Octroi, LBT, and Luxury Tax etc.

3. There are four types of GST namely:

    a) **SGST** – State GST, collected by the State Govt.

b) **CGST** – Central GST, collected by the Central Govt.

    c) **IGST** – Integrated GST, collected by the Central Govt.

    d) **UTGST** – Union Territory GST, collected by the Union Territory

4. Tax Payers with an aggregate turnover in a financial year up [Rs. 20 Lakhs & Rs. 10 Lakhs for North Eastern Sates and Special Category States] would be exempted from tax.

5. GST slabs are pegged at 5%, 12%, 18% & 28%.

Journey of Indian indirect taxation and turning points, which reformed the taxation system till date before the introduction of GST taxation system in India:

1974: Report of LK Jha Committee suggested introduction of VAT system.

1986: Introduction of restricted VAT called "MODVAT".

1991: Chelliah Committee report recommended "VAT/GST" and recommendations accepted by Govt.

1994: Service Tax introduction.

1999: Empowered Committee formation on State VAT.

2000: Introduction of Uniform Floor State Tax Rates and abolition of tax-related incentives granted by State Governments.

2003: Implementation of VAT system in Haryana.

2004: Strong progress towards introduction of CENVAT.

2005-06: Implementation of VAT based taxation system in 26+ states in India.

2007: First GST Stuffy released by Mr. P. Shome in January; Finance Minister speech carries the introduction of GST in Budget; CST phase out starts in April 2007; joint working group created and reports submitted.

2008: EC rolls out the GST Structure of Taxation System in April 2008.

2009: Date proposed for Implementation as April 1, 2010.

2010: Department of Revenue commented on GST discussion paper and finance minister suggested probable GST rate.

2011: Team was created to lay down the road map for GST and 115th Constitutional Amendment Bill for GST was laid down by the Parliament.

2012: Negative list regime for service tax was implemented.

2013: Parliamentary Standing committee submitted its report on the Bill.

2014: 115th Amendment Bill lapsed and was reintroduced in 122nd Constitutional Amendment Bill.

Challenges in Implementing GST:

Wall Street firm Goldman Sachs, in a note „India: Q and A on GST- Growth Impact Could Be Muted", has put out estimates that show that the Modi government's model for the Goods and Services Tax(GST) will not raise growth, will push up consumer prices inflation and may not result in increased tax revenue collections. There appears to be certain principle loopholes in the GST model imposed by the union government which may be ineffective in delivering the desired result.

1. Note ban has huge impact on the Goods and Services Tax (GST) a serious doubt on implementing GST by the central government`s targeted deadline of April 1, 2017..

2. The impact of the November 8 demonetization of high value currency on their respective economies to underline that it is not the appropriate time to implement. That could have a unstable effect on the economy.

3. The principle ideology behind implementation of GST-one country one tax is not suitable for India. Previously there were 32 taxes which include service tax, excise duty, sale tax and 29 state VAT taxes and after implementation of GST it comes to 31 taxes which include IGST, CGST and 29 SGST which again bear complicated tax structure in the country and rebuts the principle of one country one tax.

4. Another principle ideology behind implementation of GST-one rate of tax is not possible in India due to, According to the 101st amendment in the constitution, Article 246 A states that parliament and legislative assembly can impose taxes on goods and services. Hence not only union government but also state government had power to have own GST rate.Article 279 A of the constitution states that GST council has only recommendatory powers, now it's up to state government to levy its own GST rate and distorts the entire GST uniformity rate system of the country.

5. Government had incorporated goods and services tax network(GSTN), which is responsible for developing GST portal to ensure services like GST registration, GST return filling, IGST settlement, etc. which requires robust IT network. It is widely known that India is in an embryonic stage as far as IT network connectivity is concerned.

6. GST will also have impact on cash flow and working capital. Cash flow and working capital of business organizations which maintain high inventory of goods in different states will be adversely

affected as they will have to pay GST at full rate on stock transfer from one state to another. Currently CST/VAT is payable on sale and not stock transfers.

7. Trained and skilled man power with updated GST subject knowledge are not easily available, this had created an additional work load on professionals across industry.

8. The Indian insurance market is not so developed as less than 10% of the population has insurance. This was the reason behind the government initiative, Pradhan Mantri Jeevan Bema Yojna" however with the implementation of GST insurance premiums have become expensive by 300 basis points which will become difficult for insurance companies to penetrate the market and would work as an unfavorable factor against insurance awareness schemes. The government initiative „Pradhan Mantri Jan DhanYojna" initiated that every citizen of have a bank account will face difficulties as the tax on financial services had raised by 3% in the new goods and services tax regime.

9. The telecommunication sector assumes a serious problem as on the one hand the government is initiating digital India and on the other hand telecom services is getting costlier as telecom services will attract GST tax rate of 18% which is 3% higher than the previous service tax rate, even when India's rural teledensity is not even 60%.

10. The GST administration intends to keep petroleum products out of the ambit of GST, being petroleum products have been a major contributor of inflation in India.

11. Small traders are confused with the GST tax rate application and increasing cost of operations, as they are unable to afford the cost of computer and accounting staff for maintenance of record and filling of returns under GST.

12. Political reasons are determining the fate of GST, which is not the correct thing, because ideally GST is an economic and tax reform, and economic and tax reforms should not be dictated by political.

Conclusion: It can be concluded from the above discussion that GST will bring One Nation and One Tax market. Efficient formulation of GST will lead to resource and revenue gain for both Centre and States majorly through widening of tax base and improvement in tax compliance. It can be furtherconcluded that GST have a positive impact on various sectors and industry. Although implementation of GST requires concentrated efforts of all stake holders namely, Central and State Government, trade and industry. Electronic processing of tax returns, refunds and tax payments through 'GSTNET' without human intervention, will reduce corruption and tax evasion. Built-in check on business transactions through seamless credit and return processing will reduce scope for black money generation leading to productive use of capital,

The country is keenly looking for the roll-out of GST from April 2017, as the government focuses on creating one single tax & market for all in India. GST in India will make the country industry friendly by implementing one type of tax and that will attract more investments from foreign investors

also.Also, implementation of dual model of GST will result in generating more employment opportunities. Therefore, it is very important that the government makes efforts to make the GST applicable all over the country with clear law and industry friendly so that the industry, consumers and the economy benefits as a whole

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DETERMINANTS OF THE CAREER PATH OF LIFE INSURANCE ADVISORS

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Abstract

Since the evolution of management thoughts, employee performance has always been considered as the key to organizational success. The issue of performance has been specially significant when the transaction concerns intangible goods in the service sector. The present research work attempts to examine the key performance drivers amongst the life insurance advisors of both the public and the private sector in the Kolkata region. Past studies have revealed that social skills and personality characteristics play a significant role in influencing the performance of employees in the service sector (Lay, et al., 2014). The methodology adopted for the study was a questionnaire-based survey carried out on public and private life insurance companies. The data, based on 200 complete responses, have been analyzed using regression analysis with the help of statistical software. The results have shown that creativity (emotional intelligence skill) and openness (personality trait) have played significant roles in impacting performance of the insurance advisors. This research is an attempt to recommend a policy prescription for the human resource section of the insurance company, so that the suggestion contained would enable the insurance organizations to build potential advisors who would be prepared to deliver high-performance in the life insurance sector in India.

Key words – Emotional intelligence, insurance, performance, personality

Introduction

The Indian insurance industry has a deep-rooted history which has its evidences from the writings of Manu (Manusmrithi), Yagnavalkya (Dharmasastra) and Kautilya (Arthasastra). In ancient India, there was the custom of pooling of resources which were redistributed in times of calamities such as fire, floods, epidemics and famine. Insurance has evolved in India, over time and has also been drawn heavily from other countries, particularly, England (History of Insurance in India, 2007).It has been accepted by business, academia and practitioners that one of the indispensable resources of any organization is its human resource. The quality of manpower inventory of an organization is the source of value-addition for the system. Today, manpower is regarded as a capital investment of an organization and the return on such capital is considered as their performance which adds to the competitive edge of the organization. Thus measuring the performance of employees is a critical exercise because this acts as a yardstick to differentiate star performers from average performers which

carries both short term and long term reward and recognition implications for managerial decision-making. The process of performance measurement differs inter and intra industry in all sectors depending on the nature of performance expected from its people. Among the different industries, the service industry is considered to be unique, because it emphasizes on 'personal service' or the 'human touch' which overrides any other activity of this industry. Thus people employed in this industry are the main pillars who can contribute and add-value to the business.

This study collaborates Goleman into the research work of performance determining variables and identifies emotional intelligence as one of the areas of study as an influencer to performance. Similarly, personal characteristics may be referred to as personality traits of an individual and thus the researchers posit personality to be another significant influencer of performance. The study has chosen the insurance sector for analyzing the performance of the employees and diagnosing the psychological characteristics that may drive performance variations. The insurance sector is an integral part of the services industry. It is also a known fact that the sector deals with intangible products. The people referred to here, are the insurance advisors who lead from the front and create revenue for the sector. In this highly competitive environment, their performance is definitely driven by some innate traits which may be identified as social skills and personal characteristics. As mentioned earlier, these competencies were translated into constructs of emotional intelligence and personality, for the purpose of this study. Presently, the Indian insurance industry is flourishing with several national and international players competing in the open market. After an extensive study of the available literature, it was inferred that there is a gap in the area of study of the combined effect of emotional intelligence and personality on performance, with special reference to insurance advisors. Thus the research issue was framed to study the impact of emotional intelligence and personality on the performance of the life insurance advisors, with a special focus on performance in the public and private sectors.

Literature Review

Performance management aims at developing individuals with the relevant competencies and growing commitment for working towards the shared objectives within an organizational framework (Lockett, 1992). The objectives of performance management are to assist the employees in identifying the appropriate knowledge, skills and behaviors required for performing the job efficiently. Through a well integrated feedback system, it also contributes towards identifying the constraints to effective performance delivery and taking initiative to overcome the difficulties through constant monitoring, coaching and developmental interventions. Through effective performance management, organizations may focus on the continuous development of its human resources to sustain the competition and surge ahead. It facilitates in not only achieving the business results but also in preparing employee development plans in alignment with the long-term goals of the organization. In today's environment of cut-throat competition, individual competencies are very critical to sustain profitability of a business. David McClelland (1973) first proposed the idea of competency which posed a challenge to the traditional method of individual assessment. Boyatzis (1982) and Klemp (1980) suggested that a person would be capable of superior performance in a job, if he portrayed the underlying characteristics conducive to that particular job. Performance of an individual and outcomes of an individual's efforts are different from each other. On one hand outcomes are the result of an individual's performance whereas on the other hand performance is defined as the behavior exhibited

by an individual employee. Hence, performance is conceptualized as a multidimensional construct, that is, performance consists of more than one kind of behavior.

The Socioanalytic theory (Hogan, 1996) is rooted in interpersonal psychology (Wiggins, 1979) and is intended to explain individual differences i.e. differences in personal competencies which influence career growth and development. This theory is based on two generalizations relevant to organizational behavior that people prefer to live and work in groups and groups are usually structured in terms of hierarchies (Hogan & Holland, 2003). Socioanalytic theory (Hogan & Holland, 2003) also argues that people always want to seek social camaraderie and status in any social exchange or communication. The efforts of an individual to get along within a group or get ahead of others in a group are recognized as individual differences and these are being reflected in the personality test scores and performance in the workplace. Past studies have shown that emotionally stable individuals or people who have high conscientiousness are believed to be more dependable and disciplined than that of others. The socioanalytic model (Johnson, 1983) also suggests that individuals with high levels of extraversion are interested in jobs which are person-oriented. Inferring from the above theories, the present research identifies two significant personal competencies of individuals which drive performance: emotional intelligence and personality. As discussed in theories, traits like emotional stability, calmness, self-confident, dependability form an integral part of emotional intelligence whereas extraversion, conscientiousness defines individual's personality characteristics. Thus the research work proposes that individuals with a higher level of emotional intelligence and certain personality attributes will perform better.But it is also true that the significance of each of these factors vary depending on the nature of the job. The jobs where 'human factor' plays a major role, the impact of emotional intelligence and personality also become remarkable. Such jobs are predominantly identified in the frontline jobs of sale. Additionally, the selling job becomes even more challenging when the product is intangible. This understanding has guided the researchers to choose the service industry and the frontline selling jobs to further explore the impact of emotional intelligence and personality on job performance. The front line sales personnel of the insurance products are conventionally termed as 'Insurance agents'. The productivity of an insurance company largely depends on the salesmanship skill of such agents. The job of an insurance agent has become more difficult due to opening up of insurance sector and competition all around. There are more than 20 insurance companies, soliciting life insurance business. In this background, an insurance agent should have the following competencies and skills: sales acumen, result orientation, interpersonal skills, ability to work in high pressure environment, ability to multitask and industry knowledge. However, selling is primarily based on trust, transparency and building relationships. Thus it all relies on the 'human factor' and the way one can instill life in the selling of services for intangible goods. In a sales job, the most critical behaviour is the ability to assess the need of the customer and effectively guiding them through the sale (Mallalieu & Nakamoto, 2008). Thus the salesperson has to be in tune with the client's emotional needs and responses. This understanding has led the researchers to identify the competencies of a salesperson which actually triggers a successful sale performance. There have been number of studies (Barrick & Mount, 1991; Hough, 1997; Mount, Barrick & Stewart, 1998; Tett, Jackson, Rothstein & Reddon, 1994) that have focused on different constructs such as personality, IQ, academic GPAs and other skills to determine which characteristics a person has that will lead to a high-performing employee. Although there have been a number of studies (Bentz, 1990; Foti & Hauenstein, 2007; Judge, Colbert

& Illies, 2004) that have shown a positive relationship between I.Q. and high performance, finding the correct combination of human characteristics (mainly emotional intelligence and personality) that may lead to high-performing employees remains a focus for this study.

Research Gap

The review of literature led to the identification of the research gap of assessing the impact of the predictor variables on performance. The research presented here is the analysis of the transition of an insurance advisor from one-level to the immediately next higher level of performance. To conduct this analysis, the researchers had undertaken binary logistic regression as the statistical tool for data analysis and interpretation.

Research Objective

Following the review of literature and the gap in the past research, the present study is focused to estimate the influence of demography, emotional intelligence and personality constructs on the career path of insurance advisors.

Methodology

The methodology adopted for the study was a questionnaire-based survey on both public and private sector life insurance advisors of the Kolkata region. Since, the issue deals with emotional intelligence and personality, a primary field survey of respondents has been felt necessary. However, the sample is chosen from available secondary record of the Insurance Regulatory and Development Authority (IRDA).

The analysis for the present study has been carried out based on 200 complete responses received from public and private life insurance companies. Of these 109 responses are from the employees of Life Insurance Corporation of India and 91 are from selected private life insurance companies. The EQ Map Questionnaire (Cooper & Sawaf, 1997) and the Big Five Model of personality questionnaire, adapted from Managing Self – Assessing the Big Five: The Big Five Locator Questionnaire (Hellriegel, Slocum and Woodman, South-Western, 2001) have been administered to collect data. The performance of the 200 respondents have been categorized into 4 distinct levels namely, Level 1 (Needs Improvement), Level 2 (Fair), Level 3 (Good), Level 4 (Very Good), wherein Level 1 is at the bottom of the performance order and Level 4 indicates the best performers. These levels have been designed based on the given business targets, for a particular financial year, 2010-2011. The data collected have been analyzed using standardized statistical techniques with the help of statistical software.

Findings and Analysis

The study delves into predicting the impact of more than one independent variable on the categorical dependent variable, performance. In this research work, performance of the life insurance advisors is captured on multiple levels, in a hierarchy of Needs Improvement to Very Good (denoted as Level I to Level IV for practical purposes). To conduct the analysis, the research work has undertaken two statistical tools, binary logistic regression and multinomial logistic regression.

Level-Wise Performance Drivers: Using Binary Logistic Regression

The sample has been divided into three sub sets, where the first sub-set comprises of 109 life insurance advisors who are in the 'Needs Improvement' and 'Fair' category of performance; the second sub-set consists of 117 respondents who are in the 'Fair' and 'Good' category of performance and the third and final sub-set of the sample consists of 91 respondents who are in the 'Good' and 'Very Good' category of performance[1]. Here, for each sub-set, the researchers seek to estimate the influence of the independent variables, namely, emotional intelligence constructs, personality variables and demography sample characteristics on the possibility of a respondent improving his/her performance from a lower level of performance to the next higher level of performance. Here performance has been segregated into four levels of performance[2]. Binary logistic tool has been applied on each of these three sub-sets of data to estimate the impact of the predictor variables on the movement from the lower performance level to the next higher performance level as depicted in Figure 1. In the following sections, the results of the binary logistic regression of each of the sub-sets of the sample are presented and discussed in details.
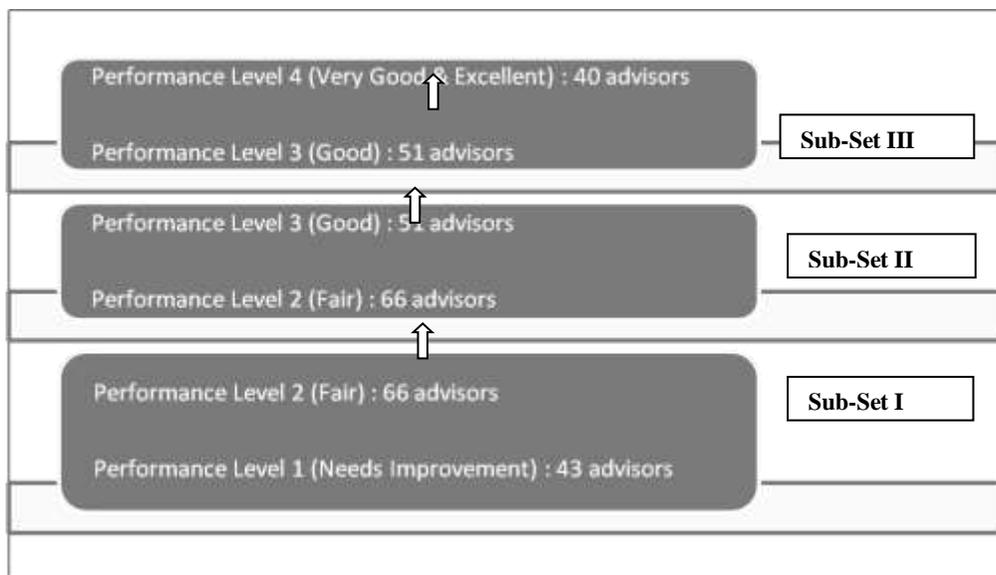

Figure 1: Respondents Divided into Three Sub-Sets: Each Set Depicts Movement from One Lower Performance Level to the Next Higher Level of Performance

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[1] In this present study, the performance of the advisors has been divided into four categories, namely, 'Needs Improvement', 'Fair', 'Good' and 'Very Good'

[2] Needs Improvement is denoted as Performance Level 1;Fair is denoted as Performance Level 2; Good is denoted as Performance Level 3; Very Good is denoted as Performance Level 4.

Transition from Performance Level 1 to 2

As stated in the earlier section, sub-set I comprises of 43 advisors in Performance Level 1 and 66 advisors in Performance Level 2. The study tries to capture the variables which may influence the probability of movement of a respondent from 'Needs Improvement' to 'Fair' category. The regression results estimate the impact of work pressure and general health on performance as depicted in Table 1.

Table 1: Sub-Set I: Transition From Performance Level 1 To 2

Significant drivers of performance	B	S.E.	Wald	Df	Sig.	Exp(B)
Work Pressures	-.179	.058	9.537	1	.002	.836
General Health	.101	.048	4.390	1	.036	1.106

Transition from Performance Level 2 to 3

Following the same lines, sub-set II comprising of 117 respondents who are in the Performance Level 2 (Fair) and Performance Level 3 (Good) has been used to run the binary logistic regression model. Here also, the study tries to capture the variables which may impact the probability of movement of a respondent from 'Fair' to 'Good' category. The regression results estimate the impact of tenure of service in the current organization and creativity on performance, as depicted in Table 2.**Table 2: Sub-Set II: Transition From Performance Level 2 To 3**

Significant drivers of performance	B	S.E.	Wald	Df	Sig.	Exp(B)
Tenure of service in the current organization	.278	.084	11.035	1	.001	1.320
Creativity	.163	.076	4.596	1	.032	1.177

Transition from Performance Level 3 to the Highest Level of Performance

The next binary regression model was run on sub-set III comprising of 91 respondents who are in the performance Level 3(Good) and Performance Level 4 (Very Good). The result of the study tries to capture the variables which may influence the probability of movement of a respondent from 'Good' to 'Very Good'. The regression results estimate the impact of gender on performance, as depicted in Table 3.

Table 3: Sub-Set III: Transition From Performance Level 3 To The Highest Level Of Performance

Significant drivers of performance	B	S.E.	Wald	df	Sig.	Exp(B)
Gender(1)	-2.088	.922	5.135	1	.023	.124

Till now the analysis has shown a partial influence of some of the independent variables on the dependent variable. From this the study cannot make a blanket inference about all the explanatory variables. To address this, the study proceeds with multinomial logistic regression in the subsequent section. Though the above regression models have endeavoured to understand the movement from one level of performance to its next higher level, the nature of the sector is such that an advisor can move up the ladder of performance easily by

overtaking a few layers depending upon the business generated by him. This phenomenon is diagnosed through a multinomial logistic regression which is conducted on the data. The analysis is done based on the probability of movement of the advisors from 'Needs Improvement' to 'Fair' level, 'Needs Improvement' to 'Good' level and 'Needs Improvement' to 'Very Good' level (Figure 2). Thus in the present study, three models are predicted. Considering 'Needs Improvement' as the reference category, the movement of the advisors relative to the 'Needs Improvement' performance level to each of the higher levels of performance is studied.
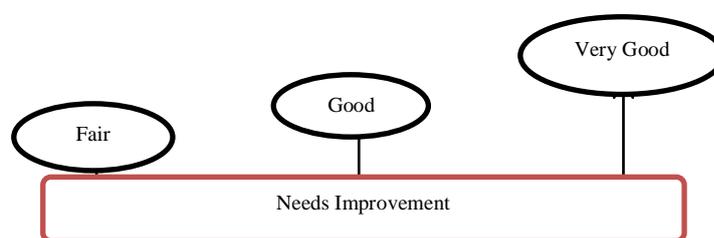

Figure 2: Diagram Showing Transition across Performance Levels from the Base Category (Needs Improvement) to Any Higher Levels of Performance

Transition from Performance Level 1 to Any Higher Level of Performance: Using Multinomial Logistic Regression

A summary of the findings is presented in Table 4, where the movement across performance levels from Needs Improvement to the higher levels shows a combined impact of the demography, emotional intelligence and personality constructs.

Table 4: Factors Influencing Transition From Level 1 (Needs Improvemnet To Any Higher Level Of Performance[1]

[i]From **Needs Improvement** To / Influencing constructs	Fair (Model I)	Good (Model II)	Very Good (Model III)
Demography		Tenure of service in the current organization	Tenure of service in the current organization

[1] Number of insurance advisors from Needs Improvement to any higher level of performance is 43

Emotional Intelligence	General Health	General Health Creativity	General Health Creativity
Personality			Openness

Inferring from the above discussion, it may be concluded that in the movement of the advisors from the 'Needs Improvement' to any higher level of performance, level-wise or across levels, the study reveals an overall conjoint impact of the demography, emotional intelligence and personality variables on the performance of life insurance advisors.

Discussion

From Table 1, it is clearly observed that work pressure will negatively influence movement of an advisor from Performance Level 1 to 2 whereas the given health conditions will positively influence the upward movement of performance in the present sample of life insurance advisors. The items corresponding to work pressure in the EQ Map questionnaire are indicators of possible sources of distress for an individual, e.g. boring or uninteresting work, job security, pressure of deadlines, to name a few. Research has found out that work stress and job performance are negatively correlated (Bashir & Ramay, 2010). So advisors scoring high on work pressure are actually victims of stress and this may lead to decrease in their performance. Again, health conditions of an insurance advisor are very vital because the job demands stamina, physical endurance and energy. The advisors' job is eighty per cent on the field, meeting clients, travelling, working on holidays as in any other sales job. Thus sound health conditions facilitate an advisor to perform consistently, survive the toughness of the job and move ahead in the career path. Hence, in the early phases of performance as emotional intelligence impacts performance through work pressure and health conditions, the insurance organization should lay emphasis on these two parameters for advisors in the Performance Level 1. The advisors may be trained on how to handle pressure of targets and deadlines, relationship with the boss, managing flexibility of working hours etc. Additionally, health-check-ups at regular intervals should be made an essential aspect of an advisors' working life. Insurance companies may hold awareness camps and free health check-ups to ensure the healthy and fit advisors. Thus with work pressure and general health showing an impact on performance, it may be inferred that the association of performance with emotional intelligence is partially statistically proven.

From Table 2, the significant influence of one of the demographic factors, namely, tenure of service in an organization, is clearly observed. This is accompanied by another emotional intelligence construct called creativity. In the life insurance industry, the phenomenon of job-hopping is very common. But sub-set II clearly shows that if an advisor is able to sustain in a particular organization then with increase in one's length of service in that organization, the propensity to move up the performance ladder also increases. This may be because the advisor is able to identify oneself with the organization and his in-depth knowledge about the product and services also becomes better. Thus he/she is highly convincing in his approach

towards the customers and also becomes trustworthy. This leads to better performance. Additionally, the current sub-set also shows that creativity creates a positive drive towards performance. This may be explained with reference to the EQ Map questionnaire where ten items has been listed corresponding to the construct of creativity. These items tend to describe the behaviour or intention of the advisor. An advisor scoring high on creativity factor indicates that he/she shares information or ideas, open to challenges and has a problem-solving approach. These attributes drive the advisor to move from Performance Level 2 to 3. Thus insurance organizations, specially the private sectors, where there is a proliferation of companies, advisors may tend to change jobs quite often. But if the company has a strong retention policy then in the long-run the companies would reap benefits. Loyal and trustworthy advisors would yield far better results than new entrants in the business. Similarly, there should be a structured recruitment and selection process for life insurance advisors where the prospective candidates must be tested on personal competency factors e.g. creativity. As each day, a life insurance advisor meets new clients with different needs; each of such situations is a challenge to overcome. Thus an advisor requires creativity skills to handle such unique situations and emerge to be successful. Thus with creativity showing an impact on performance, it may be inferred that the association of performance with emotional intelligence is also partially statistically proven.

Table 3 shows that gender (female) shows a negative impact on the movement across levels. This may imply that the propensity of female advisors to move up to the higher levels of performance is less as compared to the male advisors. Though there is no compromise on the technical competence of the female advisors, but still it has been observed that most of the female advisors shy away from achieving higher targets and meeting stringent deadlines. They tend to give more importance to their social and personal responsibilities rather than the job performance. Thus in the present study of sub-set III, it is found that only 4.6 per cent of the female advisors are in the Performance Level 4 whereas 24.2 per cent male advisors are in the higher performance levels. Though the percentage of male advisors, in the higher performance levels, is not very impressive but still it is higher than the female advisors who have a very negligible presence in the top levels of performance. Thus organizations should take initiative to train the female advisors to handle and deliver multiple responsibilities at a single time. The process of learning would also help them to learn and deliver.

Table 4 reveals that increase in the number of years spent in this particular profession, an advisor becomes proficient enough to understand the nuances of the business and show signs of higher performance. Also, as discussed earlier, general health conditions and creativity positively impact performance. In this profession, physical stamina is an essential requisite as an advisor has to work also in the odd-hours of the day and there are no specific holidays. Challenges are very common in this profession. But a person who looks at these challenges differently and also is able to solve them, goes up the performance ladder. Thus an advisor with high on openness and creativity may show signs of high performance. Openness to experience is expressed by a need to expand and examine experience. It defines the extent to which an individual allows himself or herself to be affected by external or internal influences (McCrae, 1992). A person high on openness to experience is likely to seek novel experiences, initiate new ideas, and have a creative bend of mind. Creativity, on the other

hand, is associated with the degree to which a person engages in novel endeavors (Ivcevic, Brackett, & Mayer, 2007). Thus an advisor with combined traits of openness and creativity and continued tenure in this profession has opportunities to excel in the profession.

Conclusion

Summarizing the above findings it may be concluded that, there is a distinct impact of certain variables, positive or negative, influencing incremental movement of the advisors across the performance levels. The advisors who are at the 'Needs Improvement' stage may not require the emotional intelligence and strength of personality to handle work pressure. Thus the only way they may move from 'Needs Improvement' to 'Fair' is by working hard. They depend on leg-work to increase their client-base and may not be able to increase their performance. On the other hand, the respondents who have already moved into the 'Fair' stage would need their creative skills and years of experience to move to the 'Good' stage because the rise from 'Fair' to 'Good' would mean more than just physical hard work or handling work pressure. But the simple move from 'Good' to 'Very good' and 'Excellent' is not the cup of tea of female advisors. They find it difficult to move up the performance ladder but appropriate training may help them to develop and strike the right balance between personal-life and work-life.

As the focus of the research work is to study the impact of the emotional intelligence and personality variables on the performance of the advisors, the two personal competence variables, creativity and openness draw the special attention of the researchers. A sub-set of respondents with high creativity and openness are identified. In the present study, only 7.5 per cent of the respondents (total 15 respondents) show a combination of high creativity and high openness. Here, it is noteworthy to mention that, none of these advisors are in the 'Needs Improvement' level. It is also very striking that in this sub-set of 15 advisors, 14 of them belong to the private life insurance industry. Thus it reveals that the advisors of the private insurance industry are more dynamic and vibrant than that of the public sector. This may be because of the fact that the private advisors entered a very competitive market from the very beginning. To consolidate one's position in the market, one needs to have some differentiating attributes which might be openness and creativity as inferred from the study. Literature suggests that openness to experience implies that a person is imaginative, sensitive to aesthetics and open to new ideas. Thus it has been found to be important for jobs that require creativity (Zhou & George, 2001). Hence, it may be inferred that an advisor by his openness nature will be able to absorb the emotional needs of the family to whom he is trying to sell his insurance product. These inferences may be used in managerial decision-making, with a focus on recruitment and selection of insurance advisors. In addition for the existing employees of insurance sector such studies may help in identification of employees who deserve training. In other words, advisors with strong product knowledge but lacking in social skills and personal abilities may be subject to training in these areas for improved performance in the future.

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PROFESSIONAL IDENTITY CRISIS IN THE ERA OF COMMERCIALIZATION

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ABSTRACT

In the era of commercialization, *Professional identity crises in any profession is a global phenomenon. With the imbalanced rapid scientific growth and technological advancements resulting in emerging corporate sector that have burst out the complicacies in any profession. Today the young professionals even having highly specialization are also badly suffering from professional identity crises. Our higher education institutions are playing the just like a factory which is producing human robots having U.G./P.G. academic or professional degree or diplomas but very poor in human professional qualities. In this task work-integrated learning may play a major role because student participation in professional roles through workplace learning experiences areopportunities fortransformativelearningthatshapeprofessionalidentityformationanda sense ofprofessionalism*,this paperexplorestheroleofprofessionalism anditsplaceinthecurriculumtoenhanceprofessionalidentity developmentin the era of blind commercialization.

Keywords: ProfessionalIdentity, Identity Crisis, Identity Formation,Professionalism,Work-IntegratedLearning, Commercialization.

Today, colleges and universities are facing major changes as they navigate the 21st century and make decisions that will not only impact higher education but will also contribute to our country's future competitiveness in the global marketplace (Dey, A., 2000). There is growing evidence that professional identity crises in any profession is a global phenomenon of our times. Every professional has aprofessional identity, thequestion is how conscious and purposefullychosenitis.Itisimpossibleto imagineaprofessionalwithoutaprofessional identity;but itispossiblethatprofessionalscannot articulatetheirprofessionalvalues and commitmentshencecannotpurposefullydrawonthecoreoftheiridentity.Identifying with values andmoralprinciplesoftenremainstacit andnon-conscious(Nystrom, 2009).

Generating a discourseabout professionalidentityand professionalismwill enhance students'observationskills oftheworkplace.Sharing,questioningand resolvingtheir observationsandexperiences withothersisapreparatorystep inshapingprofessionalvalues thatunderpinprofessionalidentities(Brookfield,2012).Thisisdespitethefact that workplaces provide ampleopportunities forcritical discussion. Collective critical discussions potentially widen students' horizonsand strengthentheir learning journey.Studentscan

reflectuponprofessionalismfromanoutsiderperspectivelookingonto practiceinclassroom settingsandfromanemerginginsiderperspectivediscussingpracticefromwithin(Kemmis, 2009).Generatingadiscourseenablesstudentsto consciouslythink,talktogetherandact professionally.It also signalsto studentsthatprofessionalidentityisanimportantprimerfor theirfuturepractice.

What is Professional Identity ?

Theconceptofprofessionalidentity is complicated by competing definitions. Professional identity may be defined as"toknowwhatoneisdoing and whyoneis doingit"(Giddens,1991).Thisimplies areflexiveconsciousnessand an external(strategic)identity.It alsoimpliesthatpeoplecanarticulatethereasonsbehindtheir actions. Rhoades (2007) suggests that in order to understandhighereducation, therelationships andinteractions amongthemultiple professionswithintheorganizationmustbeconsidered. A numberofcategories have been identified that seek to explain the various professional identities that existwithinthehighereducationcontext. Whitchurch(2009)suggestsfour:(1) bounded professionals who perform roles that are clear and prescribed; (2) cross boundary professionals who perform translational functions and contribute to institutional capacity building;(3)unboundedprofessionalswhocontributetobroad basedprojects acrossthe university,and(4)blended professionalswhostraddle bothprofessionalandacademicareas.

Professional Identity Formation:

Professionalidentityisnotastableentity;itiscomplex,personal,andshapedby contextualfactors.Rhoades(2007)pointstothefactthatthereisalackofsufficient casestudiestofacilitate anunderstandingabouttheconditionsandexperiencesof thoseworkinginthehighereducationsystem.As work-integratedlearningscholars,itisourroletopreparestudentsfortheirfutureworkroles. Workrolepreparationincludesnotonlydisciplinaryknowledge andtechnicalskillsbut also intelligenceabouthowto workinateam,communicatewithothers,learntacitways of workingthroughobservationsand socializingintoworkplacecultures.Helpingstudents developasenseofprofessional identity and engage withissuesofprofessionalismcan enhanceworkplacelearningexperiences. Itstrengthensasenseofpurposeandfocusto Work-Integrated Learning (WIL).

Itisimportantto notethatbeyondknowing and doing, articulating reasonsand actions is partof developing professional identity. Zizek (1989) uses the theoretical framework of symbolic and imaginary identification developed by the psychoanalyst Lacan (1979) to explore the mannerinwhichidentityisformedwithintheteachingprofession.AccordingtoZizek (1989), the theory of symbolic and imaginary identifications is central to professionals who require a mandate for the position that they occupy and the manner in which they carry out their prescribed tasks (Zizek 1989). Symbolic identificationwithinthistheoryconcernsthewayinwhichpeopleperceivethemselves. Theseperceptionsareacquiredwithinthesamecontextsaspeoples'senseofwhatisright,whatiswrong, and how the social world is modelled. In that way, people construct their social selves within the everyday realities that they inhabit (Lundell and Collins2001).

How Professional Identity should be Viewed?

Professional identity is viewed as an ongoing process of interpretation and reinterpretation of experiences (Beijaard et al., 2004; Day, 1999; Kerby, 1991). It does not answer the question of whom I am at the moment but who I want to become (Beijaard etal., 2004). Henkel (2000) argues that key concepts of academic identity encompassthedistinctiveindividualwhohasauniquehistory,whoislocatedin a chosen moral and conceptual framework, and who is identified within a defined communityorinstitutionbythegoodsthatsheorhehasachieved.Thesethreeelements of individual identity are what make an academic an effective professional. Kogan (2000) argues that these elements are strengthened and matured throughtheprocessesofprofessionaleducationandexperience.Hesuggeststhatthe distinctiveindividualisalsoanembeddedindividualandisamemberofcommunities and institutions which have their own languages, conceptual structures, histories,traditions,myths,values,practices,andachievedgoods. Theindividualhas roles, which are strongly determined by the communities and institutions of which heorsheisamember. Thus,Kogan(2000)assertsthattheconceptofprofessional identity,isbothindividualandsocial,sothatpeoplearenotonlystrongerbecauseof theirexpertiseandtheirownmoralandconceptualframeworks,butalsoperforming a range of roles which are strongly determined by the communities and institutions ofwhichtheyaremembers(Kogan,2000).Interestinglyprofessionalidentity is an area that has not been researched in any great depth among the professions let alone in higher education. Some studies exist in the teaching profession and these provide some interesting insights into the area of professional identity that serve as a useful starting point for understanding this area in higher education.

Identity and Midlife CareerAcademics :

Mid-careeristhelongestandinmostcases, themostproductive phaseofacademic life; itcoversasmuchas15–25yearsof one'sprofessionalcareer (Baldwinetal., 2005).Duringthisperiod,mostfacultiesteachamajorityoftheir students, produce the bulk of their scholarship and publications, and serve their institution, disciplines, andsocietyinavariety ofexpertandleadership roles.Furthermore,facultyinthemiddleyearsrepresentthelargestsegmentoftheacademic profession.Theyarguethatforthesereasonsalone,mid-careerdeservestheinterest and attention of academic leaders, policymakers, and higher education researchers (Baldwinetal.2005).Issuesofdefinition bedevilthemid-career phaseof academiclife. Thereareseveralwaystodistinguish"facultyinthemiddle"from their colleagues. Levinson (1986) tentatively segments middle adulthood into the years between 40 and 65 with distinctive sub-stages and developmental tasks fall- ing within this lengthy period. Cytynbaum and Crites (1982) define midlife faculty as "men and women in their late 30s to mid- or late-50s who are consciously or unconsciously confronting midlife tasks", such as revising career goals, seeking balancebetweenpersonalandprofessionallife.

Mixed Identities in HigherEducation :

Thecomplexityofidentityinhighereducationbyfocusing onthemixedidentitiesthathaveemergedwithinthesector (Whitchurch, 2008). He contendsthatduetotheblurrednatureofprofessionalism within higher education rather than drawing their authority solely from established rolesandstructures,professionalsinhighereducationincreasinglybuildtheircredibility on a personal basis, via lateral relationships with colleagues inside and out- side the university (Whitchurch, 2008). In particular, new forms of blended professional are emerging, withmixedbackgroundsandportfolios,dedicated toprogressingactivity comprisingelementsofbothprofessionalandacademicdomains.Asprofessionalstaffwho work across and beyond boundaries, they are re-defining the nature of their work (Whitchurch2008)andalsocontributetothechangesinworkingpatterns inhighereducation(Whitchurch,2009).Theyareexpectedtoworkwith a range of colleagues, internal and external to the university, and to develop what Whitchurch (2009) describes as "new forms of professional space, knowledge, relationships and legitimacies associated with broadly based institutional projects such as student life, business development and community partnership". She concludes that both academic and professional staff "are adopting more project-oriented approaches to their roles, and that portfolio-type careers are becoming morecommon"(Whitchurch2010). Thisalsoimpactsonthedevelopment of identity through the interface of multiple professional boundaries.

Professional Identity & Boundaries:

Over the last 20 years, governments internationally have fostered cooperation between industries and universities in order to cope with funding gaps and global competitive marketsbyintroducinganumberoflawsandprogrammesthatallow universitiestopatenttheirresearchandtoengageincollaborationswiththeprivate sectortowardsopportunitiesintheneweconomy(Slaughteretal.2004). Whenfacultymembersenteredthemarket directly through start-up companies, boundary negotiations and difficulties multiplied (Slaughter&Rhoades,2005).Theywrestledwithissuessurroundingthelossofcontroloftheirtechn ology; themannerinwhichcorporationsrepresentedthediscoveriestheyhadpatented; the use of graduate student labour; conflicts of interest and commitment; and what they considered they owed the public. Most of the respondents in that study have resolved to continue to work with industry. Mendoza (2007) also found that institutional administrators were actively working to make the boundaries between academic and industry more permeable.

InternationalizationandProfessionalization:

Intensiveinternationalco-operation in the field of teachers' education probably announces significantchanges.Doubtlessly,co-operation will considerably contribute to increasingly unifiedstandardsofthiseducationanditwill certainly consolidate the position of educational studies in the modern scientific community. One cannot imagine that these changes could lead to already surpassedforms, but only towards their improvement and to bringing them mutually closer, which canbeonlyfoundeduponrespectofdifferencesandnational

particularities. Next to, thus, the beginning of co-operationontheinter-universityandinter-national levels, by these projects, we might as well, in nearer future be able to view certain questions, as to the adaptation of teachers' education to our specific circumstances, in some newlight.

Internationalco-operation in (higher) education and everything else that goes by the term internationalization ofeducation influences the increase of bringingcloserorganizational structures and the curricula themselves and also standards of teachers' profession. Not only doctors and engineers, but also teachers, enter the unified labourmarket. Education becomes one of the central public servicesandevermoreadominantprofessional domain. The teaching profession is a unified profession with some key common characteristics for all teachers, from pre-primary to higher education. All teachers shouldhavehighqualificationsandin acknowledgement of this and of their important role in society, enjoy high status. With these characteristics should go substantial professional autonomy for the individual teacher, and participationonarepresentativebasisineducationaldecisionmakingaffectingteachers, withinthestructuresofthepublicservice. Issues as to the development of teachers' education and training, professionalization of teaching and internationalization of teaching in general, are not dealt only by specialized researchersandpolicy-makers;itisnotonlyaninterestingfact,theyalsobecomeissuesof trade unions concern themselves with. Teachers must be reflective and adopt a self-analyticapproachtotheirworkinglives, they have to develop qualities, knowledge and skills to meet the needs of pupils/students, and bythis,alsotomeetwidersocialandeconomicneeds,etc.

ProfessionalIdentityVs.Professionalism :

Professionalisminforms decisionmaking and judgment-based practice (Higgs,McAllister&Whiteford, 2009).Professionalismisinformed by professional identity.Professionalism comprisesmorethanrulesbecauseitisafluidconcept,highlydependentoncontext.Fish anddeCossart (2006)claimthat thecompetencies-basedapproachtounderstanding professionalismalludesto amaster ablepracticeand erodesthenotionofprofessionalism.A competenciesapproachtriesto fixandmakestaticwhatprofessionalismis ?Professionalism cannot bemasteredandcannotbeseenasbeingaccountableagainstaset of rules. Professionalism needs to be seen as a responsibilityto make judgments and decisionsinthe contextofpractice.Contemporaryprofessionalismmightneedto beunderpinnedbya professionalidentitythat isabout knowingwhat onestandsforand,closelylinkedtothis,is professionalismwhichis takingresponsibilityfor one'saction. Professional identity formationmeansbecomingaware of what mattersmost inpractice, what valuesandinterests shapedecisionmaking.Being,thinkingandactingasa professionalareunderpinnedby professionalism andasenseofprofessionalidentity.**References:**

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PERCEPTION TOWARDS INTERNET ADVERTISING: A STUDY WITH REFERENCE TO TWO DIFFERENT GROUPS

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ABSTRACT

As the technology has been upgraded, internet has become one of the best ways to advertise your product. Internet advertising is a route through which an organisation can communicate about its product/service and it can expand its scope, client base and achieve higher benefits. It is modern form of advertising to promote the products/service. In fact, internet advertising is a marketing strategy for promotion of product through which we can grab and target the audience. Through internet advertising, a marketer can deliver & target right message to the right person at the right place at the right time and at right cost. In this paper, we have thoroughly analysed the perception of two different groups from Ludhiana district towards internet advertising by using various statistical technique.

KEYWORDS- internet advertising, product, promote.

INTRODUCTION

Internet advertising or online advertising is a form of advertising which uses internet to deliver promotional marketing message to consumer. It has provided opportunity to a marketer to capture new potential market. It is one of the cheapest and flexible methods of advertising which covers a large area. Internet advertising is giving a tough challenge to traditional advertising. Internet advertising is a speedy move of digital marketing. Internet users get benefit by right, required and detailed information at anytime from anywhere over their gadgets. Internet advertising is a great platform for organisations to promote their product worldwide. It has enabled marketers to target specific customer segment, gather information, assess sales potential and ensure product exposure over the country/ world.

REVIEW OF LITERATURE

Abdul Azeem and Zia ulHaq (2012) their study provides with an insight based on which it is understood that the five factors which are entertainment, information credibility, economy and value are significant predictors of attitude towards internet advertising. This research provides fruitful findings to the managers that can be applied to integrate direct business with global customers.

Ebrahim Al-gamal and Dr. AbbokarSiddiq (2018) in their paper "Consumer Perception towards Online Advertising- a Study With Reference To Foreign Students in Mysore", conclude that there are various that will influence consumer attitude towards online advertising. They recommended that online advertising has to bring some surprise to be in success. By considering all the factors, the advertisers can make advertisement more effectively and persuade consumers.

RESEARCH OBJECTIVES

1. To measure the perception of different internet users towards internet advertising.
2. To identify the problems related to internet advertising and articulating suggestions for improvement.

RESEARCH HYPOTHESIS –

Hypothesis

H_0 – let us take null hypothesis that there is no significant difference between perceptions of two groups regarding internet advertising.

H_0 – let us take null hypothesis that there is no significant difference between two groups regarding blocking of advertisement over the internet.

SAMPLE SIZE

The sample size of this study is 25 respondents.

SOURCRES OF DATA

In this study primary data was collected through personal interview by using questionnaire. The questionnaire was filled from 25 internet users, from which 15 users are below 30 years and 10 users are above 30 years of age. The secondary data was collected from books, websites, research reports, journals and unpublished thesis.

TOOLS OF THE STUDY

In this study, Likert scale for analyzing the data, and chi square test was used to test the goodness of fit.

LIMITATION OF THE STUDY

1. This is subjected and prejudices of the respondents, hence 100% accuracy cannot be assured.
2. The research was carried out in a short span of time, where in the research could not widen the study.
3. The findings are based on the answers given by the employees, so any error or bias may be affect the validity of findings.

DATA ANALYSIS AND INTERPRETATON

Demographic profile
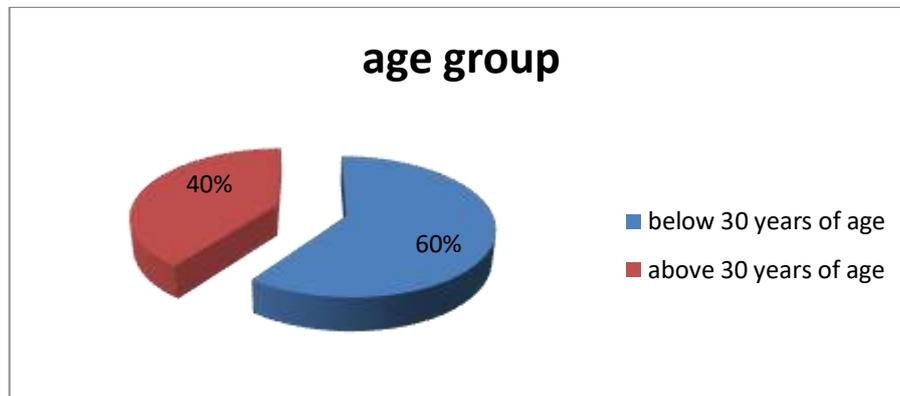
Interpretation- There is two age groups of internet users. 15 respondents are below 30 years of age whereas 10 respondents are above 30 years of age.

	under-graduate	graduate	post-graduate	higher than post graduate
education level	5	13	7	0
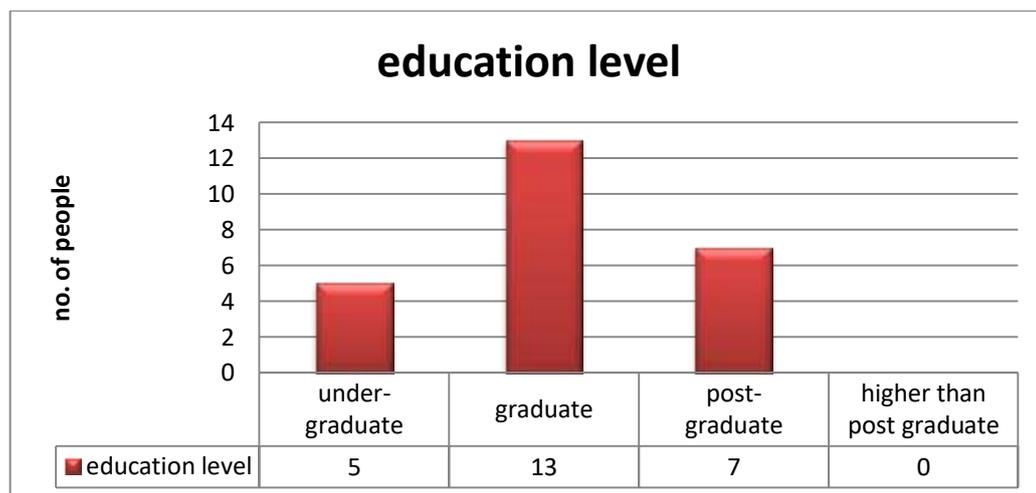
Interpretation- the above chart depicts the education level of respondents. 5 respondents are under-graduation, 13 respondents are graduated whereas 7 respondents are post graduated.
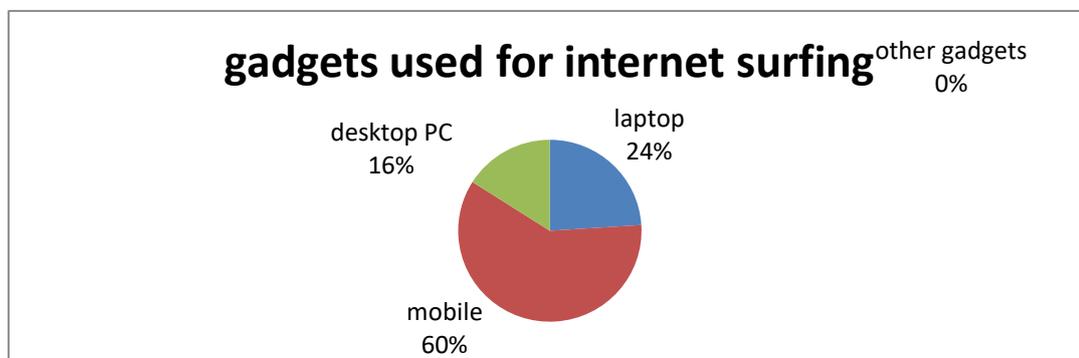
Interpretation – the above pie chart shows that what medium or gadget is used for internet surfing. 60% respondent use mobile gadget, 24% use laptop and 16% use desktop PC for internet surfing.

Perception of two groups towards advertisement over internet

H_0- let us take null hypothesis that there is no significant difference between the perceptions of two groups towards internet advertising.

Statements	X	Y
Internet Advertising is a good source of product/service information.	3.53	3.3
Internet Advertising is entertaining	3.26	3.1
Internet Advertising is suitable means of spending time.	3.06	3.0
Internet Advertising raises our standard of living.	3.66	3.1
Internet Advertising provides timely information.	3.73	3.1
Internet Advertising is enjoyable.	3.6	3.1
Internet Advertising promotes undesirable values in our society.	2.93	3.6
Internet Advertising results in better products for the public.	3.2	2.7
Internet Advertising is update source of information.	3.67	2.9
Overall, I like Advertising on the Internet.	3.8	3.1
Because of Internet advertising, people buy a lot of things that they do not really need.	2.86	3.4
Most Internet advertising insults the intelligence of the average consumer.	2.86	3.0
Internet advertising encourages people to buy something to impress others.	2.8	3.3
I would recommend Internet advertising to my friend when he or she needs to buy something.	3.26	2.4
I would consider Internet advertising before making purchase decision.	3.53	2.7

X= group below age of 30 years.

Y= group above age of 30 years.

$\underline{X}$ =3.317, $\underline{Y}$ = 3.053.

Applying t-test,

t= 2.149

D.f. = v= n_1 + n_2 =15 +15- 2 = 28,

For v= 28, $t_{0.05}$ for two tailed test, table value t= 2.048

Since, calculated value of 't' is more than table value, we reject the null hypothesis and conclude that is significant difference between the perception of two groups towards internet advertising.

Q: Which of the following purposes, currently you are using internet & do you like advertisement at that place?

	(a)Purpose of using Internet?		(b)If using then would you like advertisement at that place?	
	Yes	No	Yes	No
Reading or Sending E-mails	20	5	4	16
Buying or making reservation for travel	15	10	-	15
Shopping	22	3	7	15
Paying bills online	20	5	-	20
Surfing the internet for fun	14	11	5	9
Listening to music	21	4	3	18
Watching a video clip or movie online	21	4	-	21
Social Networking	25	-	10	15

Interpretation- From the above table, we can interpret that no. Of respondents is using internet for various purpose, but among those users most of the users do not like advertisement at that place. For example, 20 respondents are using internet for paying bills and no respondent like advertisement at that place.

Hypothesis; H$_0$- let us take null hypothesis that there is no significant difference between two groups regarding blocking of advertisement over the internet.

BLOCKED ADVERTISEMENT	X	Y	Row total
YES	10	8	**18**
NO	5	2	**7**
Column Total	**15**	**10**	**25**

X= group below age of 30 years.

Y= group above age of 30 years

$\varkappa^2 = \sum (O - E)^2 / E$

$\varkappa^2 = 0.527$,

for d.f. = (r-1)(c-1)= 1, at 5% significance value

$\varkappa^2_{0.05} = 3.841$

Since, the calculated value of $\varkappa^2$ is less than table value of $\varkappa^2$, the null hypothesis is accepted, i.e. the two groups have same opinion in blocking the advertisement over the internet.

FINDINGS AND SUGGESTIONS -

- The findings of this study indicate that Y group have neutral perception towards internet advertising while X group have towards agreed perception that they like advertisement.
- There is significant difference between the perception of two groups towards internet advertising.
- The users have same opinion regarding blocking of advertisement while surfing internet.
- Most of the users do not like advertisement while they are using internet for any purpose.
- Youngsters get attracted and get new information about new products in the market.
- Various factors are to be considered while giving advertisement over the internet to influence users.

SUGGESTIONS-

- On the basis of the findings from the study, it is suggested that Internet users should not be targeted when they are using internet for sending or reading e-mail, for listening music, for paying bill online or surfing internet for any of their important work.
- Repetition of ads should be avoided.

CONCLUSION-

The usage of internet is increasing as it becomes part in one's life. Therefore, it encourage marketer/advertising agency to advertise their product over the internet. But before doing advertising, they should analyse the behaviour of internet users.

The concern of this study relates to perception of internet users towards internet advertising. As a result, age group of below 30 and above 30 i.e. group X and group Y have different perceptions towards internet advertising. And they do not like advertisement while surfing

internet and block advertisement. Even though customer does not react immediately after watching online advertising, but they have somewhere impact of that advertising in their minds.

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PARTIALLY SINGULARLY PERTURBED LINEAR REACTION-DIFFUSION SYSTEM WITH DISCONTINUOUS SOURCE TERMS

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Abstract

A singularly perturbed linear system of second order ordinary differential equations of reaction-diffusion type with discontinuous source terms is considered. A small positive parameter multiplies the leading term of each equation. These singular perturbation parameters are assumed to be distinct. The components of the solution exhibit overlapping boundary and interior layers. A numerical method is constructed that uses a classical finite difference scheme on a piecewise uniform Shishkin mesh. It is proved that the numerical approximations obtained by this method are essentially first order convergent uniformly with respect to all of the perturbation parameters. Numerical illustrations are presented in support of the theory.

Keywords: Singular perturbation problems, system of differential equations, reaction - diffusion equations, discontinuous source terms, overlapping boundary and interior layers, classical finite difference scheme, Shishkin mesh, parameter - uniform convergence. [1]

Introduction

A partially singularly perturbed linear system of *n*-second order ordinary differential equations of reaction - diffusion type with discontinuous source terms is considered. The leading terms of *m* equations are multiplied by small positive singular perturbation parameters which are assumed to be distinct, where *m < n*. The remaining *n-m* equations are regularly perturbed or not singularly perturbed. The solutions of the *m* equations, that are multiplied by the distinct singular perturbation parameters, exhibit overlapping boundary and interior layers and the remaining *n-m* solutions have less-severe overlapping boundary and interior layers. A numerical method is constructed that uses a classical finite difference scheme on a piecewise uniform Shishkin mesh. It is provided that the numerical approximations obtained by this method are essentially first order convergent uniformly with respect to all of the perturbation parameters. A numerical illustrations is given to support the theoretical results.

A partially singularly perturbed linear system of second order ordinary differential equations of reaction-diffusion type with discontinuous source terms is considered in the interval $\Omega = \{x : 0 < x < 1\}$. A single discontinuity in the source terms is assumed to occur at a point $d \in \Omega$. The following notations

are introduced: $\Omega^- = (0,d)$, $\overline{\Omega^-} = [0,d]$, $\Omega^+ = (d,1)$, $\overline{\Omega^+} = [d,1]$. The jump at d in any function $\omega\sim$ is denoted by $[\omega\sim](d) = \omega\sim(d+) - \omega\sim(d-)$. The corresponding self-adjoint two point boundary value problem is

$-E\sim u^{00}(x) + A(x)\sim u(x) = f\hat{}(x)$ on $\Omega^- \cup \Omega^+$, $\sim u$ given on Γ and $f\hat{}(d-) 6= f\hat{}(d+)$

(1)

where $\Gamma = \{0,1\}$, $\overline{\Omega} = \Omega \cup \Gamma$.

Here, for all $x \in \Omega$, $\sim u(x) = (u_1(x), u_2(x), ..., u_n(x))^T$,

$$E = \begin{pmatrix} \varepsilon_1 & 0 & \cdots & 0 \\ 0 & \varepsilon_2 & \cdots & 0 \\ \vdots & \vdots & & \vdots \\ 0 & 0 & \cdots & \varepsilon_n \end{pmatrix}, \quad A(x) = \begin{pmatrix} a_{11}(x) & a_{12}(x) & \cdots & a_{1n}(x) \\ a_{21}(x) & a_{22}(x) & \cdots & a_{2n}(x) \\ \vdots & \vdots & & \vdots \\ a_{n1}(x) & a_{n2}(x) & \cdots & a_{nn}(x) \end{pmatrix}$$

and , for all $x \in \Omega^- \cup \Omega^+$, $f\hat{}(x) = (f_1(x), f_2(x), ..., f_n(x))^T$.

The problem can also be written in the operator form

$L\sim u\tilde{} = f\hat{}$ on $\Omega^- \cup \Omega^+$, $\sim u$ given on Γ and $f\hat{}(d-) 6= f\hat{}(d+)$ where the operator $L\sim$ is defined by

$$\vec{L} = -ED^2 + A, \quad D^2 = \frac{d^2}{dx^2}.$$

Assumption 1.1 *The singular perturbation parameters ε_i, $i = 1,...,m$, are assumed to be distinct and, for convenience, the ordering $\varepsilon_1 < \cdots < \varepsilon_m < \varepsilon_{m+1} = ... \varepsilon_n = 1$ is assumed.*

Assumption 1.2 *The components* $a_{ij}(x)$ *of $A(x)$ satisfy the inequalities*

$$(i) \quad a_{ii}(x) > \sum_{\substack{j \neq i \\ j=1}}^{n} |a_{ij}(x)| \ for \ \left. \begin{array}{l} i = 1,\ldots,n \end{array} \right\} \ \forall \, x \in \overline{\Omega}$$

. (2)

$$(ii) \quad a_{ij}(x) \leq 0 \quad for \ i \, 6= j \ and \ i,j = 1,...,n$$

Assumption 1.3 *The positive number α satisfies the inequality*

$$0 < \alpha < \min_{\substack{x \in \overline{\Omega} \\ 1 \leq i \leq n}} \left(\sum_{j=1}^{n} a_{ij}(x) \right).$$

(3)

Assumption 1.4 *The singular perturbation parameters ε_i, $i = 1,...,m$, are assumed to satisfy*

$$\sqrt{\varepsilon_m} \le \frac{\sqrt{\alpha}}{6}, \tag{4}$$

which ensures that the solution domain contains all the layers.

Assumption 1.5

The functions $a_{ij} \in C^{(2)}(\overline{\Omega})$, $f_i \in C^{(2)}(\Omega^- \cup \Omega^+)$ for $i,j = 1,...,n$. (5)

From Assumption 1.1, there are atmost m singularly perturbed equations in (1)

and from Assumption 1.5, Problem (1) has a solution $\sim u \in C(\overline{\Omega}) \cap C^{(1)}(\Omega) \cap C(4)(\Omega^- \cup \Omega^+)$.

Let $u\sim_0(x)$ be the solution of the reduced problem given by

$\sum\limits_{j=1}^{n}$

$a_{ij}(x)u_{0,j}(x) = f_i(x), \quad \text{for } i = 1,...,m, j=1$

$$\left. \begin{array}{l} -u_{0,i}''(x) + \sum\limits_{j=1}^{n} a_{ij}(x)u_{0,j}(x) = f_i(x), \end{array} \right\} \forall\, i = m+1,\ldots,n. \tag{6}$$

$$\square\square\square$$

$$u0,i = ui \text{ on } \Gamma$$

where $x \in (\Omega^- \cup \Omega^+)$

Remark 1.1 *Because $f\check{}$ is discontinuous at d, the solution $\sim u(x)$ does not necessarily have a continuous second order derivative at the point d. Thus $\sim u(x) \in/ C^2(\Omega)$, but the first derivative of the solution exists and is continuous on Ω.*

Analytical results

Theorem 2.1 *Problem (1) has a solution $\sim u \in C(\overline{\Omega}) \cap C^{(1)}(\Omega) \cap C^{(4)}(\Omega^- \cup \Omega^+)$.*

Proof: The proof is by construction. Let $\sim y_1$, $\sim y_2$ be particular solutions of the differential equations

$$-E\vec{y}_1''(x) + A(x)\vec{y}_1(x) = \vec{f}(x), \ x \in \Omega^-$$

and

$$-E\vec{y}_2''(x) + A(x)\vec{y}_2(x) = \vec{f}(x), \ x \in \Omega^+.$$

Consider the function

$$\vec{y}(x) = \begin{cases} \vec{y}_1(x) + (\vec{u}(0) - \vec{y}_1(0)) \cdot \vec{\phi}_1(x) + \vec{A}_1 \cdot \vec{\phi}_2(x), & x \in \Omega^- \\ \vec{y}_2(x) + \vec{B}_1 \cdot \vec{\phi}_1(x) + (\vec{u}(1) - \vec{y}_2(1)) \cdot \vec{\phi}_2(x), & x \in \Omega^+ \end{cases} \tag{7}$$

where $\vec{\phi}_1(x)$, $\vec{\phi}_2(x)$ are the solutions of the boundary value problems

$$-E\varphi^{\sim 00}{}_1(x) + A(x)\varphi^{\sim}{}_1(x) = \sim 0, \ x \in \Omega, \ \varphi^{\sim}{}_1(0) = \sim 1, \ \varphi^{\sim}{}_1(1) = \sim 0$$

$$-E\varphi^{\sim 00}{}_2(x) + A(x)\varphi^{\sim}{}_2(x) = \sim 0, \ x \in \Omega, \ \varphi^{\sim}{}_2(0) = \sim 0, \ \varphi^{\sim}{}_2(1) = \sim 1 \text{ and } A_1, B_1 \text{ are}$$

constant vectors to be chosen so that $\sim y \in C^{(1)}(\Omega)$. In fact, the constants $A_1 = \text{diag}($ $\vec{\hat{a}}_1)$, $\vec{\hat{a}}_1 = (\hat{a}_{1,1}, \hat{a}_{1,2}, \ldots, \hat{a}_{1,n})$ and $B_1 = \text{diag}(\vec{\hat{b}}_1)$, $\vec{\hat{b}}_1 = $ $(\hat{b}_{1,1}, \hat{b}_{1,2}, \ldots, \hat{b}_{1,n})$ are found from the system of two equations in A_1 and B_1 derived from the conditions

$$\sim y(d-) = \sim y(d+) \text{ and } \sim y^0(d-) = \sim y^0(d+).$$

It is to be noted that on the open interval $(0,1), 0 < \varphi^{\sim}{}_1, \varphi^{\sim}{}_2 < 1$. Thus $\varphi^{\sim}{}_1, \varphi^{\sim}{}_2$ cannot have an internal maximum or minimum and also

$$\vec{\phi}_1 < \vec{0}, \ \vec{\phi}_2 > \vec{0}, \ x \in (0,1).$$

Hence $\vec{\phi}_2(d)\vec{\phi}_1(d) - \vec{\phi}_2(d)\vec{\phi}_1(d) > \vec{0}$ ensures the existence of A_1 and B_1

The operator $L\sim$ satisfies the following maximum principle.

Lemma 2.1 *Let conditions (2) and (3) hold. Let $\vec{\psi}$ be any vector-valued function in the domain of $L^{\sim}$ such that $\psi^{\sim} \geq \sim 0$ on Γ, $L\psi \geq \sim 0$ on $\Omega^- \cup \Omega^+$*

and $[\psi^{\sim}](d) = \sim 0$, $[\psi^{\sim 0}](d) \leq \sim 0$, then $\psi^{\sim} \geq \sim 0$ on Ω.

Proof: Let i^*, x^* be such that $\psi_{i*}(x^*) = \min\limits_{i,x}\psi_i(x)$.   If $\psi_{i*}(x^*) \geq 0$, there

is nothing to prove. Suppose therefore that $\psi_{i*}(x^*) < 0$, then the proof is completed by showing that this leads to a contradiction. With the above assumption on the boundary values, either $x^* \in \Omega^- \cup \Omega^+$ or $x^* = d$. In the first case $\psi''_{i*}(x^*) \geq 0$ and so

$$(\vec{L}\vec{\psi})_{i*}(x^*) = -\varepsilon_{i*}\psi''_{i*}(x^*) + \sum_{j=1}^{n} a_{i*,j}(x^*)\psi_j(x^*) < 0,$$

which is false. In the second case the argument depends on whether or not ψ_{i*} is differentiable at d. If $\psi^0_{i*}(d)$ does not exist, then $[\psi^0_{i*}](d) = 0$6 and because $\psi^0_{i*}(d-) \leq 0$, $\psi^0_{i*}(d+) \geq 0$ it is clear that $[\psi^0_{i*}](d) > 0$, which is a contradiction. On the other hand, if ψ_{i*} be differentiable at d, then $\psi^0_{i*}(d) = 0$ and $\psi_{i*} \in C^{(1)}(\Omega)$. Recalling that $\psi_{i*}(d) < 0$ it follows that there exists a neighbourhood $N_h = (d-h,d)$ such that $\psi_{i*}(x) < 0$ for $x \in N_h$. Now choose a point $x_1$6$= d$, $x_1 \in N_h$ such that $\psi_{i*}(x_1) > \psi_{i*}(d)$. It follows from the mean value theorem that, for some $x_2 \in N_h$,

$$\psi'_{i*}(x_2) = \frac{\psi_{i*}(d) - \psi_{i*}(x_1)}{d - x_1} < 0$$

and also that for some $x_3 \in N_h$,

$$\psi_{i*}''(x_3) = \frac{\psi_{i*}'(d) - \psi_{i*}'(x_2)}{d - x_2} = \frac{-\psi_{i*}'(x_2)}{d - x_2} > 0.$$

Note also that $\psi_{i*}(x_3) < 0$, since $x_3 \in N_h$. Thus

$$(\vec{L}\vec{\psi})_{i*}(x_3) = -\varepsilon_{i*}\psi_{i*}''(x_3) + \sum_{j=1}^{n} a_{i*,j}(x_3)\psi_j(x_3) < 0,$$

which is the required contradiction.

Remark 2.1 *Let $\tilde{A}(x)$ be any principal sub-matrix of $A(x)$ and $\tilde{L}$, the corresponding operator. To see that any $\tilde{L}$ satisfies the same maximum principle as $L\sim$, it suffices to observe that the elements of $\tilde{A}(x)$ satisfy* a fortiori *the same inequalities as those of $A(x)$.*

As a consequence of the maximum principle, there is established the stability result for the problem (1) in the following.

Lemma 2.2 *Let $A(x)$ satisfy (2) and (3). If $\tilde{\psi}$ is any vector-valued function in*

the domain of L,$\sim$then for each i, $1 \leq i \leq n$ and $x \in \Omega$,

$$|\psi_i(x)| \leq \max\left\{\|\vec{\psi}\|_\Gamma, \frac{1}{\alpha}\|\vec{f}\|_{\Omega^- \cup \Omega^+}\right\}.$$

Proof: The following two functions are defined:

$$\vec{\theta}^\pm(x) = \max\left\{\|\vec{\psi}\|_\Gamma, \frac{1}{\alpha}\|\vec{f}\|_{\Omega^- \cup \Omega^+}\right\}\vec{e} \pm \vec{\psi}(x)$$

where $\sim e = (1, ..., 1)^T$ is the unit column $n-$vector. Using the properties of A, it is not hard to verify that $\theta^\pm \geq \sim 0$ on Γ and $\tilde{L}\theta^\pm \geq \sim 0$ on $\Omega^- \cup \Omega^+$.

Furthermore, since $\tilde{\psi} \in C^{(1)}(\Omega)$,

$$[\vec{\theta}^\pm](d) = \pm[\vec{\psi}](d) = \vec{0} \text{ and } [\theta^{\pm,0}](d) = \pm[\psi^0](d) = \sim 0.$$

It follows from Lemma 2.1 that $\theta^\pm \geq \sim 0$ on Ω.

Standard estimates of the exact solution and its derivatives are contained in the following lemma.

Lemma 2.3 *Let conditions (2) and (3) hold and let $\sim u$ be the solution of (1). Then, for all $x \in \Omega^- \cup \Omega^+$ and each $i = 1, ..., n$,*

$$|u_i(x)| \leq C(\|\vec{u}\|_\Gamma + \|\vec{f}\|_{\Omega^- \cup \Omega^+}),$$

$$|u_i^{(k)}(x)| \leq C\varepsilon_i^{-\frac{k}{2}}(\|\vec{u}\| + \|\vec{f}\|_{\Omega^- \cup \Omega^+}), \text{ for } k = 1,2$$

and

$$|u_i^{(k)}(x)| \leq C\varepsilon_1^{-\frac{(k-2)}{2}}\varepsilon_i^{-1}(\|\vec{u}\|+\|\vec{f}\|_{\Omega^- \cup \Omega^+}+\varepsilon_1^{\frac{(k-2)}{2}}\|\vec{f}^{(k-2)}\|_{\Omega^- \cup \Omega^+}),\ for\ k=3,4.$$

Proof: The bound on ~u is an immediate consequence of Lemma 2.1 and the differential equation (1).

Rewriting the differential equation (1) gives

$$\vec{u}'' = E^{-1}(A\vec{u} - \vec{f}_{\Omega^- \cup \Omega^+}) \tag{8}$$

and it is not hard to see that the bounds on $u^{00}{}_i$ follow from (8).

$^0(x)$, for $i = 1,...,m$, an interval $N = [a, a + \sqrt{\varepsilon_i}] \subset [0, d-] \cup$

To bound u_i $\sqrt{}$

$[d+, 1]$is considered, where$\sqrt{}$ $a \geq 0,\ 0 <$ $\varepsilon_i \leq (d-) - a$ in $[0, d-]$ and

$a \geq d+,\ 0 < \varepsilon_i \leq 1 - a$ in $[d+, 1]$. Then, by the mean value theorem, for some $y \in N$,

$$u_i'(y) = \frac{u_i(a + \sqrt{\varepsilon_i}) - u_i(a)}{\sqrt{\varepsilon_i}}$$

and it follows that $|u_i'(y)| \leq 2\varepsilon_i^{-\frac{1}{2}}\|u_i\|.$

Now, for any $x \in N$,

$$u_i'(x) = u_i'(y) + \int_y^x u_i''(s)ds = u_i'(y) + \varepsilon_i^{-1}\int_y^x \left(-f_i(s) + \sum_{j=1}^n a_{ij}(s)u_j(s)\right)ds$$

and so

$$|u_i'(x)| \leq |u_i'(y)| + C\varepsilon_i^{-1}(\|f_i\|_{\Omega^- \cup \Omega^+} + \|\vec{u}\|)\int_y^x ds \leq C\varepsilon_i^{-\frac{1}{2}}(\|f_i\|_{\Omega^- \cup \Omega^+} + \|\vec{u}\|)$$

from which the required bound follows for $i = 1,...,m$.

To bound $u^0{}_i(x)$, for $i = m + 1,...,n$, an interval $N = [a, a + t] \subset [0, d-] \cup [d+, 1]$ is considered, where $a \geq 0,\ 0 < t \leq (d-) - a$ in $[0, d-]$ and $a \geq d+,\ 0 < t \leq 1 - a$ in $[d+, 1]$. Then, by the mean value theorem, for some $y \in N$,

$$u_i'(y) = \frac{u_i(a + t) - u_i(a)}{t}$$

and it follows that

$$|u_i'(y)| \leq \frac{2}{t}\|u_i\|.$$

Now, for any $x \in N$,

$$u_i'(x) = u_i'(y) + \int_y^x u_i''(s)ds = u_i'(y) + \varepsilon_i^{-1} \int_y^x \left(-f_i(s) + \sum_{j=1}^n a_{ij}(s)u_j(s)\right)ds$$

and so for $i = m + 1,\dots,n$,

$$|u_i'(x)| \le |u_i'(y)| + C(\|f_i\|_{\Omega^- \cup \Omega^+} + \|\vec{u}\|) \int_y^x ds \le \frac{2}{t}\|u_i\| \le Ct(\|f_i\|_{\Omega^- \cup \Omega^+} + \|\vec{u}\|)$$

from which the required bound follows for $i = m + 1,\dots,n$.

Differentiating (8) once and twice give $\vec{u}^{(3)} = E^{-1}(A\vec{u}' + A'\vec{u} - \vec{f}'_{\Omega^- \cup \Omega^+})$,

$\vec{u}^{(4)} = E^{-1}(A\vec{u}'' + 2A'\vec{u}' + A''\vec{u} - f''_{\Omega^- \cup \Omega^+})$ and the bounds on $u_i^{(3)}$, $u_i^{(4)}$

follow from those on $u^0{}_i$ and $u^{00}{}_i$.

The Shishkin decomposition of the solution $\sim u$ of (1) is $\sim u = \sim v + w\sim$ where the smooth component $\sim v$ is the solution of

$$L\sim v\sim = f\sim \text{ on } (0,d-), \quad \vec{v}(0) = \vec{u}_0(0), \quad \vec{v}(d-) = (A(d))^{-1}\vec{f}(d-) \qquad (9)$$

and

$$L\sim v\sim = f\sim \text{ on } (d+,1), \quad \sim v(d+) = (A(d))^{-1}f\sim(d+), \quad \sim v(1) = \sim u_0(1) \quad (10)$$ and the singular
component $w\sim$ is the solution of

$Lw\sim\sim = \sim 0$ on $\Omega^- \cup \Omega^+$ with $w\sim = \sim u - \sim v$ on Γ, $[w\sim](d) = -[\sim v](d)$, $[w\sim{}^0](d) = -[\sim v{}^0](d)$.

(11) For convenience,
the singular   component is given a further decomposition

$$(12) \qquad \vec{w}(x) = \begin{cases} \vec{w}_1^L(x) + \vec{w}_1^R(x) & \text{on } \Omega^- \\ \vec{w}_2^L(x) + \vec{w}_2^R(x) & \text{on } \Omega^+ \end{cases}$$

where

$w\sim_1{}^L(x) = w\sim(0)\psi\sim_1(x), \quad w\sim_1{}^R(x) = A_2\psi\sim_2(x), \quad w\sim_2{}^L(x) = B_2\psi\sim_3(x), \quad w\sim_2{}^R(x) = w\sim(1)\psi\sim_4(x)$

(13)

with

$$-E\vec{\psi}_1''(x) + A(x)\vec{\psi}_1(x) = \vec{0} \text{ on } \Omega^-, \quad \vec{\psi}_1(0) = \vec{1}, \quad \vec{\psi}_1(d) = \vec{0} \qquad (14)$$

$$-E\vec{\psi}_2''(x) + A(x)\vec{\psi}_2(x) = \vec{0} \text{ on } \Omega^-, \quad \vec{\psi}_2(0) = \vec{0}, \quad \vec{\psi}_2(d) = \vec{1} \qquad (15)$$

$$-E\vec{\psi}_3''(x) + A(x)\vec{\psi}_3(x) = \vec{0} \text{ on } \Omega^+, \quad \vec{\psi}_3(d) = \vec{1}, \quad \vec{\psi}_3(1) = \vec{0} \qquad (16)$$

$$-E\vec{\psi}_4''(x) + A(x)\vec{\psi}_4(x) = \vec{0} \text{ on } \Omega^+, \quad \vec{\psi}_4(d) = \vec{0}, \quad \vec{\psi}_4(1) = \vec{1}. \qquad (17)$$

Here, A_2 and B_2 are constants to be chosen in such a way that the jump conditions at $x = d$ are satisfied. Further, $A_2 = \mathrm{diag}(\tilde{a}\hat{}_2)$, $\tilde{a}\hat{}_2 = (\hat{a}_{2,1}, \hat{a}_{2,2}, ..., \hat{a}_{2,n})$

$\sim\hat{b}_2)$, $\tilde{}\hat{b}_2 = (\hat{b}_{2,1}, \hat{b}_{2,2}, ..., \hat{b}_{2,n})$ are independent of x and $\sim\varepsilon$.

and $B_2 = \mathrm{diag}($

Bounds on the smooth component and its derivatives are contained in the following lemma.

Lemma 2.4 *Let conditions* (2) *and* (3) *hold. Then the smooth component $\sim v$ and its derivatives satisfy, for all $x \in \Omega^- \cup \Omega^+$ and $i = 1, ..., n$,*

$$|v_i^{(k)}(x)| \leq C \text{ for } k = 0, 1, 2$$

and $|v_i^{(k)}(x)| \leq C(1 + \varepsilon_i^{1-\frac{k}{2}})$ *for $k = 3, 4$.*

Proof: The arguments used to bound $\sim v$ and its derivatives in the interval $[0, d-]$ are given below. Analogous arguments can also be used for the interval $[d+, 1]$.

The bound on $\sim v$ is an immediate consequence of the defining equation (9) for $\sim v$ and Lemma 2.3.

The bounds on $\sim v\,^0$ and $\sim v\,^{00}$ are found as follows. Differentiating twice the equation (9) for $\sim v$, it is not hard to see that $\sim v\,^{00}$ satisfies

$$L\sim\tilde{v}\,^{00} = \sim g \text{ where } \sim g = \tilde{f}\,^{00} - A^{00}\sim v - 2A^0\sim v\,^0. \qquad (18)$$

Also the defining equation (9) for $\sim v$ yields

$$v\sim_i^{00}(0) = \sim 0, \ v\sim_i^{00}(d-) = \sim 0 \text{ for } i = 1,...,m \text{ and } v\sim_i^{00}(0) = s_i^0, \sim v\,^{00}(d-) = s_i^1 \qquad (19)$$

for $i = m + 1, ..., n$ where s_i^0 and s_i^1 are definite constants for each $i = m + 1, ..., n$. Applying Lemma 2.3 to $\sim v\,^{00}$ then gives

$$\|\sim v\,00\|[0, d-] \leq C(1 + \|\sim v\,0\|[0, d-]). \qquad (20)$$

Choosing i^*, x^* such that $1 \leq i^* \leq n$, $x^* \in [0, d-]$ and

$$v'_{i^*}(x^*) = \|v^{i'}\|_{[0, d-]} \qquad (21)$$

and using a Taylor expansion it follows that, for any $y \in [0, (d-) - x^*]$ and some η, $x^* < \eta < x^* + y$,

$$v_{i^*}(x^* + y) = v_{i^*}(x^*) + y\,v'_{i^*}(x^*) + \frac{y^2}{2}\,v''_{i^*}(\eta). \qquad (22)$$

Rearranging (22) yields

$$v'_{i^*}(x^*) = \frac{v_{i^*}(x^* + y) - v_{i^*}(x^*)}{y} - \frac{y}{2}v''_{i^*}(\eta) \qquad (23)$$

and so, from (21) and (23),

$$\|\vec{v}'\|_{[0,d-]} \le \frac{2}{y}\|\vec{v}\|_{[0,d-]} + \frac{y}{2}\|\vec{v}''\|_{[0,d-]}. \tag{24}$$

Using (24), (20) and the bound on ~v yields

$$(1 - \frac{Cy}{2})\|\vec{v}''\|_{[0,d-]} \le C(1 + \frac{2}{y}). \tag{25}$$

Choosing $y = \min(\frac{1}{c}, (d-) - x^*)$ (25) then gives $\|\sim v^{00}\|_{[0,d-]} \le C$ and (24) gives $\|\sim v^{0}\|_{[0,d-]} \le C$ as required.

The bounds on ~$v^{(3)}$, ~$v^{(4)}$ are obtained by similar arguments.

Improved estimates

The layer functions $B_{1,i}^{L}, \ B_{1,i}^{R}, \ B_{2,i}^{L}, \ B_{2,i}^{R}, B_{1,i}, \ B_{2,i}, \ i = 1, \ldots, m,$ associated with the solution ~u, are defined by

$$B_{1,i}^{L}(x) = e^{-x\sqrt{\alpha/}\sqrt{\varepsilon_i}}, B_{1,i}^{R}(x) = e^{-(d-x)\sqrt{\alpha/}\sqrt{\varepsilon_i}}, B_{1,i}(x) = B_{1,i}^{L}(x) + B_{1,i}^{R}(x) \quad \text{on } \Omega^-,$$

$$B_{2,i}^{L}(x) = e^{-(x-d)\sqrt{\alpha/}\sqrt{\varepsilon_i}}, B_{2,i}^{R}(x) = e^{-(1-x)\sqrt{\alpha/}\sqrt{\varepsilon_i}}, B_{2,i}(x) = B_{2,i}^{L}(x) + B_{2,i}^{R}(x) \quad \text{on } \Omega^+.$$

The following elementary properties of the layer functions $B_{1,i}^{L}(x), \ B_{1,i}^{R}(x)$ for all $1 \le i < j \le m$ and $0 \le x < y \le d$, should be noted:

(a) $B_{1,i}^{L}(x) < B_{1,j}^{L}(x), \ B_{1,i}^{L}(x) > B_{1,i}^{L}(y), \ 0 < B_{1,i}^{L}(x) \le 1.$

(b) $B_{1,i}^{R}(x) < B_{1,j}^{R}(x), \ B_{1,i}^{R}(x) < B_{1,i}^{R}(y), \ 0 < B_{1,i}^{R}(x) \le 1.$

(c) $B_{1,i}^{L}(x)$ is monotone decreasing for increasing $x \in [0, \frac{d}{2}]$.

(d) $B_{1,i}^{R}(x)$ is monotone increasing for increasing $x \in [\frac{d}{2}, d]$.

(e) $B_{1,i}(x) \le 2B_{1,i}^{L}(x)$ for $x \in [0, \frac{d}{2}]$ and $B_{1,i}(x) \le 2B_{1,i}^{R}(x)$ for $x \in [\frac{d}{2}, d]$.

Similar properties for $B_{2,i}^{L}, \ B_{2,i}^{R},$ for all $1 \le i < j \le m$ and $d \le x < y \le 1$ hold good.

If $x_{i,j}^{(s)}$ and $1 - x_{i,j}^{(s)}$ are those points of the boundary layers, then $d - x_{i,j}^{(s)}$ and $d + x_{i,j}^{(s)}$ play the same role in case of the interior layers. The properties of these points are stated below.

Definition 3.1 *For* $B_{1,i}^{L}, \ B_{1,j}^{L},$ *each i,j,* $1 \le i \ne j \le m$ *and each s,s* $> 0,$ *the point* $x_{i,j}^{(s)}$ *is defined by*

$$\frac{B_{1,i}^{L}(x_{i,j}^{(s)})}{\varepsilon_i^s} = \frac{B_{1,j}^{L}(x_{i,j}^{(s)})}{\varepsilon_j^s}. \tag{26}$$

It is remarked that

$$\frac{B_{1,i}^R(d - x_{i,j}^{(s)})}{\varepsilon_i^s} = \frac{B_{1,j}^R(d - x_{i,j}^{(s)})}{\varepsilon_j^s}, \quad \frac{B_{2,i}^L(d + x_{i,j}^{(s)})}{\varepsilon_i^s} = \frac{B_{2,j}^L(d + x_{i,j}^{(s)})}{\varepsilon_j^s},$$

$$\tag{27}$$

$$\frac{B_{2,i}^R(1 - x_{i,j}^{(s)})}{\varepsilon_i^s} = \frac{B_{2,j}^R(1 - x_{i,j}^{(s)})}{\varepsilon_j^s}.$$

In the next lemma, the existence and uniqueness of the points $x_{i,j}^{(s)}$ are shown. Various properties are also established.

Lemma 3.1 *For all i,j such that $1 \leq i < j \leq n$ and $0 < s \leq 3/2$, the points $x_{i,j}^{(s)}$ exist, are uniquely defined and satisfy the following inequalities*

$$\frac{B_{1,i}^L(x)}{\varepsilon_i^s} > \frac{B_{1,j}^L(x)}{\varepsilon_j^s}, \quad x \in [0, x_{i,j}^{(s)}), \quad \frac{B_{1,i}^L(x)}{\varepsilon_i^s} < \frac{B_{1,j}^L(x)}{\varepsilon_j^s}, \quad x \in (x_{i,j}^{(s)}, d]. \tag{28}$$

Moreover

$$x_{i,j}^{(s)} < x_{i+1,j}^{(s)}, \; if \; i+1 < j \; and \; x_{i,j}^{(s)} < x_{i,j+1}^{(s)}, \; if \; i < j. \tag{29}$$

Also

$$x_{i,j}^{(s)} < 2s\frac{\sqrt{\varepsilon_j}}{\sqrt{\alpha}} \; and \; x_{i,j}^{(s)} \in (0, \frac{d}{2}) \; if \; i < j. \tag{30}$$

Analogous results hold for $B_{1,i}^R$, $B_{2,i}^L$ *and* $B_{2,i}^R$ *and the points* $d - x_{i,j}^{(s)}$, $d + x_{i,j}^{(s)}$, $1 - x_{i,j}^{(s)}$.

Proof: The proof is similar to the proof of Lemma 2.3.1 in [].

Bounds on the singular component *w~* and *~u* and its derivatives are contained in

Lemma 3.2 *Let A(x) satisfy (2) and (3). Then there exists a constant C, such that, for i = 1, ..., m and $x \in \Omega^-$,*

$$\left| w_{1,i}^L(x) \right| \leq C_1 B_{1,m}^L(x) + C_2 \varepsilon_m(d - B_{1,m}^L(x)),$$

$$\left| w_{1,i}^{L,\prime}(x) \right| \leq C \sum_{q=i}^m \frac{B_{1,q}^L(x)}{\sqrt{\varepsilon_q}}, \qquad \left| w_{1,i}^{L,\prime\prime}(x) \right| \leq C \sum_{q=i}^m \frac{B_{1,q}^L(x)}{\varepsilon_q},$$

$$\left| w_{1,i}^{L,(3)}(x) \right| \leq C \sum_{q=1}^m \frac{B_{1,q}^L(x)}{\varepsilon_q^{3/2}}, \qquad \left| \varepsilon_i w_{1,i}^{L,(4)}(x) \right| \leq C \sum_{q=1}^m \frac{B_{1,q}^L(x)}{\varepsilon_q}$$

and for i=m+1,...,n

$$\left| w_{1,i}^L(x) \right| \leq C_2 \varepsilon_m(d - B_{1,m}^L(x)),$$

$$\left|w_{1,i}^{L,(k)}(x)\right| \le C_1 B_{1,m}^L(x) + C_2\varepsilon_m(d - B_{1,m}^L(x)), \quad k = 1,2$$

$$\left|w_{1,i}^{L,(k)}(x)\right| \le C\sum_{q=1}^{m} \frac{B_{1,q}^L(x)}{\varepsilon_q^{\frac{(k-2)}{2}}}, \quad k = 3,4.$$

,

Analogous results hold for $w_{1,i}^{R}$, $w_{2,i}^{L}$ *and* $w_{2,i}^{R}$ *and their derivatives.*

Lemma 3.3 *Let* $A(x)$ *satisfy (2) and (3). Then the smooth component ~v of the solution ~u of (1) satisfies for* $i = 1,...,m$, $k = 0,1,2,3$,

$$|v_i^{(k)}(x)| \le C\begin{cases} 1 + \sum_{q=i}^{m} \dfrac{B_{1,q}(x)}{\varepsilon_q^{\frac{k}{2}-1}} & on\ \Omega^- \\[2em] 1 + \sum_{q=i}^{m} \dfrac{B_{2,q}(x)}{\varepsilon_q^{\frac{k}{2}-1}} & on\ \Omega^+. \end{cases}$$

The Shishkin mesh

A piecewise uniform Shishkin mesh with N mesh-intervals is now constructed on

$\Omega^- \cup \Omega^+$ as follows. Let $\Omega^N = \Omega^{-N} \cup \Omega^{+N}$ where $\Omega^{-N} = \{x_j\}_{j=1}^{\frac{N}{2}-1}$, $\Omega^{+N} =$

$\{x_j\}_{j=\frac{N}{2}+1}^{N-1}$ and $x_{\frac{N}{2}} = d$. Then $\overline{\Omega^{-}}^N = \{x_j\}_{j=0}^{\frac{N}{2}}$, $\overline{\Omega^{+}}^N = \{x_j\}_{j=\frac{N}{2}}^{N}$, $\overline{\Omega^{-}}^N \cup$

$\overline{\Omega^{+}}^N = \Omega^N = \{x_j\}_{j=0}^{N}$ and $\Gamma^N = \Gamma$. The interval $[0,d]$ is subdivided into $2m + 1$ mesh-intervals

$[0,\tau_1] \cup \cdots \cup (\tau_{m-1},\tau_m] \cup (\tau_m, d -\tau_m] \cup (d -\tau_m, d -\tau_{m-1}] \cup \cdots \cup (d -\tau_1, d].$

The m parameters τ_r, which determine the points separating the uniform meshes, are defined by $\tau_0 = 0$, $\tau_{m+1} = \frac{d}{2}$,

$$\tau_m = \min\left\{\frac{d}{4}, \frac{2\sqrt{\varepsilon_m}}{\sqrt{\alpha}}\ln N\right\} \qquad (31)$$

and, for $r = m -1,...,1$,

$$\tau_r = \min\left\{\frac{r\tau_{r+1}}{r+1}, \frac{2\sqrt{\varepsilon_r}}{\sqrt{\alpha}}\ln N\right\}. \qquad (32)$$

Clearly

$$0 < \tau_1 < \ldots < \tau_m \le \frac{d}{4}.$$

Then, on the sub-interval $(\tau_m, d -\tau_m]$ a uniform mesh with $\frac{N}{4}$ mesh points is placed and on each of the sub-intervals $(\tau_r,\tau_{r+1}]$ and $(d -\tau_{r+1}, d -\tau_r]$, $r = 0,1,...,m-1$, a uniform mesh of $\frac{N}{8m}$

mesh points is placed. In particular, when all the parameters τ_r, $r = 1,...,m$, take their left-hand value, the Shishkin

mesh $\overline{\Omega}^{-N}$ becomes a classical uniform mesh throughout from 0 to d. Similarly, the interval $[d,1]$ is subdivided into $2m + 1$ sub-intervals

$$[d,d+\sigma_1]\cup\cdots\cup(d+\sigma_{m-1},d+\sigma_m]\cup(d+\sigma_m,1-\sigma_m]\cup(1-\sigma_m,1-\sigma_{m-1}]\cup\cdots\cup(1-\sigma_1,1].$$

The m parameters σ_r, which determine the points separating the uniform meshes,

are defined by $\sigma_0 = 0$, $\sigma_{m-1} = \frac{1-d}{2}$,

$$\sigma_m = \min\left\{\frac{1-d}{4}, 2\frac{\sqrt{\varepsilon_m}}{\sqrt{\alpha}}\ln N\right\}$$

and, for $r = m$ $-1,...,1$,

$$\sigma_r = \min\left\{\frac{r\sigma_{r+1}}{r+1}, 2\frac{\sqrt{\varepsilon_r}}{\sqrt{\alpha}}\ln N\right\}.$$

Clearly

$$0 < \sigma_1 < \ldots < \sigma_m \leq \frac{1-d}{4}$$

.

Then, on the sub-interval $(d + \sigma_m, 1 - \sigma_m]$ a uniform mesh with $\frac{N}{4}$ mesh points is placed and on each of the sub-intervals $(d + \sigma_r, d + \sigma_{r+1}]$ and $(1 - \sigma_{r+1}, 1-\sigma_r]$, $r = 0,1,...,m-1$, a uniform mesh of $\frac{N}{8m}$ mesh points is placed. In particular, when all the parameters σ_r, $r = 1,...,m$, take their left-hand value, the Shishkin mesh $\overline{\Omega}^{-N}$ becomes a classical uniform mesh throughout from d to 1.

When $d = 1/2$ and when all the transition parameters τ_r and σ_r, $r = $

$1,...,m$, take the left choice then the mesh $\overline{\Omega}^{N}$ is the classical uniform mesh with step size N^{-1} throughout from 0 to 1. In practice, it is convenient to take

$$N = 8mk, \; k \geq 2, \tag{33}$$

where m is the number of distinct singular perturbation parameters involved in (1). This construction leads to a class of 2^{m+1} piecewise uniform Shishkin

meshes $\overline{\Omega}^{N}$. $\overline{\Omega}^{-N}$

The geometrical properties of are presented in the following discussion.

Similar results hold good for Ω^{+N}. From the above discussion of $\overline{\Omega}^{-N}$, it is clear that the transition points $\{\tau_r, d - \tau_r\}_{r=1}^{m}$ are the only points at which the mesh-size can change and that

it does not necessarily change at each of these points. The following notations are introduced: $h_j = x_j - x_{j-1}$, $h_{j+1} = x_{j+1} - x_j$

and if $x_j = \tau_r$, then $h^-_r = x_j - x_{j-1}$, $h^+_r = x_{j+1} - x_j$, $J = \{\tau_r : h^+_r \neq h^-_r\}$. In general, for each point x_j in the mesh-interval $(\tau_{r-1}, \tau_r]$,

$$xj - xj - 1 = 8mN - 1(\tau r - \tau r - 1). \tag{34}$$

Also, for $x_j \in (\tau_m, \frac{d}{2}]$, $x_j - x_{j-1} = 4N^{-1}(d - 2\tau_m)$ and for $x_j \in (0, \tau_1]$, $x_j - x_{j-1} = 8mN^{-1}\tau_1$. Thus, for $1 \leq r \leq m - 1$, the change in the step-size at the point $x_j = \tau_r$ is

$$h^+_r - h^-_r = 8mN^{-1}((r+1)d_r - rd_{r-1}), \tag{35}$$

where

$$d_r = \frac{r\tau_{r+1}}{r+1} - \tau_r \tag{36}$$

with the convention $d_0 = 0$. It is to be noted that that $d_r \geq 0$, that Ω^{-N} is the classical uniform mesh when $d_r = 0$ for all $r = 1,...,m$ and, from (31) and

(32), that $\sqrt{}$

_

$$\tau_r \leq C \quad \varepsilon_r \ln N, \quad 1 \leq r \leq m. \tag{37}$$

It follows from (34) and (37) that for $r = 1,...,m - 1$,

$$h^-_r + h^+_r \leq C\sqrt{\varepsilon_{r+1}}N^{-1}\ln N. \tag{38}$$

Also

$$\tau_r = \frac{r}{s}\tau_s \text{ when } d_r = \cdots = d_s = 0, \ 1 \leq r \leq s \leq m. \tag{39}$$

Some results utilizing the mesh geometry are presented in the following lemmas for later use.

Lemma 4.1 *Assume that $d_r > 0$ for some $r, 1 \leq r \leq m$. Then the following inequalities hold*

$$B^L_{1,r}(d - \tau_r) \leq B^L_{1,r}(\tau_r) = N^{-2}, \tag{40} \quad x^{(s)}_{r-1,r} \leq \tau_r - h^-_r \text{ for } 0 < s \leq \frac{3}{2}, \ 1 < r \leq m; \tag{41}$$

$$B^L_{1,q}(\tau_r - h^-_r) \leq CB^L_{1,q}(\tau_r) \text{ for } 1 \leq r \leq q \leq m, \tag{42} \quad \frac{B^L_{1,q}(\tau_r)}{\sqrt{\varepsilon_q}} \leq C\frac{1}{\sqrt{\varepsilon_r}\ln N} \text{ for } 1 \leq q \leq m, \ 1 \leq r \leq m. \tag{43}$$

Analogous results hold for $B^H_{1,r}$, $B^L_{2,r}$, $B^H_{2,r}$.

Proof: Using the definitions of $B^L_{1,r}(x)$ and τ_r, (40) follows.

By Lemma 3.1,

$$x^{(s)}_{r-1,r} < 2s\frac{\sqrt{\varepsilon_r}}{\sqrt{\alpha}} = \frac{s\tau_r}{\ln N} \leq \frac{\tau_r}{2}.$$

Also, by (33) and (34),

$$h_r^- = 8mN^{-1}(\tau_r - \tau_{r-1}) = \frac{(\tau_r - \tau_{r-1})}{k} < \frac{\tau_r}{2}.$$

It follows that $x^{(s)}_{r-1,r} + h_r^- \leq \tau_r$ as required.

To verify (42), it is to be noted that, from (34),

$$h_r^- = 8mN^{-1}(\tau_r - \tau_{r-1}) \leq 8mN^{-1}\tau_r = 2^4 mN^{-1}\frac{\sqrt{\varepsilon_r}}{\sqrt{\alpha}}\ln N.$$

But

$$e^{2^4 mN^{-1}\frac{\sqrt{\varepsilon_r}}{\sqrt{\alpha}}\ln N} \leq (N^{\frac{1}{N}})^{16m} \leq C.$$

Since $r \leq q$,

$$\frac{\sqrt{\alpha}}{\sqrt{\varepsilon_q}}h_r^- \leq \frac{\sqrt{\varepsilon_r}}{\sqrt{\varepsilon_q}}2^4 mN^{-1}\tau_r \leq 2^4 mN^{-1}\ln N\frac{\sqrt{\varepsilon_r}}{\sqrt{\alpha}}.$$

It follows that

$$B^L_{1,q}(\tau_r - h_r^-) = B^L_{1,q}(\tau_r)e^{\frac{\sqrt{\alpha}}{\sqrt{\varepsilon_q}}h_r^-} \leq CB^L_{1,q}(\tau_r)$$
as required.

To verify (43), if $q \geq r$ the result is trivial. On the other hand, if $q < r$,

$$B^L_{1,q}(\tau_r) = e^{-\frac{\sqrt{\alpha}}{\sqrt{\varepsilon_q}}\tau_r} = e^{-2\frac{\sqrt{\varepsilon_r}}{\sqrt{\varepsilon_q}}\ln N} \leq \frac{C}{\ln N}\frac{\sqrt{\varepsilon_q}}{\sqrt{\varepsilon_r}},$$

where the inequality is obtained by using the result $e^{-t} \leq \frac{1}{t}$ for all $t \geq 0$.

The discrete problem

In this section, a classical finite difference operator with an appropriate Shishkin mesh is used to construct a numerical method for (1), which is shown later to be essentially first order parameter-uniform convergent.

The discrete two-point boundary value problem is now defined to be the finite difference method

$$-E\delta^2 \tilde{U}(x) + A(x)\tilde{U}(x) = \tilde{f}(x) \text{ on } \Omega^N,$$

$$\tilde{U} = \tilde{u} \text{ on } \Gamma^N, \ D^-\vec{U}(x_{N/2}) = D^+\vec{U}(x_{N/2}).$$

(44)

This is used to compute numerical approximations to the exact solution of (1). Note that (44) can also be written in the operator form

$$L\sim N U\sim = f\sim \text{ on } \Omega^N, \ \vec{U} = \vec{u} \text{ on } \Gamma N, \ D- U\sim (xN/2) = D+ U\sim (xN/2)$$

where

$$L^{\sim N} = -E\delta^2 + A$$

and δ^2, D^+ and D^- are the classical finite difference operators. The following discrete results are analogous to those for the continuous case.

Lemma 5.1 *Let $A(x)$ satisfy (2) and (3). Then, for any vector-valued mesh function*
, the inequalities $\vec{\Psi} \geq \vec{0}$ $\Psi\sim$ on Γ^N, $\vec{L}^N \vec{\Psi} \geq \vec{0}$ on Ω^N and
$D^+\Psi(x_{N/2}) - D^-\Psi(x_{N/2}) \leq 0$ *imply that $\Psi \geq 0$ on Ω^N.* **Proof:** Let i^*, j^* be such that $\Psi_{i^*}(x_{j^*}) = \min \Psi_i(x_j)$ and assume that the

$$i, j$$

lemma is false. Then $\Psi_{i^*}(x_{j^*}) < 0$. From the hypotheses we have $j^* \neq 0$, N and
$\Psi_{i^*}(x_{j^*}) - \Psi_{i^*}(x_{j^* -1}) \leq 0$, $\Psi_{i^*}(x_{j^* +1}) - \Psi_{i^*}(x_{j^*}) \geq 0$, so $\delta^2\Psi_{i^*}(x_{j^*}) \geq 0$. It follows that

$$\left(\vec{L}^N \vec{\Psi}\right)_{i^*}(x_{j^*}) = -\varepsilon_{i^*}\delta^2\Psi_{i^*}(x_{j^*}) + \sum_{k=1}^{n} a_{i^*, k}(x_{j^*})\Psi_k(x_{j^*}) < 0$$

.

If $x_{j^*} \in \Omega^N$, this leads to a contradiction. Because of the boundary values, the only other possibility is that $x_{j^*} = x_{N/2}$. Then

$$D-\Psi_{i^*}(xN/2) \leq 0 \leq D+\Psi_{i^*}(xN/2) \leq D-\Psi_{i^*}(xN/2)$$

and so

$$\Psi_{i^*}(x_{\frac{N}{2}-1}) = \Psi_{i^*}(x_{N/2}) = \Psi_{i^*}(x_{\frac{N}{2}+1}) < 0.$$

Then $\left(\vec{L}^N \vec{\Psi}\right)_{i^*}(x_{\frac{N}{2}-1}) < 0$, which provides the desired contradiction.

An immediate consequence of this is the following discrete stability result.

Lemma 5.2 *Let* $\overline{\Omega}^N$ *$A(x)$* $D^+\vec{\Psi} = D^-\vec{\Psi}$ *satisfy (2) and (3). Then, for any vector-valued mesh*

$$|\vec{\Psi}(x_j)| \leq \max\left\{\|\vec{\Psi}\|_{\Gamma^N}, \frac{1}{\alpha}\|\vec{L}^N\vec{\Psi}\|_{\Omega^{-N} \cup \Omega^{+N}}\right\}, \ 0 \leq j \leq N.$$

function $\Psi\sim$ defined onsuch thatat $x_{N/2}$,

$$\vec{\Theta}^{\pm}(x_j) = \max\left\{\|\vec{\Psi}\|_{\Gamma^N}, \frac{1}{\alpha}\|\vec{L}^N\vec{\Psi}\|_{\Omega^{-N} \cup \Omega^{+N}}\right\}\vec{e} \pm \vec{\Psi}(x_j)$$

Proof: Define the two functions

where $\sim e = (1, \ldots, 1)^T$ is the unit N, for $x_j \neq x_{N/2}$, $\vec{L}^N \vec{\Theta}^{\pm} \geq \to$ column $n-$vector. Using the properties of A

it is not hard to verify that $\Theta^{\sim \pm} \geq \sim 0$ on Γ 0 on Ω^N

and at $x_j = x_{N/2}$,

$(D^+ - D^-)\Theta^{\sim \pm}(x_j) = \pm(D^+ - D^-)\Psi(\sim x_j) = 0.$ $\vec{\Theta}^! > \vec{0}$ on Ω^{N-}

It follows from Lemma 5.1 that.

Error estimate

$\vec{V}_1$ Analogously to the decomposed into and $\vec{V}_2$ continuous case, the discrete solution $U\sim$ can be $W^\sim$ on Ω^{-N} and and $W^\sim$ on Ω^{+N} which are defined to

12 be the solutions of the following discrete problems

and $(L\sim NV\sim 1)(xj) = \vec{f}(x_j),\ x_j \in \Omega^{-N},\ \vec{V}_1(0) = \vec{v}(0),\ \vec{V}_1(x_{N/2}) = \vec{v}(d-)$

$\sim^N W\sim (\vec{L}^N \vec{V}_2)(x_j) == \vec{f}(x_j),\ x_j \in \Omega^{+N},\ \vec{V}_2(1) = \vec{v}(1),\ \vec{V}_2(x_{N/2}) = \vec{v}(d+)\ _1)(x_j) = \sim 0,\ x_j \in \Omega^- N,\ W\sim$
$_1(0) =$ $w\sim(0),\ (L$

$(L\sim^N W\sim\ _2)(x_j) = \sim 0,\ x_j \in \Omega^{+N},\ W\sim\ _2(1) = w\sim(1),$

$W\sim\ 1(xN/2) + V\sim 1(xN/2) = W\sim\ 2(xN/2) + V\sim 2(xN/2),$

$D^-\vec{W}_1(x_{N/2}) + D^-\vec{V}_1(x_{N/2}) = D^+\vec{W}_2(x_{N/2}) + D^+\vec{V}_2(x_{N/2}).$

$x_j \in \Omega N$ $\sim(x_j) - \sim u(x_j).$ Then the

The error at each point is denoted by $\sim e(x_j) = U$

local truncation error $L^N \sim e(x_j)$, for $j \neq N/2$, has the decomposition

$L^{\sim N} \sim e(x_j) = L^{\sim N}(V^\sim - \sim v)(x_j) + L^{\sim N}(W^\sim - w\sim)(x_j).$

The smooth and singular error components are bounded in the following theorems.

Theorem 6.1 *Let $A(x)$ satisfy (2) and (3). If $\sim v$ denotes the smooth component of the exact solution of (1) and $V\sim$ the smooth component of the solution of the discrete problem (44), then, for $j \neq N/2$,*

$$|(L^{\sim N}(V^\sim - \sim v))_i(x_j)| \leq C\,(N^{-1}\ln N)^2. \qquad (45)$$

Proof: Using Lemma 3.3 and Theorem 3.7.1 in [10], it is not hard to see that (45) holds separately on Ω^{+N} and Ω^{-N}.

Theorem 6.2 *Let A(x) satisfy (2) and (3). If w~ denotes the singular component of the exact solution of (1) and W~ the singular component of the solution of the discrete problem (44), then, for j 6= N/2,*

$$|(L^{\sim N}(W^{\sim} - w\sim))_i(x_j)| \leq C \, (N^{-1} \ln N)^2. \qquad (46)$$

Proof: Using Lemmas 3.2 and 4.1 and Theorem 3.7.2 in [10], it is not hard to see that (46) holds separately on Ω^{+N} and Ω^{-N}.

At the point $x_j = x_{N/2}$, for $i = 1,...,m,$

$$
\begin{aligned}
(D^+ - D^-)e_i(x_{\frac{N}{2}}) &= (D^+ - D^-)(U_i - u_i)(x_{\frac{N}{2}}) \\
&= (D^+ - D^-)U_i(x_{\frac{N}{2}}) - (D^+ - D^-)u_i(x_{\frac{N}{2}}).
\end{aligned}
$$

Recall that $(D^+ - D^-)U_i(x_{\frac{N}{2}}) = 0.$

Let $h* = \max\{h{-}N/2, h{+}N/2\}$. Then

$$
\begin{aligned}
|(D^+ - D^-)e_i(x_{\frac{N}{2}})| &= |(D^+ - D^-)u_i(x_{\frac{N}{2}})| \\
&\leq |(D^+ - \tfrac{d}{dx})u_i(x_{\frac{N}{2}})| + |(D^- - \tfrac{d}{dx})u_i(x_{\frac{N}{2}})| \\
&\leq \tfrac{1}{2}h^+_{N/2}|u_i''(\eta)|_{\eta \in \Omega^+} + \tfrac{1}{2}h^-_{N/2}|u_i''(\xi)|_{\xi \in \Omega^-}
\end{aligned}
$$

$$\leq C h^* \max_{x \in \Omega^- \cup \Omega^+} |u^{00}{}_i(x)|.$$

Therefore,

$$|(D^+ - D^-)e_i(x_{\frac{N}{2}})| \leq C \frac{h^*}{\varepsilon_i}. \qquad (47)$$

From now on, we have the general setting $h_k = x_k - x_{k-1}$ and $h_{k+1} = x_{k+1} - x_k$ for any $x_k \subset \overline{\Omega}^N = \{x_k\}_{k=0}^N.$

Define, for $i = 1,...,m,$ a set of discrete barrier functions on $[0,1]$ by

$$
\omega_i(x_j) =
\begin{cases}
\dfrac{\Pi_{k=1}^{j}(1 + \sqrt{\alpha}h_k/\sqrt{2\varepsilon_i})}{\Pi_{k=1}^{N/2}(1 + \sqrt{\alpha}h_k/\sqrt{2\varepsilon_i})}, & 0 \leq j \leq N/2 \\[2em]
\dfrac{\Pi_{k=j}^{N-1}(1 + \sqrt{\alpha}h_{k+1}/\sqrt{2\varepsilon_i})}{\Pi_{k=N/2}^{N-1}(1 + \sqrt{\alpha}h_{k+1}/\sqrt{2\varepsilon_i})}, & N/2 \leq j \leq N.
\end{cases}
\qquad (48)
$$

Note that

$$\omega_i(0) = 0, \ \omega_i(d) = 1, \ \omega_i(1) = 0 \qquad (49)$$

and, for $1 \leq i \leq m$ and $0 \leq j \leq N,$

$$0 \leq \omega_i(x_j) < \omega_{i+1}(x_j) \leq 1. \qquad (50)$$

It is not hard to see that for $x_j \in \Omega^-_N,$

$$D^+\omega_i(x_j) = \frac{\sqrt{\alpha}}{\sqrt{2\varepsilon_i}}\omega_i(x_j), D^-\omega_i(x_j) = \frac{\sqrt{\alpha}}{\sqrt{2\varepsilon_i}(1 + \sqrt{\alpha}h_j/\sqrt{2\varepsilon_i})\omega_i(x_j)} \quad (51)$$

$$\text{and } \delta^2\omega_i(x_j) \le \frac{\alpha}{\varepsilon_i}\omega_i(x_j).$$

Similarly, for $x_j \in \overline{\Omega^{+}}^{N}$,

$$D^+\omega_i(x_j) = -\frac{\sqrt{\alpha}}{\sqrt{2\varepsilon_i}(1 + \sqrt{\alpha}h_{j+1}/\sqrt{2\varepsilon_i})}\omega_i(x_j), \quad D^-\omega_i(x_j) = -\frac{\sqrt{\alpha}}{\sqrt{2\varepsilon_i}}\omega_i(x_j)$$

$$(52)$$

$$\text{and } \delta^2\omega_i(x_j) \le \frac{\alpha}{\varepsilon_i}\omega_i(x_j).$$

In particular, at $x_j = x_{N/2}$,

$$(D^+ - D^-)\omega_i(x_j) =\le -\frac{C}{\sqrt{\varepsilon_i}}. \quad (53)$$

We now state and prove the main theoretical result of the paper.

Theorem 6.3 *Let ~u(x_j) be the solution of the continuous problem* (1) *and*

U˜ (x_j) be the solution of the discrete problem (44). *Then,*

k U˜ (x_j) −~u(x_j) k≤ C N^{-1} ln$N$. **Proof:** Consider the mesh function Ψ given by~

$$\Psi_i(x_j) = C_1 N^{-1}\ln N + C_2\frac{h^*}{\sqrt{\varepsilon_i}}\omega_i(x_j) \pm e_i(x_j), \ 1 \le i \le n, \ 0 \le j \le N,$$

whereusing Theorems 6.1, 6.2 and the fact that $C1$ and $C2$ are constants. Then, for appropriate choices of h $\sqrt{\ }$ $_{-}$ $^{-1\ \ln N,}$ $C1$ and $C2$,

$$* \le C \quad \varepsilon 1\ N$$

$$(\vec{L}^N\vec{\Psi})_i(x_j) = C_1\sum_{j=1}^{n} a_{ij}(x)N^{-1}\ln N + C_2\frac{h^*}{\sqrt{\varepsilon_i}}(\vec{L}^N\vec{\omega})_i(x_j) \pm (\vec{L}^N\vec{e})_i(x_j)$$

$$\ge 0, \text{ for } j \ne N/2,$$

and

$$D^+\Psi_i(d) - D^-\Psi_i(d) \ \le \ -C_2\frac{Ch^*}{\varepsilon_i} \pm C\frac{h^*}{\varepsilon_i}, \text{ using (47) and (53)}$$

$$\le \ 0.$$

Also, using (49), $\Psi_i(0) = C_1 N^{-1}\ln N \ge 0, \ \Psi_i(1) = C_1 N^{-1}\ln N \ge 0$.

Therefore, using Lemma 5.1 for Ψ, it follows that $\Psi_i(x_j) \ge 0$ for all $i =$ 1,...,m, $0 \le j \le N$. As, from (50), $\omega_i(x_j) \le 1$ for $1 \le i \le m$, $0 \le j \le N$, for N sufficiently large,

k U˜ −~u k≤ CN^{-1} ln$N$,

which completes the proof.

Numerical results

The above numerical method is applied to the following singularly perturbed boundary value problems.

Example 7.1 *Consider*

$-E\sim u^{00}(x) + A(x)\sim u(x) = f\check{}(x)\,for\,x \in (0,0.5) \cup (0.5,1),\ \sim u(0) = \sim 0,\ \sim u(1) = \sim 0$

where $E = \mathrm{diag}($ $\varepsilon_1,\ \varepsilon_2), \ A = \begin{pmatrix} 6+x & -1 \\ x-1 & 6 \end{pmatrix}, \ \vec{f} = (2,\,2)^T$ for $0 < x < 0.5$

and $f\check{} = (1,\,1)^T$ for $0.5 < x < 1$. It is seen that both components of the source function $f\check{}$ have a discontinuity at $x = 0.5$. For various values of $\varepsilon_1,\ \varepsilon_2,\ N = 16k,\ k = 2^r,\ r = 1,\cdots,7,$ and $\alpha = 3.9$, the $\sim\varepsilon$–uniform order of convergence and the $\sim\varepsilon$–uniform error constant are computed using the general methodology from [**?**]. The results are presented in Table 1.

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ANALYSING PERFORMANCE OF PSO AND SVM IN POKER

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ABSTRACT: The implementation of PSO and SVM IN POKER has been proposed here. The efficient Particle Swarm Optimization approach for poker has been discussed with integration of Support Vector Machine. The performance of the Proposed Approach in poker is also considered here. The paper also provides the compare the performance of Existing Approach (Genetic Algorithm and Support Vector Machine) with the Proposed Approach for poker. The performance of SVM based PSO is better as compared to SVM based GA in POKER. The blue curve represents the time taken by SVM based PSO and red curve represents SVM based GA. SVM based GA is taking more time as compare to SVM based PSO POKER SYSTEM. Thus it could be considered that the performance of SVM based PSO is better as compare to SVM based GA POKER SYSTEM.The research work would be beneficial to resolve the issues related to warm particle based implementation with such integration for poker.

KEYWORDS: AI,PSO, SVM, Genetic algorithm, GA

[1] INTRODUCTION

Artificial intelligence

AI works in the same way as done by person. To achieve this, we first adopt the features of persons. After that we implemented it as a formula in a computer responsive technique. Computers are basically compatible to bring out mechanical calculation. Flat program rules are utilized by them to do this function. It allows artificial machine to carry out uncomplicated repetitive responsibilities professionally and consistently. Human beings are not able to carry out this feat. Artificial intelligence is field which is associated with science. Its main objective is to resolve the multifaceted matters with the help of machine. All the researches which are related to artificial intelligence is highly practical and particular. One of the fundamental complications in artificial intelligence is that how computer programming has been done for some definite characteristic such as: understanding, analysis, Problem solving, awareness, education, Planning, Ability to manipulate and move objects. Knowledge engineering is considered as the fundamental part of AI research. Approaches involved arithmetic procedure, calculation cleverness, and flexible calculation along with conventional representational AI. Some approach is exploited in AI, involved type exploration along with arithmetical growth methods which enlighten prospect along with financial matters

Usage of AI

AI has been prevailing in variety of areas which is as follows

- Gaming:-An important function in strategic games is played by AI. Chess, poker, tic-tac-toe, etc are the few examples of strategic games. In this it is thought that machine could perform a large no. of function on the basis of trial and error method.

- Expected Language Dispensation: - It is practicable to work simultaneously with computer which are skilled of recognize ordinary language spoken by humans.

- Systems of Expert:- An skilled system is a processor course which is created to perform as a specialist in an exacting domain or we can say that in an area of expertise.
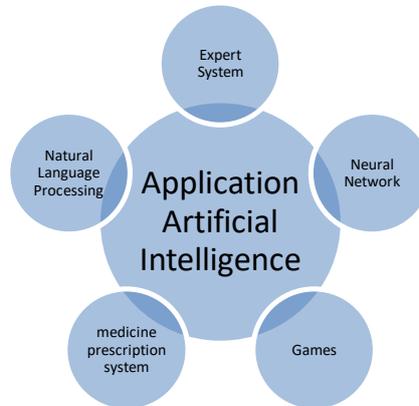

Fig 1 Applications Artificial Intelligence

- Computer Vision Systems:- With the help of vision the human beings generally detects the situation. We watch more often in comparison to listen, snuff along with sense. The main intention behind the investigation of computer vision system is to furnish computers with this influential skill. Due to this computers are capable of understanding their situation. In this the computer are assisted by the artificial intelligence so that they can recognize what they see through attached cameras. A robot is a electro mechanical device which is able to execute responsibilities given by a human. In other words we can say that it is a designed multipurpose manipulator which is capable of transport material, parts and tools.

[2]SUPPORT VECTOR MACHINE

A Support Vector Machine is a supervised learning model. It contains learning algorithm. Information required for the purpose of organization and decay examination is survey by them. It is a machine learning approach. They analyze a large amount of data to identify patterns from them. Concept of finding a hyper plane is used as a base for the creation of SVM. It exploits for mathematical and engineering problems. For example handwriting number detection, item recognition, speaker discovery, faces classification in descriptions and target detection. In coding exercise it is observed by us that how the accuracy of SVM is improved by doing modification in these parameters.

Genetic Algorithms

These are the techniques required to resolve multifaceted problems. Encryption of variables in series is done for the operation of G.A. Encryption discreatizes the search space constantly for each function. On the other hand it comes in to notice that simply proper encryption of the difficulty can translate into a precise explanation. In GA, function value at isolated point is required. Therefore it is feasible to manage isolated along with irregular function. Relation between the string arrangements is detected by G.A. Therefore it is feasible to obtain the worldwide excellent explanation. GA is a people based investigation algorithm. Therefore it is feasible to gather multiple most favorable explanations. For the operation of GA knowledge of item function worth is more than sufficient.

[3]OBJECTIVES

The objectives of research are as follow:

1. To develop efficient Particle Swarm Optimization approach for poker with integration of Support Vector Machine.
2. To check the performance of the Proposed Approach in poker.
3. To compare the performance of Existing Approach (Genetic Algorithm and Support Vector Machine) with the Proposed Approach for poker

[4]PROBLEM STATEMENT

Support Vector Machine has been considered as an effective classification mechanism that has been used in poker. It is does not obtaining feature importance directly. Accuracy of Support Vector Machine might be raised using Support Vector Machine with integration of any optimized algorithm. Support Vector Machine is used with Genetic Algorithm in poker For feature selection. It is capable to minimize computation time. It also raises accuracy. But it has been observed that there are lot of issues with Genetic Algorithm. Such mechanism is not capable to obtain the optimal feature subset. There are issues in local optimum while searching space is complex procedure.

Particle Swarm optimization has been considered better global optimization ability. It has lower computing complexity as compare to GA or Hybrid GA. It is frequently utilized in order to perform selection of features.

[5] PROPOSED WORK

The proposed work consists of implementation of Support vector machine with integration of PSO for poker. On other side the implementation of genetic algorithm would be performed with integration of Support vector machine.
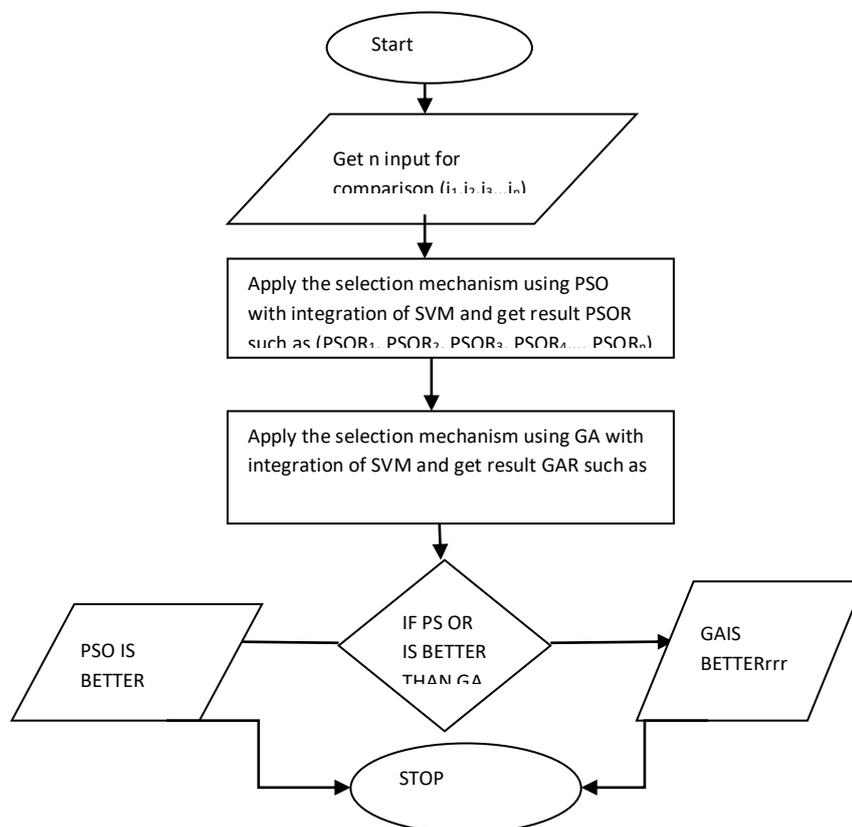
FIG 2 PROPOSED MODEL

[6] RESULT AND DISCUSSION

Implementation of basic SVM MODEL using MATLAB has been made here. SVM output representing Positive and negative class is shown by the following figure:
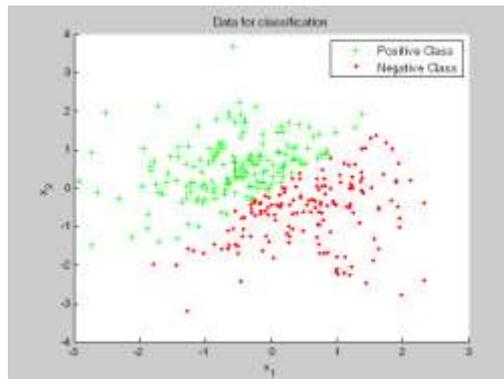
Fig 3 SVM output representing Positive and negative class

Implementation of Genetic Algorithm is defined in the following figure:
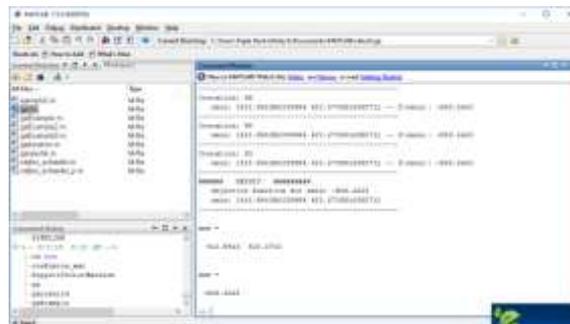
Fig 4 Implementation of Genetic Algorithm

Output of Best cost in case of SVM based PSO has been shown here:
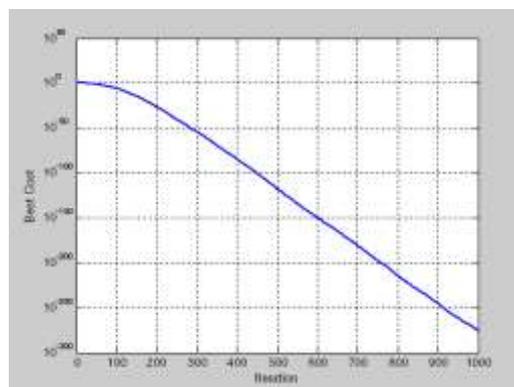
Fig 5 output of Best cost in case of SVM based PSO

The time taken during decision in case of SVM based PSO and GA has been discussed in following table

Table 1 Performance of SVM based PSO

Case	Time taken in case of SVM based PSO POKER SYSTEM (In second)	Time taken in case of SVM based GA POKER SYSTEM (In second)
1	2	3
2	3	3.5
3	4	4
4	2	3
5	6	8
6	3	4
7	1	2
8	3	4
9	2	2.5
10	1	2
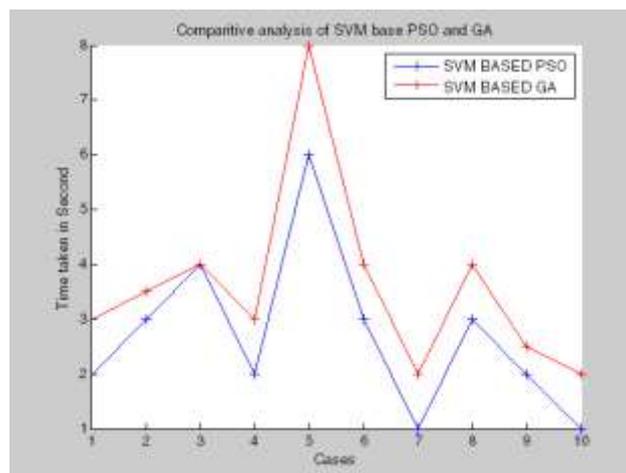
Fig 6 Comparative analysis of SVM based PSO and SVM based GA in poker

[6]CONCLUSION

From the above implementation it has been concluded that the performance of SVM based PSO is better as compared to SVM based GA in POKER. The blue curve represents the time taken by SVM based PSO and red curve represents SVM based GA. SVM based GA is taking more

time as compare to SVM based PSO POKER SYSTEM. Thus it could be considered that the performance of SVM based PSO is better as compare to SVM based GA POKER SYSTEM.

[7]FUTURE SCOPE

Swarm particle based implementation with such integration for poker could better perform in order to solve problems by having a population of candidate solutions, here dubbed particles, and moving these particles around in case of search-space according to simple mathematical formulae over the particle's position and velocity. In order to develop more efficient particle based implementation with integration of vector machine in poker is a challenging process. Support Vector Machine is considered supervised machine learning algorithm which is used for both classification and regression challenges.

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DETERMINANTS OF NON-FARM SECTOR GROWTH IN ETHIOPIA

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Abstract

Nonfarm sector growth in rural area are a sources of livelihood for subsistence farmers beyond agriculture plays a significant role in alleviating poverty as well as cope up with the adverse impacts of climate change. A descriptive statistics has been employed to explain the factors which determine the engagement of rain-fed dependent smallholder farmers in non-farm activities. Data were obtained from Ethiopian rural socioeconomic survey (ERSS), central statistical agency and World Bank of May 7th 2013 and 3969 households were selected by quota sampling techniques from all regions and one administrative town (Dire Dawa) by integrated survey and hence, we analyzed the data by using this secondary data through mean, percentage, and presented by graphs and pie chart. Access to microfinance loans and credit, poor infrastructure (transportation, electricity, technology, potable drinking water, postal service, and telecommunication) and lack of adequate market access were the major determinants which hamper farmers from undertaking nonfarm activities in rural areas. As the study finding depicts that several factors determine the propensity of smallholder farmers' participation to nonfarm activities. Well off households, headed by literate and younger heads, having access to microfinance, having extension services, and having social responsibilities create engagement in nonfarm economic activities. We argue that strengthening agricultural extension services, providing microfinance, creating potential market accessibility and skill development, and infrastructure development would increase the involvement of smallholder farmers in nonfarm activities. To make success this, policy makers and other concerned bodies have to integrate nonfarm livelihood strategies into rural farming economies in order to better of rural living standard.

Key words: Non-farm, Poverty, Employment, GDP, Development etc.

1. Introduction

1.1 BackgroundofStudy

In most developing countries like Ethiopia, the rural labor farm has been growing rapidly. But employment opportunities have been retarding. Availability of land for agricultural production is going to be scarce. As a result the probability for engage in non agricultural sector for nonfarm begin to increase to fulfill their unlimited wants and needs to sustain his/her level of living standard. This scarcity of farming land in rural area opens door for rural agricultural un-employers searching for alternative works and leads to deepening of rural poverty. Due to these reason many rural labors seeking to engage in nonfarm activities and other push and pull factors. Expansion of rural non farm sector with its own labor intensive and small scale enterprise widens, income opportunities for the poor

including small farmers landless and women, enabling them to even out extreme fluctuations in their income. (Singh, 2009).

Due to rapidly increasing population in Africa, more and more pressure is exerted on arable land. Therefore many households are no longer able to live on agriculture alone but also engage in non-farm entrepreneurship activities. There is mounting evidence that non-farm income (income derived from wage paying activities and self-employment in commerce, manufacturing and other services) is an important resource for farm and other rural households and urban residents. Women use their non-farm income to finance farm investment, to self insure or purchase cash inputs for agricultural production. Surplus cash generated from non-farm enterprise directly influences the purchase of agricultural inputs. World Bank (2005) mentioned the significant roles women play in economic development. West African women play important role as farmers, traders and entrepreneurs (C. K. Osondu, K. C. Obike2, S. Ogbonna,, December 2014).

Lack of adequate infrastructure is a major impediment to the development of industries in the rural areas. Electricity, transport, communications and availability of ancillary and allied services, such as suppliers of raw materials and other inputs, semi-skilled and skilled laborers to attend to the problems of machinery, marketing and credit support agencies, and so on, are essential for the growth of industries. In their absence, production activities of tiny units tend to concentrate around the peripheries of urban centers(Singh, 2009).

Factors regarding these non farm sector development determinants are like family size, level of education, farm size, access to physical capital, infrastructure, training; human capital and access to microcredit and microfinance service can enable laborers to engage in different non-farm activities to sustain their life (Mohammed, 2012).

1.2 Statementof the Problem

This study is aimed to assess the determinants that push laborers/individuals engage in non-farm economic activities. There are many individual characteristics that motivate households' decision to engage in non-farm economic activities, family size, land size/farm size/ and level of household head's income influence rural farmer laborers affect peoples in rural area.This situation point to the need for more research so as to fill information gap hence results to the availability of vital information to inform the decisions to promote the development non-farm sector (Mansura K. , 2011).

Here we would like to investigate which factors/determinants mostly affect rural laborers specially those who are excessively exposure to lack of agricultural occupation in rural areas. In reality every economic activityhelps country's economic growth and development.

1.3 Objectivesof the Study
1.3.1 General Objectives

The general objectives of the study is to investigate the determinants of non-farm sector growth in Ethiopia

1.3.2 Specific objectives of the study

The specific objective of this study is:-
- ➢ To identify the determinants of non-farm sector growth in Ethiopia,
- ➢ To differentiate which determinants more influential factor for rural households' decision to engage in non-farm activities,
- ➢ To put directions, suggestion and policy implication for future further study seekers.

1.4 Research Questions

This research is derived from the above research objectives;
- What are the major determinants that affect the growth of non-farm sector in Ethiopia?
- How can the major influential determinants are differentiated from the ordinary factors of determinants?
- What do you expect that can solution for non-farm sector growth in rural Ethiopia?

1.5 Significance ofthe Study

As the topic entitled 'Determinants of non-farm Sector Growth in Ethiopia' which is aimed at assessing the determinants and rural household compelled to engage in rural non-farm activities in general and determinants of rural nonfarm activities participation of rural households in Ethiopia.Available studies were confined mainly to analyzing geographical and socio-economic variables. This research could help further research doers, project designers and planners, analysts to conduct future investigation finally uses as a document for another day use.

2 Related Literature Review

This chapter reviews existing literature on non-farm activities and determinants of farm household participation in non-farm economic activities. The review is overviewed in terms of Ethiopia level, Africa and in world level. The review also presented the role of non-farm activities in the rural household economy and highlighted the impact of non-farm activities in sustaining rural livelihoods.

Finally, provided the information on characteristics of non-farm activities, the determinants of involvement in non-farm activities.

2.1Theoretical evidences

2.1.1 Non-farm

Non farming activities include various ventures like handicrafts, household as well as non-household small-scale manufacturing, construction, mining, quarrying, repair, transport, community service etc, but of course in the designated rural areas so as to generate non farm income which is the portion of farm household income obtained off the farm, including nonfarm wages and salaries, pensions, and interest income earned by farm families. It differs from formal farm activities such that farming activities are related to agriculture, whereas non farming activities are not related to agriculture. In farming activities huge investment is needed, due to that farmers borrow money from moneylenders or

traders and big land is required. but in non farming little land is enough. For instance, for trading purpose only goods and stocks putting few places will be needed.

2.1.2 Rural non-farm activities

Rural non-farm activity is defined both spatially, by activity that takes place in rural areas, and functionally, by a set of activities that do not constitute primary agricultural production. Rural non-farm activities include value chain activities, such as agroprocessing, transport, distribution, marketing, and retail, as well as tourism, manufacturing, construction and mining, plus self-employment activities (handicrafts, bakeries, mechanics, kiosks, and so on).

These activities help rural laborers to reduce poverty, having reached to rural poor, reduce vulnerability and increase service access and generate sufficient, sustained income to lift a large number of the poor out of poverty.(World Bank, 2013-2018). Here 'non-farm' also refers to those activities that are not primary agriculture or forestry or fisheries. However, non-farm does include trade or processing of agricultural products (even if, in the case of micro-processing activities, they take place on the farm (Ann Gordon and Catherine Craig, 2001).

2.1.3 Conceptual Framework of Determinants of Nonfarm Economic Activities

Figure 1
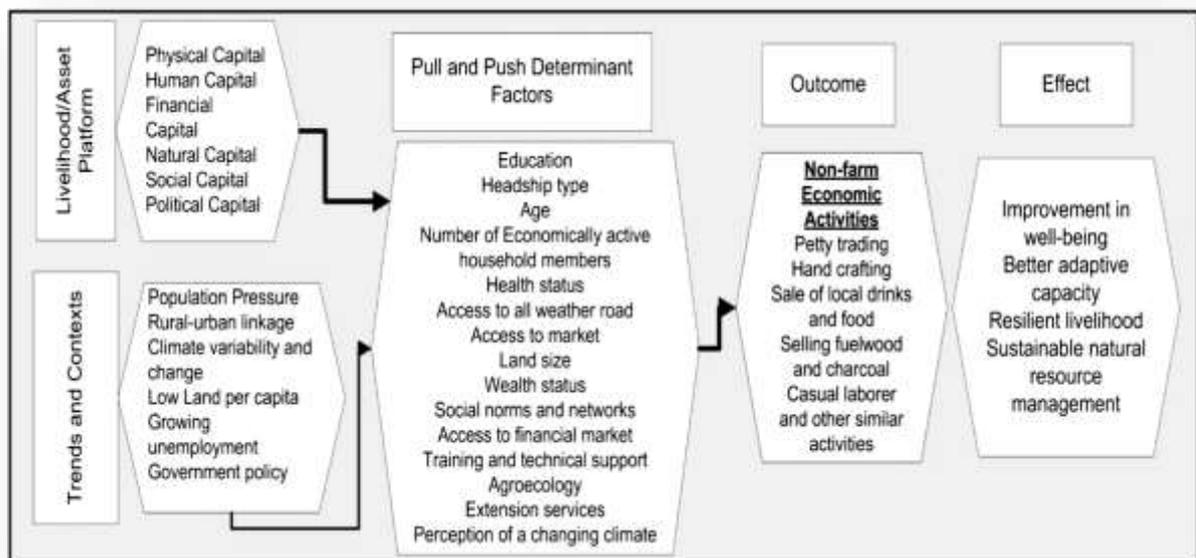
Sources: Adopted from (Amogne Asfaw, Belay Simane, Ali Hassen & Amare Bantider, 2017).

There are different theoretical models that apply to the analysis of nonfarm activities. One such model is the theory of agricultural households, which is based on the works of economists. The theory views a rural household having a dual role as production and consumption unit. In this case, the rural household or individual's decision to supply labor to the rural non-farm sector can be conceptualized as a specific

application of the class of behavioral models of factor supply in general, and labor in particular. (Weldegebriel).

2.2Empirical Evidences

Several studies show the dependence of rural people on non-farm economic activities and have highlighted the importance of these activities in sustaining rural livelihoods. There is increment of evidences that indicate non-farm economic activities are important components of rural livelihoods in Africa, Asia and Latin America. Rural household participation in non-farm economic activities shows the reality of importance economic diversification as a potential routine out of rural poverty(Mansura K. , 2011).

Engaging in non-farm activities is the most commonly adopted livelihood strategy engaged in by the majority of rural households and individuals in developing countries regardless of their wealth, gender and geographical condition. This is so because of the sector's ability to accommodate both skilled and unskilled labor, increasing accessibility for various segments of rural populations (World Bank, 2007).

Non-farm employment is broadly divided into two groups: wage employment and self employment. Whereas wage employment is temporary, self-employed individuals seek more long-term livelihoods. Non-farm self employment is reported as widespread among family-based and one or two person enterprises. However, this generates lower earnings than non-farm wage employment a large contributor to rural non-farm income (Mansura K. , 2011).

2.2.1Determinants of Nonfarm Sectors Operation

As many prominent scholars argue that households in rural Africa operate in enterprises outside agriculture due to both push and pull factors, with household capabilities and the institutional environment (e.g. market failures) mediating (Reardon et al., 2006). One of the most important push factors is the high degree of risk in African agriculture. In the presence of failures in markets for credit and insurance, risk-averse farm households are keen to diversify their income ex-ante in anticipation that a crop may fail, or ex-post in the aftermath of a shock. Rural enterprises as such are a form of self-insurance in the face of limited insurance markets. (Ackah, 2013).

In long run, structural push factors include surplus labor in households, as growing families put pressure on fixed parcels of farmland over time. Push factors also include seasonality: household members may be pushed off-farm in the low season, a situation aggravated by a lack of facilities for inter-temporal arbitrage. (Babatunde and Qaim, 2010). Whether rural households operate non-farm enterprises may also be due to their desire to utilize business opportunities, so called pull factors into entrepreneurship. In this regard household capabilities and assets, as well as individual characteristics have been found to be crucial. Household capabilities and assets typically include gender, age (also a proxy for experience), education, marital status as well as financial assets (Ackah, 2013; Bhaumik et al).

Both push and pull factors are influenced by the features of the local and regional economies where households are located which are mostly exogenous to the household. For instance the agro-climatic

environment determines the extent to which agriculture is productive and/or risky. There is evidence that rural entrepreneurship fares better under favorable agro-climatic conditions (e.g. better rainfall) that are good for agricultural productivity and where other natural resources, e.g. in mines and tourist attractions, can be found (Reardon et al., 2006). The location of a household also determines the distance from urban areas, ports and markets. The share of non-farm wage employment declines the further a household lives away from a urban center, and also other determinants of development in both the farm and non-farm economy of Africa, and of the linkages between the two (Paula Nagler and Wim Naude , June 19 2014).

2.2.2 Importance of Rural Non-Farm Sectors Growth

In many rural areas, agriculture alone cannot provide sufficient livelihood opportunities. Rural to urban migration is not an option for everyone and where possible searching for job rather than finding alternative solutions nearby. Policy-makers may in any case prefer to limit the worst excesses of urbanization with its associated social and environmental problems. Rural non-farm employment can play a vital and significant role in alleviatingrural poverty and several studies indicated the importance of non-farm enterprise to rural incomes. Most of the time in developing countries like Ethiopia, people engage in mixed activities to move their livelihoods in rural area.(Ann Gordon and Catherine Craig, 2001).

Off-farmearnings that could not be offset by strong growth in farm income, since the farm portion is small. Non-farm earnings tend to fall as farm income rises, and vice versa, suggesting that off-farm work is temporarily used to cover farm losses. **It is clear that intermediate farm households rely heavily on off-farm work to supplement rather low farm earnings**.

Ingeneral,importance of rural nonfarm activities are important with regard topoverty alleviation, economic growth, rural development and increasing potential sustainability of natural resources, gender empowerment, ensure food security, prevention of rapid or excessive urbanization (Wandschneider, 2003).

The role of rural non-farm sectors in their contribution to economic growth, rural employment, poverty reduction, sustainable natural resource management, climate change adaptation strategy and a more spatially balanced population distribution have been developed recently. In one of its report, the World Bank gave its testimony that millions of rural people worldwide have enabled to leapfrog from poverty through better incomes and employment in rural non-farm enterprises and hence contributed to better livelihood (World Bank 2008).

Since rural non-farm economies are mostly small-scale, require low entry capital, and its seasonality and amenability are suitable to home-based activity; they can play an important role in the economic transformation of developing countries and as a viable adaptation strategy to climate change-induced shocks and those engaged in non-farm livelihood activities are more likely to meet the basic need of their family, are more capable of withstanding shocks and having a more stable livelihood than those that have to farm as a single source of their income (Amogne Asfaw, Belay Simane, Ali Hassen & Amare Bantider, 2017)

2.2.3Push and Pull Factors of Rural Nonfarm Activities

The rationale for rural development is Increasing focus on rural nonfarm activities which leads to a more holistic view on rural development, and reflects the reality of growing economic diversification amongst rural households. InExpansion of rural nonfarm activities and diversification of income are desirable policy objectives, because they give individuals and households more options to improve livelihood security and to raise their own living standards.Regarding labour allocation decisions, it posits that given households' skills, they allocate labourand other resources to specific activities with highest return such as non-farm employment. Thus, farm households' involvement in non-farm work is dependent on their human and physical capital endowments. In non-farm work may be driven by 'demand-pull' and 'distress-push' factors. Households may be pulled into non-farm work if it has a higher return to labour or capital and is less risky compared to on-farm work. Also, households may be pushed into non-farm work to overcome the shocks and risks of on-farmactivities (such as poor yields, decline in land fertility and loss of landholdings) which maythreaten their welfare and food security situation (Paul Kwame Nkegbe, Hamdiyah Alhassan, Benjamin Musah Abu, Yazidu Ustarz, Edinam Dope Setsoafia,Shamsia Abdul-Wahab, 2018).

On the determinants of participation in non-farm work, indicates that the characteristics of households including education, ethnicity, skills and gender; assets, financialand social capital; and physical infrastructure and information remain important. In addition, education, level of savings, prior work experience andsocial capital are the main drivers of non-farm work in developing countries. Others argue that education, household size,gender and land as critical for engagement in non-farm wage employment, whereas engagementin non-farm entrepreneurship is determined by access to credit, value of assets, land size andsocial capital.

Table1: A short summary of micro and macro Level demand-pull/distress-push factors for non-farm activities

Level	Push Factors	Pull Factors
Micro	- Risk reduction - Diminishing returns in land and labor or coping with inefficiency Seasonality - Compensating for failures in credit markets/liquidity constraints - Incomplete or weak financial system	- Gradual transition to new activities - Building on complementarities between activities, e.g. crop-livestock integration - Comparative advantages based on the existence of skills, resources and technologies.
Macro	- Constraints in labor and land markets - Lack of support to agricultural works	- Commercial agriculture - Location (proximity to urban centers)

Source: improved and taken from ZerihunBerhaneWeldegebriel

2.2.3 Households and Nonfarm Activities of Ethiopia

The rural nonfarm participation rate is defined as the proportion of households in which at least one household member participates in the rural nonfarm sector, therefore including secondary and often marginal activities. The participation rate for "main rural nonfarm activities only" is defined as the proportion of households for whom the main occupation of the household head is not farming andfor whom the household head only participates in rural nonfarm activities. (Josef Loening, Bob Rijkers and Måns Söderbom, March 2008)

In the case of Ethiopia, people are not totally engage in nonfarm activities; they involve in different ways and differentreasons. Some of the households participate in nonfarm activities additionally to improve their living standards because of small farm size which cannot produce adequate food for their children. Some of them totally leave the ordinary farming and participate in nonfarm activities by their own will and choosing the feasibility of living in rural area. When rural households to start and effectively sustain in nonfarm activities, they are confronting with constraints that limit them not to actively participate, be effective in their work are related with lack of financial assets, access to market, transportation. In some rural small town workers/households/ participators of nonfarm activity were face with lack of sustainable electricity in small town, others constrained with lack of advanced technology, lack of awareness of consumers, registration and permit problem, inaccessibility of postal service, absence of telecommunication and taxation are main problems to start and manipulate nonfarm activities in rural area of Ethiopia(Central Statistical Agency & the World Bank, May 7 2013).

The rural nonfarm sector usually includes manufacturing, trade, construction, transportation, communication, services and income earned by rural family members who commute to jobs in nearby urban centers and remittances from family members who live and work in cities within the country or abroad.

2.2.4Dynamics of Rural Nonfarm Employment (RNFAs): farm nonfarm linkages

The existing structure of RNFS is an outcome of the economic transformation process that proceeded for many generations though at varying speeds in different locations. Thus, before the onset of development, the countryside in developing nations can be conceived as populated by primarily agricultural households producing for themselves most of the farm and nonfarm goods and services they require.

While backward production linkages emerge from farmers' growing demand for inputs from the non-agricultural sector, forward linkages develop through the increased need for agro-processing. On the other hand, rising incomes of farmers and agricultural laborers as a consequence of rising farm productivity stimulate the demand for locally produced goods and services thereby resulting in consumption linkages. Also increased agricultural productivity and surpluses in the hands of large commercial farms make available greater resources for investment in nonfarm activities.

3. Research Methodology

3.1 Data sources

This study used secondary from Ethiopian Rural socioeconomic survey Report, Central Statistical Agency (Ethiopia) and World Bank May7th,2013and National Bank of Ethiopia 2017/18

3.2 Data Analysis and Presentation Method

For this study we used descriptive statisticsespecially mean, percentages graphs (pie chart) to analyze the data even if the nature and characteristics of data regarding determinants of rural nonfarm sectors are qualitative data and categorical in its outlook and needs binary logistics (probit, tobit and logit), but in our case we compelled to use descriptive statistics, because this regression analysis methods needs adequate time to test and evaluate hypothesis pass the necessary steps to ensure the adequacy of the model. This study used the secondary data but it is empirical study.

4. Result and Discussions

4.1 Types of Nonfarm Activities

As we introduce the method of data analysis in the methodology part, here we used descriptive statistics to access the determinants of household's participation in nonfarm activities in rural Ethiopia. From the economics employed in rural areas farm economic activities, nonfarm economic activities and services are the main known one. Here we would like to identify the nonfarm economic activities potentially helpful in rural Ethiopia comparing with other activities.

Table 2. Types and Percent of household participation in rural nonfarm activities

No.	Nonfarm activities	% of Household participation		
		All	Rural	Small town
1	Service from home shop/non agri-business	5.8	19.1	55.6
2	Processed agricultural products/Tella, Flour, Caticala, Injera	5.8	5.6	24.1
3	Trading business on street/market/	4.9	5.7	14.4
4	Fire wood charcoal	2	4.9	12.5
5	Professional/hair cut, carpentry,	0.2	2	2.9
6	transportation	0.3	0.2	0.4
7	Bar/restaurant/	0.1	0.3	1
8	Others/weaving, metal works, tourism, smith /etc	3	0.1	2.5
9	Any other nonfarm activities	19.4	3	7.3

Source: from Ethiopian Rural socioeconomic survey report and World and Bank, 2013

As the table 2 above shows that rural economy is not all about agriculture. As nonfarm activity importance in the lives of rural and small town households, about one in five households in rural areas have one or more NFA. The three most important NFA activities are selling processed agricultural products including food and local beverages (5.8 percent of households), non agricultural businesses or services from home including shops (about 5.8 percent of households), and trading business such as selling goods on a street or in a market (about 4.9 percent of households). All types of NFAs are more common in small towns than in rural areas. Even if there were regional differences do exist; households engage in combined nonfarm activities are about 19.4percent. This combination accounts the highest of all nonfarm economic activities. When we come to the rural and small town, even if the nonfarm activities raw materials produced in rural area; peoples are bringing the activities into town and participate more in town. As table 1 above show that 55.6% of households participate in service from home shop/agri-business in small town and 19.1% of households participate in service from home shop/agri-business in rural area.This is the types of nonfarm activities that in which rural households need to or not to participate more in nonfarm activities.
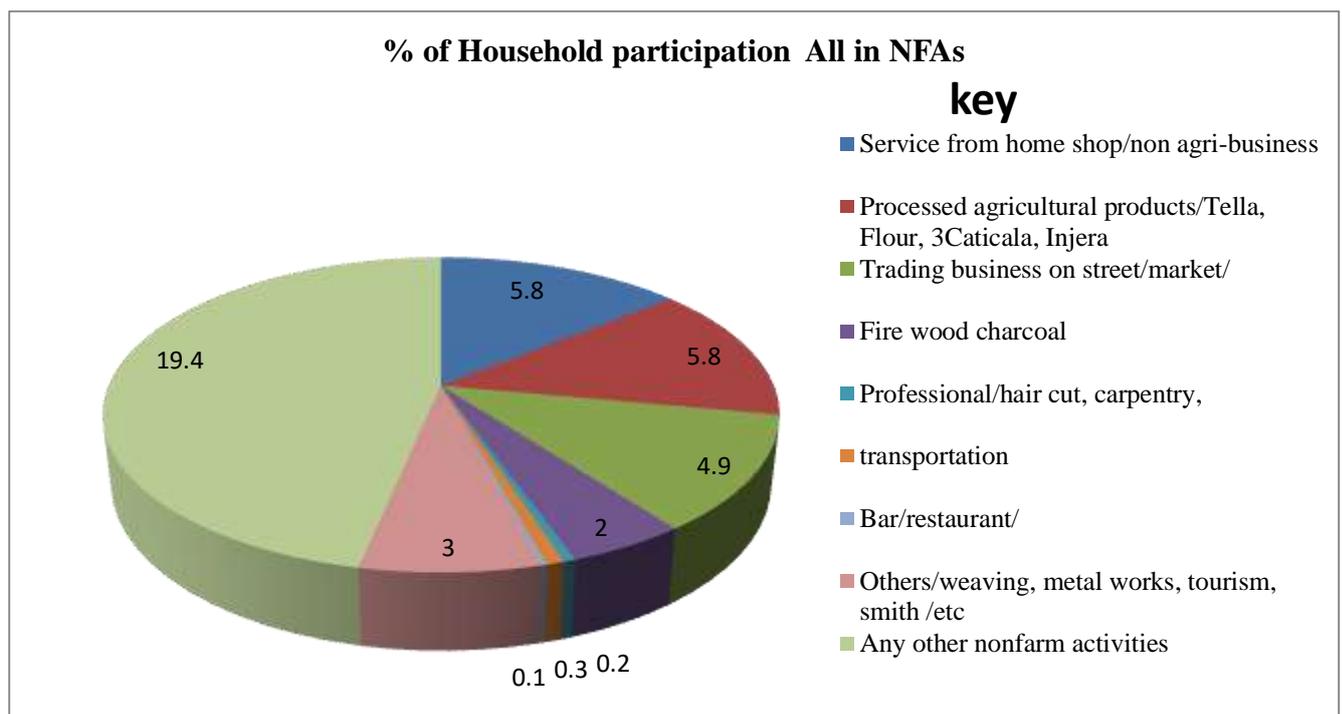
Pie chart1: Percentage of Household Participation in Nonfarm Activities

4.2 Determinants/Constraints/ Rural Nonfarm Activities

 There are many factors that hinders/favors households not to or to participate in nonfarm activities in rural Ethiopia. For instance, it might be related with accessibility, suitability, availability and

affordability of the facilities to start and sustain the economic activities. Here we would like to identify the core determinants that hamper household'sparticipation.

Table 3.percent of household constraints that determine participation in rural nonfarm activities

No.	Types of determinants that hinders/favors households to participate in NFAs	% of constraints or determinants		
		All	Rural	Small town
1	Access to microfinance loans	47.2	46.9	62
2	Lack of adequate Market access	33.6	33.8	24.9
3	Transportation	27.8	28.1	11.4
4	Electricity service	12.4	12.6	1.3
5	Availability of Technology	10.7	10.8	5.9
6	Potable drinking Water	7.6	7.7	1.8
7	Registration and permit	6	5.9	13.7
8	Postal service	5.4	5.4	4.8
9	Safety	4.4	4.5	2.8
10	Telecommunication service	3.9	4.3	4.8
11	Taxation	3.9	3.9	3.8
12	Government	4.3	3.8	10.8

Source: ERSS, CSA and World Bank 2013

The table 3 above shows that there are three main constraints hinders households are: - lack of financial services(microfinance loans), access to market service(Markets include Access to markets (distance and cost), difficult to obtain information on your product's market, and low demand for goods and services produced), and transportation service and they account the percentage of 47.2%, 33.6% and 27.8% respectively.

Infrastructure related constraints are more important in rural areas than small town areas. Rural infrastructure constraints accounts (transportation 27.8%, electricity 12.7%, technology 10.7%) On the other hand government related constraints such as registration and permits as well as taxes are cited more often by small town residences. This implies that concerned bodies have to work bypaying attention to facilitate these constraints and create conducive environment for the rural nonfarm activity participants.

Pie chart 2 constraints/determinants of household engagement in RNFAs
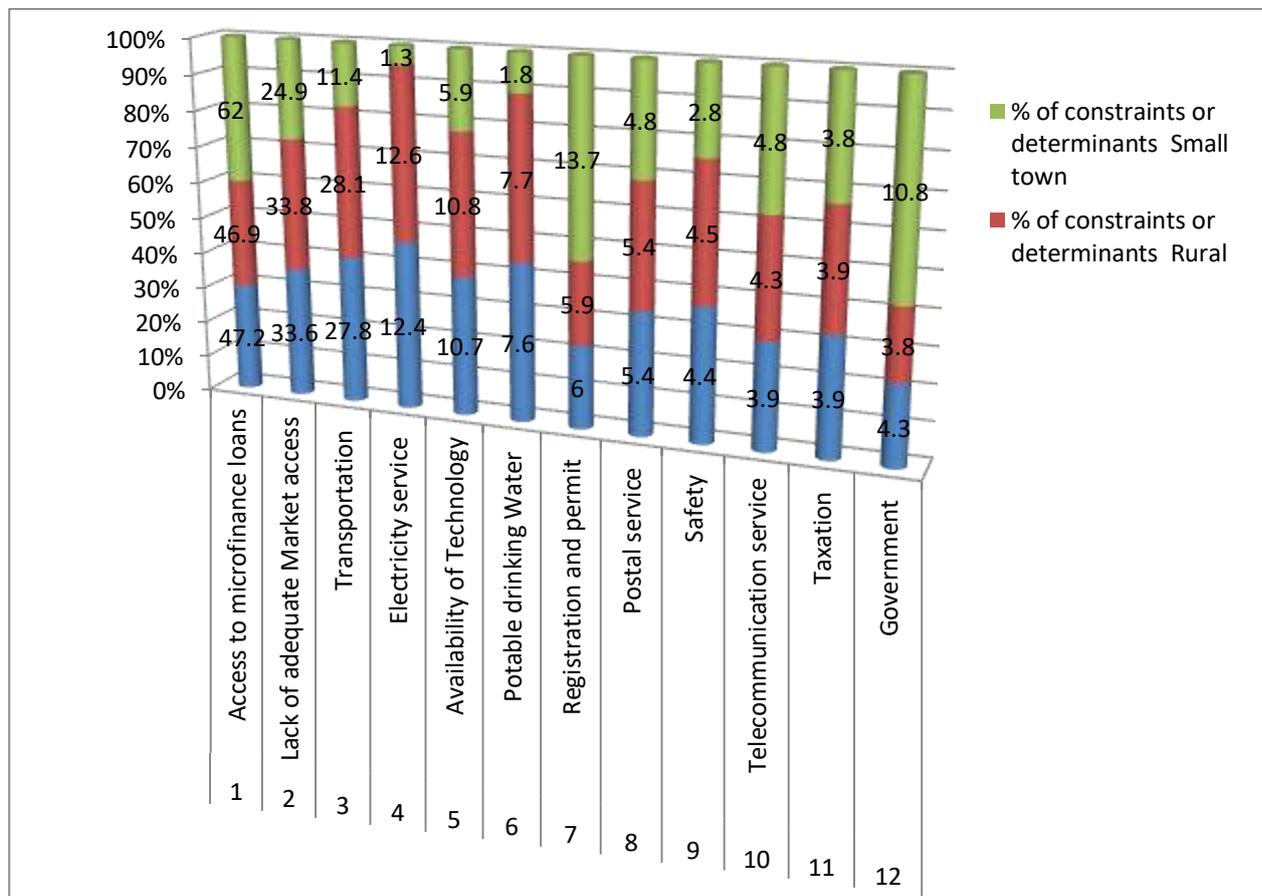
Figure 3. Shows determinants, rural and small town

4.3 Gender and Nonfarm Activities

The nonfarm activities considered as household level activities such as petty trading and retailing because participation rates are fairly low. Unlike agricultural activities nonfarm activities are more important in small towns than rural areas. It is most the time nonfarm activities are carried out more by female than male household head members.Whilecomparing males with females, time spent on nonfarm activities is a slight difference for female household members. As some evidence depicts that female household average time elapse in hours per week is six and half hours. By age group, economically active group (15 – 64 years) spends more hours on HHs NFAs. But youngest and oldest age groups such as age less than 14 and greater than 65 actively participate in nonfarm activities. In rural and small town; most of the time aged groups engage more in nonfarm activities than rural areas (ERSS, Central Statistical Agency & the World Bank, May 7 2013).

4.4 Rural Employment and Nonfarm Activities

Laborers employed in rural agricultural work and urban manufacturing industry in nature. Laborers/households involve in rural agricultural practices have no extra profit rather than getting their

subsistence living. They were simply employed, but disguised employment means underemployment in which they didn't able to get expected and enough return from such work why because the marginal product will be almost zero. They participate in works like fetching water and collecting fire wood, agricultural works, nonfarm enterprise, casual part-time work, work for wage or salary/commissions and apprentice/unpaid.Collecting water and fuel wood are important household chores that most people spend a lot of time on every day.

4.5 Housing characteristics: Ownership, structure and facilities

Household Assets

As many study evidence witness that from the five main important capitals (human, natural, physical, social and financial) natural (land) is the only asset for farmers.

Asset ownership is one of important indicators of welfare. Acquisition of assets could be a manifestation of improving living standards of households. Depletion of assets, on the other hand, would entail a shrinking household wealth and thus a decline in welfare. The items are modern and traditional farm implements, home furniture, communication and entertainment equipment, household durables and a few other items such as automobiles, bikes and jewelries were the most important in general.(ERSS 2013). Thus, when households lacked and unable to access to the above facilities, they begin to change their economic activities from farm activities to nonfarm activities.

5. Conclusions and Recommendations

5.1 Conclusions

This paper examined the determinants of nonfarm activities growth by using descriptive statistics such as percentages, graphs (pie-charts and bar graph) in Ethiopia for the period 2011–2012. The analysis indicates that although smallholders are trying to engage in rural nonfarm activities, their income sources, factors of non-farm activitiesconstrained households to be effective in these economic activities and compelled them to be very low. This partly indicates there were hinders that retard their participation in rural nonfarm activities potentially and fully.

For this study researcher used the samples of household from across the regions collected by integration of the Ethiopian rural socioeconomic survey and World Bank in 2011- 2012 for a year and took a sample from target population which is aimed to collect multi-topic panel household level data with a special focus on improving agriculture statistics and the link between agriculture and other sectors of the economy. The project also aims to build capacity, share knowledge across countries, and improve survey methodologies and technology.Here our objective is focused on the other sectors (determinants nonfarm economic activities) of rural households and differentiating the main determinants and provide policy directions to improve livelihoods of rural households in Ethiopia.

As the table 2 above shows that rural economy is not all about agriculture. As nonfarm activity importance in the lives of rural and small town households, about one in five households in rural areas have one or more NFA. The three most important NFA activities are selling processed agricultural

products including food and local beverages (5.8 percent of households), non agricultural businesses or services from home including shops (about 5.8 percent of households), and trading business such as selling goods on a street or in a market (about 4.9 percent of households). All types of NFAs are more common in small towns than in rural areas. Households engage in combined nonfarm activities are about 19.4 percent. This combination accounts the highest of all nonfarm economic activities. When we come to the rural and small town, even if the nonfarm activities raw materials produced in rural area; peoples are bringing the activities into town and participate more in town. As table 1 above show that 55.6% of households participate in service from home shop/agri-business in small town and 19.1% of households participate in service from home shop/agri-business in rural area. This is the types of nonfarm activities in households voluntarily or obliged to or not to participate more in nonfarm activities. Referring table 2 which testifies there are three main constraints that hinders households are: - lack of financial services (microfinance loans), access to market service(Markets include Access to markets (distance and cost), difficult to obtain information on your product's market, and low demand for goods and services produced), and transportation service and they account the percentage of 47.2%, 33.6% and 27.8% respectively.

Infrastructure related constraints are more important in rural areas than small town areas. Rural infrastructure constraints accounts (transportation 27.8%, electricity 12.7%, technology 10.7%) On the other hand government related constraints such as registration and permits as well as taxes are cited more often by small town residences. This implies that concerned bodies have to work by paying attention to facilitate these constraints and create conducive environment for the rural nonfarm activity participants.

5.2 Recommendation/policy implications

We proposed the following ideas to be carried out by concerned bodies those who are interest to conduct further research on this area.
In line with our findings indicated that access to microfinance loans, lack of adequate markets access and infrastructure were core determinants for nonfarm growth in rural Ethiopia, as Ethiopia's economy development strategy base rural to be development center, it still now requires strong endeavor and government commitment and political will to transform rural Ethiopia through agricultural and industrial development strategies synergistically.So:-

- ➢ Increase investments to promote access to electricity and roads which could improve access to markets and remove some entry barriers for poorer households. This is crucial, as non-farm activities can remove some of the current pressure on farm land and reduce the rate of land degradation by providing alternative sources of income to smallholders in densely populated areas in Ethiopia.
- ➢ Enabling the poor to participate in non-farm activities also requires improving their asset base through creating alternative employment and income generating opportunities.
- ➢ Public work schemes can be play important role in this regard.
- ➢ Invite, widen and establish labour and primary goods intensive manufacturing industries to escape rural households from such type of constraints confront them.etc.

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A REVIEW ON ENGINEERING MODELING AND PROCESSING OF NATURAL FIBER REINFORCED POLYMER COMPOSITES

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Abstract

The Contemporary and advanced trends in the field of polymeric materials composite towards the sustainability is a great challenge to the engineers and researchers. In the present scenario a vast and broad research and development is sustained in the field of polymeric and natural fiber composite field due to its better formability, abundant, renewable, cost-effective & eco-friendly features. This paper exhibits an anatomization study on manufacturing process for processing of polymeric and natural fibers & their potential applications in present and past few decades with the future development of different kinds of engineering and domestic products. In this review, many articles and literatures were related to the processing and applications of natural fiber reinforced polymer composites. As a result, it helps to provide details about the potential use of natural fibers and its composite materials, mechanical and physical properties and some of their applications in engineering sectors.

Key words: Polymer, composite, Natural fiber, Hand lay-up, Physical properties, Engineering application

1. Introduction

In the past few years, there has been a dramatic increase in the use of natural fibers such as flax, jute, pineapple, areca, banana, bamboo, rice, kenaf, hemp, palm and sisal for making a new type of environmentally–friendly composites. Recent advances in natural fibre development, genetic engineering, and composites science offer significant opportunities for improved materials from renewable resources with enhanced support for global sustainability. Table-1shows the mechanical properties of different types of potential natural fibers for composite applications[1]. A material that can be used for medical application must possess a lot of specific characteristics, which are different with that for the general domestic-used plastic products. As matrix most of the researches were carried out on epoxy resin of different grade. Also to obtain different quality, hybridization was considered by different researchers. For instance to increase the tensile strength and density (decreasing the micro voids and cracks), hybridization is one of the method[2].Also to improve some properties, chemical treatment and surface treatment of the fibers were done [3 & 4]. High-temperature polymer blends (HTPBs) are typically used at T $\geq 140^0$C.

Table 1. Mechanical properties of natural fibre

Natural fibres	Tensile strength (MPa)	Elongation at break (%)	Young modulus (GPa)
Flax	300–1500	1.3–10	24–80
Jute	200–800	1.16–8	10–55
Sisal	80–840	2–25	9–38
Kenaf	295–1191	3.5	2.86
Pineapple	170–1627	2.4	60-82
Banana	529–914	3	27–32
Coir	106–175	14.21–49	4–6
Oil palm (empty fruit)	130–248	9.7–14	3.58
Oil palm (fruit)	80	17	
Ramie	348–938	1.2–8	44–128
Hemp	310–900	1.6–6	30–70
Wool	120–174	25–35	2.3–3.4
Spider silk	875–972	17–18	11–13
Cotton	264–800	3–8	5–12.6
Human tissues	130–160	1–3	17–20

It has some great application in the military, aerospace, transportation, electronic, health care and oil and gas industries, they need to have good process ability, high mechanical performance, chemical resistance, and fire retardancy and so on FRPs are very sensitive to intrinsic damage, matrix cracking and fatigue damage. Several approaches have been adopted to tackle these which include improving the fracture toughness of the ply interfaces via epoxy elastomer blends and reducing the mismatch of elastic properties (and stress concentrations) at the interfaces between the laminated plies. The innovation and advances in the engineering material is that the improvisation in the properties for the specific application. That is alloy and heat treatment as internal improvisation and as external change is the [5] reinforcement with fibers, rods, whiskers, and particle. There are some difference between alloys and composite Alloy is the solid solution of two or more materials with one principal element which has more volumetric percentage and for better quality (specific) we use other elements in that particular composition. In the other hand the composite can be defined as a mixture of two or more distinct constituents or phases. Having the following criteria, first, both constituents have to be present in reasonable proportions, say greater than 5%. & Secondly, it is only when the constituent phases have different properties, and hence the composite properties are noticeably different from the properties of the constituents, that we have come to recognize these material as composites. We know that composite have two or more phases on a macroscopic scale, separated by a distinct interface. The constituent that is continuous and is often but not always,

present in greater quantity in the composite is termed as Matrix. A composite have ceramic, metallic or a polymeric matrix. Reinforcement is the part of the composite that provides strength, stiffness, and the ability to carry a load. In many cases the reinforcement is harder, stronger and stiffer than the matrix[6].

2. Manufacturing process

There are generally two types manufacturing process i.e. primary & secondary which are applied for polymeric composites.

2.1. Primary processing of Polymer Composites

2.1.1. Extrusion

Extrusion is a high-volume manufacturing process. Plastic material is melted with the application of heat and extruded through die into a desired shape. A cylindrical rotating screw is placed inside the barrel which forces out molten plastic material through a die. The overheating of plastics should be minimized which may cause degradation in the material properties. A cooling fan or water-cooling system is used to maintain the temperature of the barrel during the process[7].

2.1.2. Compression Moulding

Compression moulding process is one of the low-cost moulding methods as compared to injection molding and transfer molding is a high-pressure forming process in which the molten plastic material is squeezed directly into a mould cavity, by the application of heat and pressure to conform to the shape of the mould. In compression molding of thermo sets the mould remains hot throughout the entire cycle; as soon as a molded part is ejected, a new charge of molding powder can be introduced. On the other hand, unlike thermo sets, thermoplastics must be cooled to harden. So, before a molded part is ejected, the entire mould must be cooled, and as a result, the process of compression molding is quite slow with thermoplastics. Compression molding is thus commonly used for thermosetting plastics such as phenolic, urea, melamine, an alkyd; it is not ordinarily used for thermoplastics. However, in special cases, such as when extreme accuracy is needed, thermoplastics are also compression molded[8].

2.1.3. Injection moulding

Injection molding is the one of the most commonly used processing technique for the plastic components. It is used to manufacture thin walled plastic parts for a wide variety of shapes and sizes. Plastic material is melted in the heating chamber and then injected into the mould, where it cools and finally the finished plastic part is ejected. Plastic materials usually in the form of powder or pellets are fed from hopper into the injection chamber. The "piston and cylinder/reciprocating screw" arrangement is used to forward the material inserted from the hopper in to the injection chamber. The material is heated in the injection chamber with the

application of heating elements. The molten plastic material is then injected into the mould through a nozzle. The molded part is cooled quickly in the mould. Final plastic part is removed from the mould. The process cycle for injection molding is very short, typically between 2 to 60 seconds.

2.1.4. Resin Transfer Moulding

Resin transfer molding is a closed molding process. It is also known as liquid transfer molding process. As the name indicates, resin is transferred over the already placed reinforcement. The process is effective for production of structural parts with low cost in low to medium production quantities. Reinforcement in terms of either woven mat or chopped fiber mat form is placed on the surface of lower half mould. A release gel is applied on the mould surface for easy removal of the composite. The mould is properly closed and clamped. The resin is pumped into the mould through ports and air is displaced through other vents. The uniformity of resin flow can be enhanced by using a catalyst as an accelerator and vacuum application. After curing, the mould is opened and composite product is taken out.

2.1.5. Rotational Moulding

Rotational moulding, known also as retooling or roto casting, is a process for manufacturing hollow plastic products. For certain types of liquid vinyl, the term slush moulding is also used. Rotational moulding is a high temperature and low-pressure plastic forming process. Powder is inserted into the closed split mould and rotated in biaxial direction to produce a hollow part.

2.1.6. Blow Moulding

Blow moulding is a manufacturing process that is used to produce hollow plastic parts by inflating a heated plastic until it conforms to the mould shape and form the desired product. The blow moulding process begins with melting of the plastic and forming it into a parison or preform, it can be done by extrusion or injection moulding. The parison is a tube-like piece of plastic with a hole in one end in which compressed air can pass through. The parison is then clamped into a mould and air is pumped into it. The air pressure then pushes the plastic out to match the mould. Once the plastic has cooled and hardened, the mould opens up and the part is ejected.

2.1.7 Hand lay-up

Spray release gel is applied on to the mould surface to facilitate the easy removal of component from the mould. Thin plastic sheets are used at mould surface to get good surface finish. A spray gun is used to spray pressurized resin, catalyst and reinforcement in the form of chopped fibres. A roller is rolled over the sprayed material to remove air trapped into the lay-ups.

Curing of the product is done either at room temperature. After curing, mould is opened and the developed composite part is taken out and further processed.

2.1.8 Spray lay-up

Spray release gel is applied on to the mould surface to facilitate the easy removal of component from the mould. Thin plastic sheets are used at mould surface to get good surface finish. A spray gun is used to spray pressurized resin, catalyst and reinforcement in the form of chopped fibres. A roller is rolled over the sprayed material to remove air trapped into the lay-ups. Curing of the product is done either at room temperature. After curing, mould is opened and the developed composite part is taken out and further processed.

2.1.9. Pultrusion

Automated process for manufacturing of composite materials into continuous cross-section profiles Developed around 1950 for making fishing rods of glass fibre reinforced polymer (GFRP). Usually grouped into two categories: solid rod and bar stock, structural profiles.

2.1.10. Autoclaving

Autoclave moulding technique is similar to vacuum bag and pressure bag moulding method with some modifications. This method employs an autoclave to provide heat and pressure to the composite product during curing. In this method, prepregs are stacked in a mould in a definite sequence and then sealed to avoid any relative movement in between the prepregs sheets. Initially, a release gel is applied onto the mould surface to avoid sticking of polymer to the mould surface. After stacking the prepregs, the whole assembly is vacuum bagged to remove any air entrapped in between the layers after a definite period of time when it is ensured that all air is removed, the entire assembly is transferred to autoclave. Heat and pressure are applied for a definite interval of time. After the processing, the assembly is cooled at a definite rate and then vacuum bag is removed. The composite part is taken out from the mould.

2.2. Secondary processing of Polymer composites

Secondary processing of polymer composites is post processing like material removal process, joining process and all the below methods are generally applicable. Adhesive joining is a permanent type joining technique. Material on which adhesive is applied, is called adhered (Mechanical interlocking, Chemical bonding, Diffusion bonding), Mechanical joining is a non-permanent type of joining technique. It is performed either by mechanical fastening or integral mechanical attachment. Microwave joining process is a non-conventional joining process which is applicable for joining of thermoplastic matrix composites. Subsector materials are

used to accelerate the heating process . Drilling of polymer Metrix composites (PMCs) is a secondary processing technique that is done prior to mechanical fastening.

The figure 1 shown below is the adaptation of different manufacturing process in different fields like aerospace, research and academic, domestic application, automobile, electronics and plastic industries. Thisfigure shows the use of different manufacturing process in different fields. For example if total products produced in aerospace industries is 10. Then out of 10 product 3.5 products are by injection moulding, 2.5 are by hand layup, 1.5 are with compression moulding, 1 are by autoclave and so on.

Figure 1. Adaption of different manufacturing process.
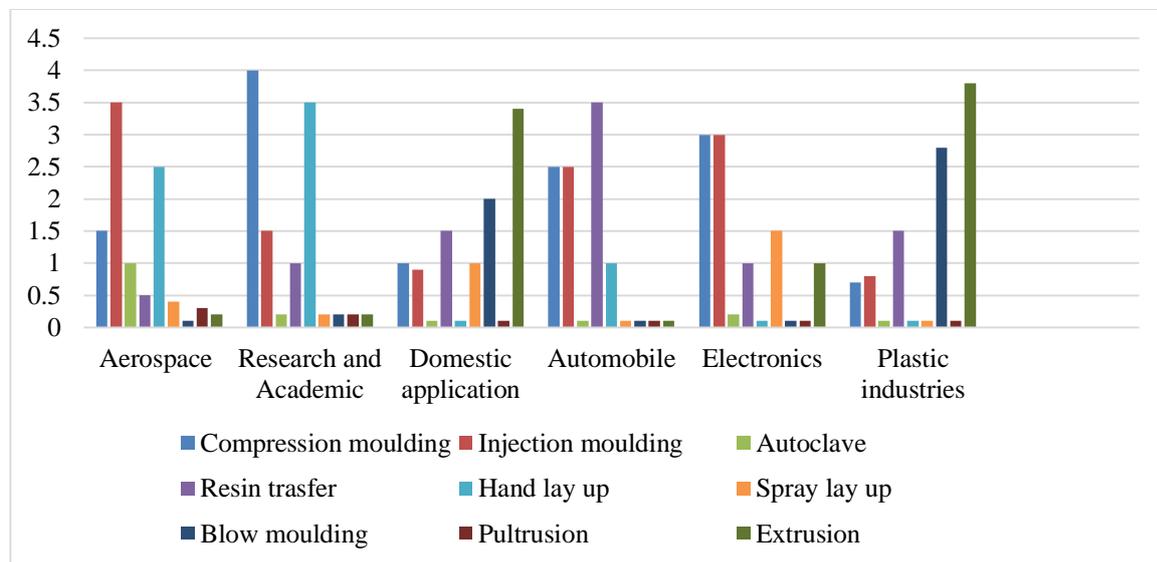
3. Application review.

Natural fibres reinforced composites are developing very rapidly as the genuine substitute to the metal or ceramic Based materials in applications that also include automotive, aerospace, marine, sporting goods and electronic industries. Natural fibre composites exhibit good specific properties, but there is high variability in their properties. So their weakness can and will be overcome with the development of more advanced processing of natural fibre and their composites. Both academicians as well as industries to manufacture a sustainable module for future application of natural fibre composites.The natural fibre-based thermoset and thermoplastic skins were developed by researchers for use as aircraft interior panels. The panels were found to possess the required flame and heat resistance, allowing easy recycling and disposal, and were cheaper and offered significant weight savings over conventional sandwich panels. In some countries, composite building materials are being made from straw. Straw bales are being used inthe construction of buildings. Many automotive components are already produced with natural composites, mainly based on polyester or Polypropylene and

fibres like flax, hemp, or sisal. The adoption of natural fibre composites in this industry is led by motives of price, weight reduction, and marketing rather than technical demands. Germany is a leader in the use of natural fibre composites. The German auto-manufacturers, Mercedes, BMW, Audi and Volkswagen have taken the initiative to introduce natural fibre composites for interiorand exterior applications. The first commercial example is the inner door panel of the 1999 S-Class Mercedes Benz, made in Germany, of 35% Barer F semi-rigid (PUR) elastomer from Bayer and 65% of a blend of flax,hemp and sisal. It should be emphasized that luxury automotive manufacturers are on board which could be seenas evidence that natural fibre composites are being used for environmental needs and not to lower costs [9].Mercedes-Benz used an epoxy matrix with the addition of jute in the door panels in its E-class vehicles back in1996. Another paradigm of natural fibre composites' application appeared commercially in 2000, when Audi launched the A2 midrange car: the door trim panels were made of polyurethane reinforced with a mixedflax and sisal material. Toyota developed an eco-plastic made from sugar cane and will use it to line the interiors ofthe cars [10]. Biodegradable bark cloth reinforced green epoxy composites are developed with view of application to automotive instrument panels [11].The coir/polyester composites have been used to produce mirror casing, paperweights, projector cover, voltage stabilizer cover, mail-box, helmet and roof. In structural applications and infrastructure applications, natural fibre composites have been used to develop load-bearing elements such asbeam, roof, multipurpose panel, water tanks and pedestrian bridge [12]. Jute-based green composites would besuitable for even primary structural applications, such as indoor elements in housing, temporary outdoor applications like low-cost housing for defence and rehabilitation and transportation. Due to its insulating characteristics, jute may find areas of applications in automotive door/ceiling panels and panels separating the engine andpassenger compartments [13]Natural fibre reinforced polymer composites have been proven alternative to Synthetic fibre reinforced polymer composites in many applications [14 &15]. Many Natural fibre composite products being developed and marketed, very few natural fibre composites have been developed, with most of their technologies still in the research and development stages. Natural fibre composites in automobile include for parcel shelves, door panels, instrument panels, armrests, headrests and seat Shells [16]. Plastic/wood fibre composites are being used in a large number of applications in decks, docks, Window frames and moulded panel components [17]. The passenger car bumper beam is manufactured by kenaf/glass epoxy composite material [18]. Recently, banana fibre reinforced composites are coming into in interest due to the innovative application of banana fibre in under-floor protection for passenger cars [19]. Automobile parts such as rear view mirror, visor in two wheeler, billion seat cover, indicator cover, cover L-side, nameplate were fabricated using sisal and Rosellefibres hybrid composites [20].

4. Conclusion.

The variety manufacturing process for the processing of polymer and fibre composite was discussed in this paper. Due to better properties with the situations natural fibre composite is considered as the best fit solution. This article includes a deep review on applications of natural fibre and its composites in aerospace, construction, automobile and many more industries due to its beneficial properties like low weight, low density, low cost, biodegradability, flame retardancy, tribological properties, mechanical and thermal properties. This review concludes that the natural fibre composites form one of the emergent areas in material science that makes awareness for use in various applications. Also it motivate new researchers for their study in this developing field.

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A STUDY ON COMPETENCY MAPPING AMONG PUMP AND VALVE INDUSTRIES IN COIMBATORE

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ABSTRACT OF THE STUDY

It helps the employees tounderstand the process and requirements of the department more effectively and thus will be of direct help to develop thetraining schedule of the employees in such a way that the training program suits better to meet the employee's and departmentalneeds. The paper focuses on the fact that there is a gap in the competencies present among the employees oftourism sector as against the competencies demanded by the employees of the sector so that the sector performs as per theexpectations and offers not only better revenues and employment opportunities but also helps in pushing the economy on alarge scale. The paper also suggests some suitable measures where this gap can be filled. The study uses descriptive research,as it includes surveying and fact-finding. The research explores details for further studies. The research comes upwith the results based on statistical tools (t-test) used in the research. Based on this research a competency map will bedeveloped which can be quite handful in suggesting improvements for the tourism sector in the state.

INTRODUCTION TO THE STUDY

Human Resource Management (HRM) is a relatively new approach to manage people in any organisation. This approach considers people as the key resource. It is concerned with the people dimension in management of an organisation. Since an organisation is a body of people, their acquisition, development of skills, motivation for higher levels of attainments, as well as ensuring maintenance of their level of commitment are all significant activities. These activities fall in the domain of HRM. HRM is a process, which consists of four main activities, namely, acquisition, development, motivation, as well as maintenance of human resources. Human Resource Management is responsible for maintaining good human relations in the organisation. It is also concerned with development of individuals and achieving integration of goals of the organisation and those of the individuals.

Competency Management focuses on integration of human resource planning in an organisation with its strategic vision by qualitative and quantitative analysis of competencies of current manpower of the organisation and its comparison with the level of competencies required to meet the goals and mission of the organisation. After this analysis, targeted and efficient HR policies and strategies are devised to bridge gaps.

Today, competency management is being used in every facet of human resource management. It is utilised in recruitment and selection, succession planning, compensation and benefits, training and career development as well. The approach undertaken is to identify an appropriate competency model, which is a framework that lists down the required competencies for being effective in the assigned job. Here, the competencies are categorised into two- soft competency that relates to communication and interpersonal skills like leadership and hard competency, which relates to technical qualifications needed for the job, like financial analysis and operational analysis. Many 'cores' competencies are first identified, which is then followed by choosing additional competencies for each sub-group.

OBJECTIVES OF THE STUDY

- To analyse various demographic variables, present in the study
- To find the awareness on competency mapping tools among the employees
- To find the challenges of competency mapping in organisation
- To find the appropriate competency mapping tools which are being used in the organization
- To find the degree of involvement of different levels of the organization in implementing the competency mapping
- To find out the competency mapping related questions among the employees
- To find out the desired outcomes by using the competency mapping in the organisation

REVIEW OF LITERATURE

1. **Boyatzis (2007)** adopted the term competency an "underlying characteristic of an individual that is casually related to effective or superior performance in a job". He identified that there were 19 generic competencies that outstanding managers tend to have. He clubbed those 19 generic management competencies into five distinct clusters as goal and action management, leadership, human resource management, directing subordinates and focus on others.

2. **Deb (2006)** stated that Human Resource Manager has to help all other functions to continuously upgrade their own systems, processes, practices, and skills by providing relevant internal and external training and expertise. He also explained that to keep upgrading the competencies of the human resources functionaries at all levels, in the formulation and implementation of human resources structures, systems, policies and practices dealing with individuals and collectives, as well as their dynamically updated knowledge of the business environment, others functions challenges and emerging human resources needs.

3. **Gaspar (2012)** found that Competency based selection method is healthy, structured and comprehensive. Candidates are evaluated on the competencies they need to demonstrate, when inducted into the organisation. Performance management competency system diagnoses the future training and development needs of the employees and it helps the HR executives to assist employees in decisions like promotions and transfers.

4. **According to Verma (2008),** "competencies in education create an environment that fosters Empowerment, accountability, and performance evaluation, which is consistent and

equitable. The acquisition of competencies can be through talent, experience, or training". Miller, et. al. (2010) suggests, there are two senses in which competence can be defined. The first is competence equating to performance, which is the ability to perform nursing tasks, and the second is competence as a „psychological construct".

5. V S Chauhan and Dr.Sandeep Srivastava (2012) explain that people are more critical than the plan. Strategies are effectively implemented when the organizations have a competent force of being employees. Effective HR strategy gives the direction to change in an orderly fashion. This is done by developing a competency model and mapping each job on these competencies. The paper attempted to shed some additional light on the field of competencies and competency models in addition to the applications of the competency model in an organization.

6. B R Celia and M Karthick (2010) had a view of measuring the competency level of employees in the power sector. It gave a broad description of the employee's competencies attributes, different departmental competencies and suggestions given to improve their competency level. The competency assessment focused on 6 behavioral sections: Knowledge, communication, development of people, team orientation, achievement orientation and client orientation. Samples of 300 employees were selected from a population using stratified random sampling. Analysis and interpretation of data was through the statistical tools namely, Percentage analysis method, spearmen's rank correlation, ANOVA.

7. Eskildsen, J. K and Nussler, M. L. (2000) have constructed a structural model that describes the causal linkage among the subsystems of human resource management, employee satisfaction and loyalty as well as corporate performance based on theoretical considerations. The analysis shows that the theoretical model relates with the mental models of the managers and also discloses the areas in which organization need to improve their performance regarding human resource management.

RESEARCH METHODOLOGY

Research is a systematic way of identifying a problem/gap, collection of data pertaining to the identified variables, analysis and presentation of the findings. Research methodology is the overall plan or blue print on how the research will be conducted. This chapter presents the definitions and various constructs used in the study, methods used for measurement, and framework for analysis of the data to meet the set objectives and hypotheses.

This study uses a descriptive research approach to measure competency mapping usage of the population under study pertaining Pump and Valve Industry in Coimbatore. It follows survey techniques using a structured questionnaire.

The study has used both the primary data and secondary data for the study to be carried out. The area of study is conducted in the pump and valve industry in Coimbatore. The target population for the study comprised nearly thousands of employees working in Pump and Valve Industry in Coimbatore. A sample of 500 respondents is chosen to collect primary data. But out of 500 respondents only 423 respondents were completely filled in the questioner and the balance 77 questioners were rejected as incomplete ones.

ANALYSIS AND INTERPRETATION

Regression analysis is used to study the nature extent of functional relationship between two or more variables and to estimate or to predict the unknown values of dependent variable from the known values of the independent variables.

H0: There are no linear relationships existing between independent variables on Competency mapping practices

HA: There are linear relationships existing between independent variables on Competency mapping practices

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.885a	0.783	0.78	0.1824
a. Predictors: (Constant), AWARENESS, ROAD BLOCKS, IMPORTANCE, REASONS, BENIFITS				

ANOVA						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	50.064	5	10.013	300.948	.000a
	Residual	13.874	417	0.033		
	Total	63.938	422			
a. Predictors: (Constant), AWARENESS, ROAD BLOCKS, IMPORTANCE, REASONS, BENIFITS						
b. Dependent Variable: COMPETENCY MAPPING PRACTICE						

Coefficients						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
			Std. Error	Beta		
1	(Constant)	0.623	0.072		8.622	0
	ROAD BLOCKS	-0.06	0.045	-0.071	-1.341	0.181
	BENIFITS	0.457	0.098	0.478	4.671	0
	REASONS	-0.442	0.075	-0.492	-5.874	0

IMPORTANCE	0.208	0.048	0.235	4.335	0
AWARENESS	0.643	0.039	0.725	16.366	0
a. Dependent Variable: COMPETENCY MAPPING PRACTICE					

INTERPRETATION

The above table shows the impact of Roadblocks, Benefits, Reasons, Importance and Awareness on Competency mapping practice.

The correlation coefficient value (R) is 0.885, which exhibits a good amount of correlation between the independent variable (Roadblocks, Benefits, Reasons, Importance and Awareness) and dependent variable (Competency mapping practice), with the F-ratio being 300.948 and its associated significance level being small (P<0.01). The R square value gives us the goodness of fit of the regression model. That is, the amount of variability explained by the whole of the selected predictor variables in the model for 22.0% of variation in the dependent variable (Competency mapping practice).

To find out how well each of the variables predicts the dependent variable, we must now look in Table. This information contains a summary of the results, with all the variables entered into the equation. Upon reviewing the **Standardise Coefficient Beta (β)** column there are five variables that make a statistically significant contribution. The t of each coefficient **β** needs to be greater than 2 or less than -2; and the sig. level less than .05.

In the table, 'roadblock' has a **β** of -.071 at a sig. level of .181, and t=-1.341, 'benefits' has a **β** of .478 at a sig. level of .000, and t=4.671, 'reasons' has a **β** of -.492 at a sig. level of .000, and t=-5.874, 'importance' has a **β** of .235 at a sig. level of .000, and t=4.335   and 'awareness' has a **β** of .725 at a sig. level of .000, and t=16.366.

Therefore, we can conclude that the more respondents feel that awareness leads to competency mapping practice more. Benefits and importance also play a significant role in competency mapping practice. But neither 'roadblocks' nor 'reasons can predict competency mapping practice significantly.

Thus, we can say the model of competency mapping practice can be achieved by more awareness, benefits and importance and by reducing the effect of roadblocks and reasons also increase competency mapping practice.

CONCLUSION

This research is important for two reasons. First, it broadens thinking about human resources as a competitive advantage and focuses on the specific skills required of HR professionals to fulfill their new role. Identify six skill groups as well as specific behaviors and knowledge (skills) within each group, which HR professionals should be able to demonstrate. Secondly, in addition to these issues, we have discussed about the benefits and its importance to the organisation. And also about the road blocks that stops to implement the competency mapping in the organisation along with the discussion about the reasons for not following it.

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A REVIEW STUDY ON CUSTOMER'S ATTITUDE TOWARDS BRANDED RETAIL STORE WITH SPECIAL REFERENCE TO COIMBATORE

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ABSTRACT OF THE STUDY

The perception of service marketing focuses on selling the services in thebest interest of user/customers. With the change in perception of themanagement, it has witnessed multifaceted changes which necessitated ananalogous change in the concept of service marketing. The servicegenerating organisation realised the interest of customers and thereafterthey were compelled to assign due weightage to the interest of society inthe pace of the holistic concept of management.

Retail branding involves branding the retail business or the store itself. In retail consumers come in direct contact with the store and then the product. The retailer has to satisfy the customer in all aspects every day so it is very much important to build up with a strong store brand. Though the retailer sells many reputed brands, it cannot simply rely on the product-brand power itself because of competition (i.e. the availability same brand in other stores also) has to build up a strong store brand.

INTRODUCTION TO THE STUDY

The Indian retail market is one of the fastest growing retail markets in the world. With over 12 million retailoutlets, India has one of the highest density of retailers in the world at one retail for every 90 people. The Indian retailmarket is estimated to be US $ 600 billion and one of the top five retail markets in the world by economic value. Retailingin India is one of the pillars of its economy and accounts for about 10 per cent of its GDP.

The management process through which goods and services move from concept to the customer. Marketing is based on thinking about the business in terms of customer needs and their satisfaction. Marketing differs from selling because (in the words of Harvard Business School's retired professor of marketing Theodore C. Levitt) "Selling concerns itself with the tricks and techniques of getting people to exchange their cash for your product. It is not concerned with the values that the exchange is all about. And it does not, as marketing invariable does, view the entire business process as consisting of a tightly integrated effort to discover, create, arouse and satisfy customer needs." In other words, marketing has less to do with getting customers to pay for your product as it does develop a demand for that product and fulfilling the customer's needs.

The marketing mix is a familiar marketing strategy tool, which you will probably know, was traditionally limited to the core 4Ps of Product, Price, Place and Promotion. The 4Ps were designed at a time where businesses sold products, rather than services and the role of customer

service in helping brand development was not so well knowing. Over time, Booms and Pitner added three extended 'service mix P's': Participants, Physical evidence and Processes, and later Participants was renamed People. Today, it's recommended that the full 7Ps of the marketing mix are considered when reviewing competitive strategies. Thus, the businessman uses appropriate marketing mix for his product or services and prepares a marketing strategy using various combinations to reach out the customers.

OBJECTIVES OF THE STUDY

To review the various studies relating to customer attitude towards branded retail outlets.

REVIEW OF LITERATURE

Indian consumers are nowadays becoming more and more brand conscious and they are much concerned about the brands they use and also the store where they do their purchase. Apparel retailers those aiming to grow, diversify and introduce new formats have to pay more attention to the brand-building process particularly that of the branding of the store itself. The emphasis here is on retail as a brand rather than retailers selling brand.

Reynolds et al (2002) reported that in order to be successful the retailers should understand the patronage behaviour of the consumers and the retailers should identify which retail attributes were important to the customers so that the appropriate retail strategy can be established. The focus should be on branding the retail business itself. To face the stiff competition, Indian retailers must come to recognize the value of building their own store as brands to strengthen their store positioning to communicate quality as well as value for money. Sustainable competitive advantage will depend on translating core values combining products, images and reputation in to a coherent retail brand strategy.

Rohit (2008) stated that in a energetic and highly competitive market which was crowded with brands, models and variety of choices, the challenge faced by apparel retailers were how to one could create a differential advantage and the tendency among the apparel retailers was providing more emphasis on the brand particularly branding the store itself and distinct themselves by creating strong brand name for themselves.

Marilyn (2009) concluded that retail brand might be as strong as product brand, that personal experience, as well as retailer-controlled variables, was strongly associated with retail brand, and that retailer "symbols and traditions" were an integral component of retail brand. Previous research studies mainly analyzed store-level statistics has revealed both the physical and social attributes of the retail atmosphere to be significant

RESEARCH METHODOLOGY

The aim of a research design is to provide an intended and prepared way of achieving the research objectives and to increase the validity and reliability. The present study is a descriptive that seeks to explore the customer satisfaction. This type of study requires a research that does an in-depth investigation and description of phenomena, and systematically classifies the attributes as accurately and precisely as possible. In order to attain the aim of the

research design, it should address the serious questions including the unit of analysis and the method of data collection. These components are therefore discussed in the following section.

ANALYSIS AND INTERPRETATION

Demographic Profile of the respondents

PARTICULARS	DESCRIPTION	FREQUENCY	PERCENTAGE
Age	<30 years	100	50.0
	30-40 years	58	29.0
	40-50 years	29	14.5
	>50 years	13	6.5
Gender	Male	120	60.0
	Female	80	40.0
Marital status	Single	75	37.5
	Married	125	62.5
Occupation	Agriculture	6	3.0
	Business	36	18.0
	Government job	28	14.0
	Profession	102	51.0
	Student	28	14.0
Birth place	Rural	65	32.5
	Urban	135	67.5
Monthly income	10000	10	5.0
	10001-20000	25	12.5
	20001-30000	80	40.0
	>30001	53	26.5
	unemployed	32	16.0
Family type	Nuclear	130	65.0
	Joint	70	35.0

INTERPRETATION:

➢ 50.0% respondents fall under the age group less than 30 years and only 6.5% of respondents fall under the age group more than 50 years of age.

➢ 60.0% of the respondents are male in gender and remaining 40.0% of the respondents are female in gender.

➢ 37.5% of the respondents are not married and the remaining 62.5% of respondents are married.

➢ 51.0% of the respondents are in profession and only 3.0% of the respondents are in agriculture sector.

➢ 67.5% of the respondents are from urban place and remaining 32.5% of the respondents are from rural place of birth.

➢ 40.0% of the respondents are having 20001-30000 as their monthly income and 5.0% of the respondents are on 10000 of their monthly income.

➢ 65.0% of the respondents are in nuclear type of family and remaining 35.0% of the respondents are in joint family.

CONCLUSION

The research identified that value for money, wide range of promotional offers an extensive variety of products are the important store choice attributes. Finally, the research work implies that the positive association exists in store reputation, consumer satisfaction and store loyalty but not with store brands. The research has implications for organised retailers in terms of store choice and store brand strategy which also have an impact on consumer satisfaction and loyalty towards store brands in the future time period. The retailers should specifically consider aspects of store reputation that are relevant to the store brands they offer when designing activities to develop and enhance strategies to promote their own brand and unique store positioning. The most important issue in retailing is credibility and trustworthiness of the supplier. Again, some of the product categories are highly successful on interest as those categories requires good feel and touch.

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A JOURNEY OF GOODS & SERVICES TAX IN INDIA: A STUDY

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Abstract

The Goods and Services Tax (GST), implemented on July 1, 2017, is regarded as a major taxation reform till date implemented in India since independence in 1947. GST was planned to be implemented in April 2010, but was postponed due to political issues and conflicting interest of stakeholders. The primary objective behind development of GST is to subsume all sorts of indirect taxes in India like Central Excise Tax, VAT/Sales Tax, Service tax, etc. and implement one taxation system in India. In the pre-GST regime, the imports of goods and services were subject to multiple state and federal levies such as customs duty, countervailing duty (equivalent to excise duty), and special additional duty (equivalent to value added tax). The single integrated goods and services tax (IGST) under the GST has replaced all these taxes. Imports under GST are treated as inter-state supply. Since GST is a destination-based tax, Integrated Goods and Services Tax (IGST) is levied in the state where the imported goods are consumed and imported services are received.IGST can be paid using input tax credit of central goods and services tax (CGST), state goods and services tax (SGST), and IGST. The input tax credit is the credit that dealers can avail for taxes paid on their purchases, at the time of paying final tax on their sales.In the case of CGST and SGST, no cross utilization of input tax credit is allowed. This means that input tax credit of CGST can only be utilized for CGST and IGST, and an input tax credit of SGST can only be utilized to pay for SGST and IGST.

Keywords: Tax, Indirect Tax, Goods And Services Tax (GST), Taxation Reforms, Indian Taxation System, GST Council.

Introduction

In India, the Goods and Services Tax Bill was officially introduced in 2014 as The Constitution (One Hundred and Twenty-Second Amendment) Bill, 2014. The GST Bill in India proposes the implementation of nationwide Value Added Tax on sale, manufacturing and the use of different goods and services. The Goods and Services Tax act is expected to be operative in India from April, 2016.Arun Jaitley - the Finance Minister of India announced The Constitution (One Hundred and Twenty-second Amendment) Bill, 2014 or the Goods and Services Tax in Lok Sabha on 19 December 2014. The Parliament passed the bill on 6th May, 2015, after it received 352 votes for and 37 against it. GST is a kind of indirect tax. Currently, Indian consumers have to pay indirect tax on goods and services such as Value Added Tax, Service Tax, Excise Duty, Customs Duty, etc. Under the current system, each State has a right to levy their own tax on the goods coming into their dominion for sale and consumption, while the Centre levies taxes on manufacture of the goods. All these direct taxes levied on the traders are passed down to the consumer. Of these, excise duty/CENVAT, customs duty, service tax, central and state sales tax, VAT, octroy, entry tax, road toll, luxury tax and entertainment tax

are applicable to goods and services. Let us take an example of a dress manufactured in Surat, Gujarat. At the spot of manufacture, an excise duty/Cenvat has to be paid to the Central Government. If the dyes for the dress are bought from Madhya Pradesh, then the manufacturer has to pay the state taxes applicable for the dyes in Madhya Pradesh while buying it, and also pay Gujarat's "import duty" on the product. Similarly, if the buttons for the dress are bought from Rajasthan, then another set of taxes are added to the manufacturing cost. At the end of this chain, when the product reaches the market for sale, VAT is added to it. So all the taxes paid for the production of the dress so far gets added to the cost of the dress, which rises considerably from its actual manufacturing cost. The current system is burdened with multiple taxation on the same object with no way to offset the taxes already paid at each stage of production-retailing-consumption. If Cenvat and service tax are paid at the manufacturing level, these can be offset against future payments, but none of the other taxes paid at any stage can be reclaimed. [1]

How GST Works

GST proposes to abolish the varying levels of taxation between States, and consider the country as a single whole organism when it comes to taxes on goods and services instead of as a segmented creature. All the sundry taxes will be clubbed into just 2 levels – Central GST and State GST. What a trader will essentially be able to do is claim a refund on the taxes already paid at different stages of value addition.[2] The consumer who buys the product will have to pay only the GST charged by the last dealer in the supply chain, as everyone else would have the opportunity to set-off the taxes paid at the previous stages. If we take the example above under the GST system, the Cenvat on manufacturing the dress and the taxes paid on dyes and buttons can be offset at each level, thereby considerably reducing the total taxes paid. GST will also prevent the multiple taxation occurring on certain goods, and ensure transparency with regards to the rate of taxation and the total amount that goes to the government as taxes on a product. Currently, a consumer is not aware of the total amount of taxes s/he pays for a product, apart from VAT which is mentioned on the bill.[3]

Here's a list of taxes that the GST will likely replace:

- Service Tax
- Cesses and surcharges related to supply of goods or services
- Central Excise Duty
- Excise Duties on medicinal and toilet preparations
- Additional Excise Duties on textiles and textile products
- Additional Excise Duties on goods of special importance[4]
- Additional Customs Duties (CVD)
- Special Additional Duty of Customs (SAD)

These are the taxes that could be absorbed into the GST regime

- Central Sales Tax
- State VAT
- Entry Tax
- Purchase Tax
- Entertainment Tax (not levied by local bodies)
- Luxury Tax
- Taxes on advertisements
- State cesses and surcharges5

The exact rates of GST have not been decided yet. This will be done only after repeated consultations on the reports made by the GST Council. The rates being discussed as of now hover around 18%, which may be higher than the current system for certain goods and services, and lower for the others. [6]

Advantages of GST

- This is a federal law, which means that the states will no longer have the right to make new laws on taxation towards goods and services. [7]
- It simplifies the tax system and makes it easier to understand as well as cheaper to implement at various levels.
- Tax evasion at various stages will be eliminated as tax offsets can be collected only if taxes have been paid originally. You will also be able to buy raw materials or constituent materials for production only from those who have paid taxes, in order to claim benefits.
- It will be cheaper to buy input goods and services for production from other states.
- The current supply and distribution chain may undergo a change with a change in taxation system that does away with excise and customs duties. [8]
- The consumer will get the end-product at cheaper rates because of elimination of multiple taxes and the tax cascade.
- As of now, petroleum and petroleum products have been kept out of the GST regime until further notice. [9]
- Sale of newspapers and advertisements are also likely to fall under the GST regime, allowing the government to increase its revenue considerably.[10]

- While there will be central GST and state GST, the tax applicable on goods and services being exported and imported between states in India would fall under an Integrated GST (GST) system in order to avoid conflict of dominion. [11]

Disadvantages of GST

- GST is not good news for all sectors, though. In the current system, many products are exempted from taxation. The GST proposes to have minimal exemption list. Currently, higher taxes are levied on fewer items, but with GST, lower taxes will be levied on almost all items.
- GST is not applicable on liquor for human consumption. So alcohol rates will not get any advantage of GST. [12]
- Stamp duty will not fall under the GST regime and will continue to be imposed by states.

GST Bill Approval Process

The Constitution Amendment Bill for Goods and Services Tax (GST) was cleared by the Rajya Sabha on August 3, 2016. This Bill sanctions a modification in the Constitution to allow both the Centre and the States to levy goods and services tax. The Bill was first introduced in the Lok Sabha in March 2011 and reports were submitted around it regularly.[14]However, in 2014, the Bill lapsed as the Lok Sabha's ongoing term ended. The Bill was passed by the Lok Sabha on May 6, 2015, and further reports were commissioned and presented. After Rajya Sabha's clearance of the Bill, the Lok Sabha will ratify the Bill again. At least 15 other states also have to support the Bill to go forward with its implementation as an Act. Once the ratifications are received, the President will constitute a GST Council comprising the Finance Minister, Minister of State in charge of Revenue, Minister in charge of Finance/Taxation, and other ministers nominated by states. [15]This Council will make recommendations on the taxes to be absorbed and done away with, exemptions to GST and their threshold, laws governing the GST levies, actual GST rates and discounts, etc. A draft of the Bill is already available in the public domain. Once the changes are made and the final draft it ready it will be put up in public again and comments sought. Once the GST Bill is fleshed out in detail, and the President approves it, the Parliament will pass a legislation on central GST and integrated GST, and all the states and union territories will pass legislations on the state GST. Once all legislations have been passed as Acts, a synchronised implementation of the Acts will be negotiated among the states and centre, and Goods and Services Tax will be officially active[16].

Goods and Services Tax Bill

The Goods and Services Tax Bill is officially known as The Constitution (One Hundred and Twenty-Second Amendment) Bill, 2014 which is formulated to create a pan-India tax system and end the number of multiple taxes charged by the Centre and the States on various goods and services. The key points of the GST bill are given below:

- It is an indirect, uniform tax that is levied on the goods and services throughout a particular country. Several developed countries add tax on sale, manufacture and consumption using single comprehensive tax.[17]
- Surcharge on supply of goods, cesses, special ad-on duty of customs, add-on duties of customs and excise and central excise duty would be replaced by Central Taxes GST.
- Entertainment tax, entry tax, purchase tax, central sales tax, VAT, etc. would be replaced by State Tax GST.
- The primary objectives of GST is eliminating the excessive taxation.[18]
- The 2014 bill deleted the 2011 bill provision that imposed certain restrictions on the states on taxation of the products that are important for inter-state commerce and trade.[19]

Tax

Taxes subsumed

The single GST subsumed several taxes and levies which included: central excise duty, services tax, additional customs duty, surcharges, state-level value added tax and Octroi. Other levies which were applicable on inter-state transportation of goods have also been done away with in GST regime. GST is levied on all transactions such as sale, transfer, purchase, barter, lease, or import of goods and/or services. India adopted a dual GST model, meaning that taxation is administered by both the Union and State Governments. [20]Transactions made within a single state are levied with Central GST (CGST) by the Central Government and State GST (SGST) by the State governments. For inter-state transactions and imported goods or services, an Integrated GST (IGST) is levied by the Central Government. GST is a consumption-based tax/destination-based tax, therefore, taxes are paid to the state where the goods or services are consumed not the state in which they were produced. IGST complicates tax collection for State Governments by disabling them from collecting the tax owed to them directly from the Central Government. Under the previous system, a state would only have to deal with a single government in order to collect tax revenue. [21]

HSN code

HSN is an 8-digit code for identifying the applicable rate of GST on different products as per CGST rules. If a company has turnover up to ₹1.5 Crore in the preceding financial year then they need not mention the HSN code while supplying goods on invoices. If a company has turnover more than ₹1.5 Crore but up to ₹5 Cr then they need to mention the first two digits of HSN code while supplying goods on invoices. If turnover crosses ₹5 Cr then they shall mention the first 4 digits of HSN code on invoices. [22]

Rate

The GST is imposed at variable rates on variable items. The rate of GST is 18% for soaps and 28% on washing detergents. GST on movie tickets is based on slabs, with 18% GST for tickets

that cost less than Rs. 100 and 28% GST on tickets costing more than Rs.100 and 5% on readymade clothes. The rate on under-construction property booking is 12%. Some industries and products were exempted by the government and remain untaxed under GST, such as dairy products, products of milling industries, fresh vegetables & fruits, meat products, and other groceries and necessities.[23]

The Central Government had proposed to insulate the revenues of the States from the impact of GST, with the expectation that in due course, GST will be levied on petroleum and petroleum products. The central government had assured states of compensation for any revenue loss incurred by them from the date of GST for a period of five years. However, no concrete laws have yet been made to support such action. GST council adopted concept paper discouraging tinkering with rates. [25]

E-Way Bill

An e-Way Bill is an electronic permit for shipping goods similar to a waybill. It was made mandatory for inter-state transport of goods from 1 June 2018. It is required to be generated for every inter-state movement of goods beyond 10 kilometres (6.2 mi) and the threshold limit of ₹50,000 (US$720). It is a paperless, technology solution and critical anti-evasion tool to check tax leakages and clamping down on trade that currently happens on a cash basis. [2]The pilot started on 1 February 2018 but was withdrawn after glitches in the GST Network. The states are divided into four zones for rolling out in phases by end of April 2018.[26] A unique e-Way Bill Number (EBN) is generated either by the supplier, recipient or the transporter. The EBN can be a printout, SMS or written on invoice is valid. The GST/Tax Officers tally the e-Way Bill listed goods with goods carried with it. The mechanism is aimed at plugging loopholes like overloading, understating etc. Each e-way bill has to be matched with a GST invoice. It is a critical compliance related GSTN project under the GST, with a capacity to process 75 lakh e-way bills per day. [27]

Intra-State e-Way Bill

The five states piloting this project are Andhra Pradesh, Gujarat, Kerala, Telangana and Uttar Pradesh, which account for 61.8% of the inter-state e-way bills, started mandatory intrastate e-way bill from 15 April 2018 to further reduce tax evasion. It was successfully introduced in Karnataka from 1 April 2018. The intrastate e-way bill will pave the way for a seamless, nationwide single e-way bill system. Six more states Jharkhand, Bihar, Tripura, Madhya Pradesh, Uttarakhand and Haryana will roll it out from 20 April 18. All states are mandated to introduce it by May 30, 2018. [29]

Reverse Charge Mechanism

Reverse Charge Mechanism (RCM) is a system in GST where the receiver pays the tax on behalf of unregistered, smaller material and service suppliers. The receiver of the goods is eligible for Input Tax Credit, while the unregistered dealer is not. In the notification dated on 29th January 2019, the Indian government has finally implemented the RCM (reverse charge

mechanism) which started from 1 February 2019 as per the GST acts and amendments. Also to note that the up to INR 5000 exemptions will be removed effectively. [30]

Goods kept outside the GST

- Alcohol for human consumption.
- Petrol and petroleum products (GST will apply at a later date) viz. Petroleum crude, High speed diesel, Motor Spirit (petrol), Natural gas, Aviation turbine fuel. [31]

GST Council

GST Council is the governing body of GST having 33 members. It is chaired by the Union Finance Minister. GST Council is an apex member committee to modify, reconcile or to procure any law or act or regulation based on the context of goods and services tax in India. The council is headed by the union finance minister Arun Jaitley assisted with the finance minister of all the states of India. The GST council is responsible for any revision or enactment of rule or any rate changes of the goods and services in India. [32]

Goods and Services Tax Network (GSTN)

The GSTN software is developed by Infosys Technologies and the Information Technology network that provides the computing resources is maintained by the NIC. "Goods and Services Tax" Network (GSTN) is a nonprofit organisation formed for creating a sophisticated network, accessible to stakeholders, government and taxpayers to access information from a single source (portal). The portal is accessible to the Tax authorities for tracking down every transaction, while taxpayers have the ability of connect for their tax returns. The GSTN's authorised capital is ₹10 crore (US$1.4 million) in which initially the Central Government held 24.5 percent of shares while the state government held 24.5 percent. The remaining 51 percent were held by non-Government financial institutions, HDFC and HDFC Bank hold 20%, ICICI Bank holds 10%, NSE Strategic Investment holds 10% and LIC Housing Finance holds 11% . [33]

Key Features of Goods and Services Tax

1. Listed below are the main features of the Goods and Services tax in India:
2. The Goods and Services Tax will include Central Indirect taxes such as Excise Duty, Service Tax, Special Additional Duty of Customs, Countervailing Duty , Central Surcharges and Cesses as long as they are related to the supply and consumption of goods and services.[34]
3. It will also include State Value Added Tax or Sales Tax, Entertainment Tax, (excluding the tax charged by the local bodies), Entry and Octroi tax, Central Sales Tax (taxed by the Centre and collected by the State Government) , Purchase Tax, Luxury tax, Taxes on betting, lottery and State cesses and surcharges involved in the supply and consumption of services and goods.[35]

4. Inclusion of the concept of 'declared goods of special importance' as per the Indian Constitution.

5. Will levy integrated Goods and Services Tax on inter-State transactions of goods and services.36

6. Will levy additional tax of 1% on supply of goods in inter-State trade which will be collected by the Government of India for a period of two years and will be allocated to the states from where the supply comes.

7. Petroleum and petroleum products and alcohol have been kept out of the reach of GST.

8. The act will have two constituents - Central GST charged by the Centre and State GST charged by the states. But, in case of inter-state trade or commerce, only the Centre will levy tax and collect Goods and Services Tax, and the tax collected would be divided between the Centre and the State as per the provision made in the parliament.37

9. Also an additional tax of 1% on inter-state trade in goods and services will be imposed and collected by the Centre and provided to the states for two years to compensate the loss (of any) faced by the states for implementing the GST.38

10. A Goods and Services Tax Council will be created to address the issues relating to goods and services tax and give recommendations to the Union and the States on areas such as rates, exemption list and threshold limits.39 The GST Council will constitute of the Union Finance Minister as chairman followed by the Minister –in-charge of Finance or Taxation or any other Minister nominated by each State Government. The GST Council will function under the Chairmanship of the Union Finance Minister and it will be a joint forum of the Centre and the States.40

The Impact

It is expected that the creation of the Goods and Services Tax act and its implementation will have a great impact on various aspects of business in India by changing the traditional pattern of pricing the products and services.[41]The Goods and Services Act will also have a great impact on the tax system in India by reducing the unfavorable effect of tax on the cost of goods and services. GST is expected to change the whole indirect tax system by impacting the tax structure, tax computation, credit utilization and tax frequency.[42] It will also help in supply chain optimization.As per the government notification, the Goods and Services Tax will be effective in India from April, 2016. The originators of the Goods and Services Tax believe that the implementation of this act would make the tax procedure more transparent, fair and efficient.Thus, the introduction of Goods and Services Tax or The Constitution (One Hundred and Twenty-Second Amendment) Bill, 2014 is a significant move taken the Indian Government to reform taxation in India. It will help in creating a single national market by merging several Central and State taxes under a one single tax procedure. No doubt, the implementation of GST will take time, but it is likely to create more employment opportunities and economic inclusion.[43]

GST Rates Impact on Economy

As GST has transformed the economy at its peak. It's a game-changing reform for the Indian economy as it brings about net appropriate price for the goods and services considered under single taxation system. Mentioned below are some of the important GST rates impacts in the Indian economy :

1. Increase in Competition: After the GST has been imposed, there has been seen a fall in prices of goods and services which ultimately has brought the final consumer to have less tax burden on the goods and services. There is seen a great scope of increased production, thus, increase in competition.
2. Simple Tax Structure: GST has simplified the calculation of tax with the adoption of single taxation system. Under this, multiple taxation has been aborted which ultimately saves time and money.
3. Uniform Tax Regime: Previously, there used to be multiple tax at every stage of supply chain, where the taxpayer got confused. But now, with GST, it is easier for the taxpayer to pay uniform tax.
4. Increase in Exports: There has been seen a fall in the cost of production after the GST got imposed. This in return has brought competitiveness towards the international market resulting in rise in exports.

Protest against GST rates

With the implementation of GST, various traders, cloth merchants, private security agencies and many others went on protest against GST rates. Cloth merchants protested against the imposition of 5% sales tax on textiles under the GST regime. The newly added tax system in the country also made the iron, wire dying and steel traders to held a protest against high rates of GST. Steel traders were of opinion that the new tax system has nosedived 40% trade due to high rates and elaborated paper works under the new system.Owners and employees of private security agencies also went on a silent protest against the levy of 18% GST on security services because the GST rate took away the major share of wage and benefits from the security personnel.

Conclusion

Technicalities of GST implementation in India have been criticized by global financial institutions, sections of Indian media and opposition political parties in India. World Bank's 2018 version of India Development Update described India's version of GST as too complex, noticing various flaws compared to GST systems prevalent in other countries; most significantly, the second highest tax rate among a sample of 115 countries at 28%. GST's implementation in India has been further criticized by Indian businessmen for problems including tax refund delays and too much documentation and administrative effort needed. According to a partner at PwC India, when the first GST returns were filed in August 2017, the

system crashed under the weight of filings. The opposition Congress party has consistently been among the most vocal opponents of GST implementation in India with party President, and leader of the opposition, Rahul Gandhi, slamming BJP for allegedly "destroying small businessmen and industries" in the country. He went on to pejoratively dub GST as "Gabbar Singh Tax" after an ill-famed, fictional dacoit in Bollywood films. Blaming the implementation of gst as a "way of removing money from the pockets of the poor", Rahul has lamented it as a "big failure". while declaring that if Congress Party is elected to power, it will implement a single slab GST instead of different slabs.In the run-up to the elections in various states of India, Rahul has intensified his "Gabbar Singh" jibes on Modi government.

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ऑनलाइन क्रय के प्रति उपभोक्ता व्यवहार : मुजफ्फरपुर जिले के संदर्भ में ।

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सारंश

आज के आधुनिक युग में ऑनलाइन क्रय का महत्व बढ़ता ही जा रहा है।छोटे छोटे शहरों में इटरनेट एवं मोबाइल की सुविधा होने के कारण ऑनलाइन क्रय की लोकप्रियता बढ़ रही है फिर भी ऑनलाइन क्रय के प्रति उपभोक्ताओं में आज भी असमंजस की स्थिति हैं। उपभोक्ताओ का झुकाव अभी भी सुपुदर्गी पर अदायगी की हैं क्योंकि ऑफलाइन क्रय करते समय नकद का भुगतान वस्तुओं या सेवाओं की सुपुदर्गी होने के बाद ही करते है। प्रस्तुत शोध पत्र में ऑनलाइन क्रय के प्रति उपभोक्ता के व्यवहार का अध्ययन का कर रहें ।

सूचक शब्द :- उपभोक्ता , क्रय व्यवहार, ॱ ऑनलाइन क्रय, उपभोक्ता संतुष्टि ।

परिचय

ई कॉमर्स का एक रूप ऑनलाइन क्रय हैं। आज के आधुनिक युग में ऑनलाइन क्रय का महत्व बढता ही जा रहा है। ऑनलाइन क्रय में एक उपभोक्ता इटरनेट के माध्यम से विक्रेता से वस्तु या सेवाओं को क्रय करता हैं। इसके अन्तर्गत एक उपभोक्ता सर्वप्रथम इटरनेण्ट की सहायता से ऑनलाइन व्यापारी के वेवसाइट पर जाकर वस्तु या सेवा का चयन करता है, इसके बाद चयन किए हुए वस्तु या सेवा को क्रय करने हेतु अग्रिम आदेश देती है तथा भुगतान के लिए विकल्प का भी चयन करती हैं। व्यापारी या विक्रेता को अग्रिम आदेश प्राप्त होने के बाद उस आदेशित माल को क्रेता के दिए गए पते पर पहुँचा देती हैं। उपभोक्ता को यह सुविधा 24X7 उपलब्ध होती हैं। ऑनलाइन क्रय के अन्तर्गत एक उपभोक्ता क्रय की जाने वाली वस्तुओं एवं सेवाओं की तुलना कीमत , रंग, आकार ,गुणवत्ता के आधार पर अन्य प्रतियोगी वस्तुओं एवं सेवाओं से कर सकती है। इटरनेट की सुविधा विकसित होने के बाद ऑनलाइन क्रय के क्षेत्र में क्रांति आ गई हैं। आज अनेक कम्पनियँ1ा ऑनलाइन अपने माल की ब्रिकी कर रही हैं ।

बिहार क्षेत्रफल की दृष्टि से भारत का 13 वॉ सबसे बडा राज्य है तथा जनसंख्या की दृष्टि से तीसरा सबसे बडा राज्य है। बिहार में कुल 38 जिले है। मुजफ्फरपुर जिला क्षेत्रफल की दृष्टि से दसवां सबसे बडा जिला है एवं जनसंख्या की दृष्टि से तीसरा सबसे बडा जिला हैं। उपभोक्ता बाजार के दृष्टिकोण से मुजफ्फरपुर जिला एक महत्वपूर्ण जिला है। 21 वी शताब्दी मे ऑनलाइन क्रय के क्षेत्र मे क्रांति आ गई हैं। आम नागरिकों के बीच मोबाइल एंव इटरनेट के प्रयोग में वृद्धि में होने से आम जनता भी ऑनलाइन क्रय की तरफ आकर्षित हो रही है।

उद्दे"य

प्रस्तुत शोध पत्र के निम्न उद्देश्य है।

1. उपभोक्ता के ऑनलाइन क्रय के व्यवहार को प्रभावित करने वाले कारको का विश्लेषण करना ।
2. उपभोक्ता के सबसे पसंदीदा वेवसाइट का पता लगाना ।
3. ऑनलाइन क्रय के समय उपभोक्ता को होने वाले अवरोधो को ज्ञात करना।
4. उपभोक्ता में ऑनलाइन क्रय के प्रति जागरूकता का पता लगाना ।
5. उपभोक्ता क्रय व्यवहार पर विपणन के साधन से होने वाले प्रभाव को ज्ञात करना।

परिकल्पना

1. 'सपुदर्गी पर नकद आदयगी' उपभोक्ता की पंसद है।
2. भुगतान सुरक्षा एंव उत्पादों की गुणवत्ता से उपभोक्ता संतुष्ट है।
3. उत्पादो की विस्तृत श्रृंख्ला उपभोक्ता को ऑनलाइन क्रय हेतु प्रेरित करती हैं।
4. ऑनलाइन क्रय करने वाले सबसे अधिक उपभोक्ता आयु वर्ग 25 से 35 है।

कार्यप्रणाली

मुजफ्फरपुर जिले के नगर निगम क्षेत्र में कुल वार्डो की संख्या 49 है। हमारे शोध का कार्य क्षेत्र मुजफ्फरपुर जिले का नगर निगम है। प्रस्तुत शोध पत्र क्षेत्र सर्वेक्षण पर आधारित है। क्षेत्र सर्वेक्षण के लिए चार वार्डो को नमूने के रूप मे शामिल किया गया है जो क्रमशः 6, 14, 25 एवं 37 है।

प्रस्तुत शोध कार्य में नमुने का चुनाव यादृच्छिक किया गया है। कुल उत्तरदाताओं की संख्या 100 लिया गया है।(प्रत्येक वार्ड से 25 उत्तरदाताओं को शामिल किया गया है।) प्रस्तुत शोध में मुजफ्फरपुर जिला में ऑनलाइन क्रय के प्रति उपभोक्ता व्यवहार को दर्शाया गया है।

प्रश्नावली के आधार पर तथा विभिन्न प्रश्नों पर आधारित सर्वेक्षण के अनुसार निम्नलिखित विश्लेषण किया गया है।

प्रश्न 1 से 14 तक व्यक्तिगत जानकारी ली गई है तथा प्रश्न 15 से 30 तक उपभोक्ताओं से ऑनलाइन क्रय की जानकारी ली गयी जिसका विश्लेषण बिन्दुवार दिया गया है।

1   ऑनलाइन क्रय करने वाले उत्तरदाताओ की आयु 18 वर्ष से कम 22 प्रतिशत है, 18 से 25 आयु वर्ग वाले उत्तरदाता 35 प्रतिशत हैं , 25 से 35 आयु वर्ग वाले उत्तरदाता 32 प्रतिशत है तथा 35 से अधिक आयु वर्ग वाले उत्तरदाता 11 प्रतिशत है।

2   ऑनलाइन क्रय करने वाले उत्तरदाताओ में विद्यार्थी 28 प्रतिशत हैं, गृहणी 10 प्रतिशत ,कर्मचारी 30 प्रतिशत , व्यापारी 18 प्रतिशत , अन्य 14 प्रतिशत है।

3   23 प्रतिशत उत्तरदाताओं ने मानाकि वह प्रत्येक माह में एक बार ऑनलाइन क्रय करते है, 21 प्रतिशत उत्तरदाताओं ने मानाकि वह प्रत्येक तिमाही में एक बार ऑनलाइन क्र0य करते है, 42 प्रतिशत उत्तरदाताओं ने मानाकि वह प्रत्येक छमाही में एक बार ऑनलाइन क्रय करते है तथा 14 प्रतिशत उत्तरदाताओं ने मानाकि वह वर्ष में एक बार ऑनलाइन क्रय करते हैं।

4	39 प्रतिशत उत्तरदाताओं के ऑनलाइन क्रय का मुख्य कारण वस्तुओ या सेवाओं की कीमत है, 17 प्रतिशत उत्तरदाताओं के ऑनलाइन क्रय का मुख्य कारण ब्राडो के प्रति सजगता हैं, 35 प्रतिशत उत्तरदाताओं के ऑनलाइन क्रय का मुख्य कारण सुविधाजनक एवं समय की बचत हैं तथा 9 प्रतिशत उत्तरदाताओं के ऑनलाइन क्रय का मुख्य कारण विश्वास है।
5	ऑनलाइन क्रय का भुगतान 62 प्रतिशत उत्तरदाता डेबिट या क्रेडिट कार्ड से करते है, 20 प्रतिशत उत्तरदाता तीसरे पक्ष के माध्यम से तथा 18 प्रतिशत उत्तरदाता अन्य माध्यम से करते है।
6	42 प्रतिशत उत्तरदाताओं को ऑनलाइन क्रय के लिए प्रेरित कारक सरल भुगतान पद्धति है, 36 प्रतिशत उत्तरदाताओं को ऑनलाइन क्रय के लिए प्रेरित कारक खरीदारी हेतु दुकान में ना जाना है, 12 प्रतिशत उत्तरदाताओं को ऑनलाइन क्रय के लिए प्रेरित कारक उत्पादों की विस्तृत श्रेणी है तथा 10 प्रतिशत उत्तरदाताओं को ऑनलाइन क्रय के लिए प्रेरित कारक कोई छिपी हुई लागत नहीं हैं।
7	34 प्रतिशत उत्तरदाताओं की पसंदीदा वेवसाइट अमेजन हैं, 33 प्रतिशत उत्तरदाताओं की पसंदीदा वेवसाइट फिलपकार्ट हैं, 12 प्रतिशत उत्तरदाताओं की पसंदीदा वेवसाइट स्नैपडील हैं , 16 प्रतिशत उत्तरदाताओं की पसंदीदा वेवसाइट मिंत्रा हैं तथा 5 प्रतिशत उत्तरदाताओं की पसंदीदा वेवसाइट अन्य हैं।
8	ऑनलाइन क्रय में भुगतान सुरक्षा एवं उत्पाद की गुणवत्ता से संतुष्ट उत्तरदाता 55 प्रतिशत हैं, जबकि 11 प्रतिशत उत्तरदाता संतुष्ट नहीं है वही 44 प्रतिशत उत्तरदाता असमंजस की स्थिति में हैं।
9	63 प्रतिशत उत्तरदाता ऑनलाइन क्रय के लिए सुपूदर्गी पर नकद अदायगी करना चाहते हैं जबकि 37 प्रतिशत उत्तरदाता ऑनलाइन क्रय के लिए सुपूदर्गी पर नकद अदायगी नहीं करना चाहते हैं।
10	48 प्रतिशत उत्तरदाताओं को ऑनलाइन क्रय हेतु प्रथम विचार इंटरनेट के माध्यम से , 18 प्रतिशत उत्तरदाताओं को विज्ञापन के माध्यम से , 27 प्रतिशत उत्तरदाताओं को दोस्तो के माध्यम से तथा 7 प्रतिशत को अन्य माध्यम से आया।

निष्कर्ष

प्रस्तुत शोध पत्र प्रत्यक्ष साक्षात्कार पर आधारित है। तथा इनसे प्राप्त ऑकड़े के विश्लेषण के आधार पर निम्नलिखित निष्कर्ष निकलते है —

1. शोध क्षेत्र के अन्तर्गत ऑनलाइन क्रय सबसे अधिक 18 से 25 आयु वर्ग के युवा उपभोक्ता करते हैं।
2. सर्वेक्षण से यह निष्कर्ष निकलता है कि ऑनलाइन क्रय से उपभोक्ता संतुष्ट हैं।
3. सर्वेक्षण से यह निष्कर्ष निकलता है कि मुजफ्फरपुर नगर निगम के उपभोक्ता सुपूदर्गी पर नगद आदयगी करना चाहते हैं।
4. सर्वेक्षण से यह भी निष्कर्ष निकलता है कि उपभोक्ता को ऑनलाइन क्रय हेतु प्रेरित कारक सरल भुगतान पद्धति हैं।

चार परिकल्पना में से दो परिकल्पना सत्य साबित होती है जबकि दो परिकल्पना असत्य साबित होती हैं |

सीमायें :

बिहार राज्य के मुजफ्फरपुर जिले के नगर निगम में कुल वार्ड की संख्या 49 हैं परन्तु हमारे शोध क्षेत्र के अन्तर्गत चार वार्डो को शामिल किया गया हैं, क्योंकि हमारा शोध प्रत्यक्ष साक्षात्कार पर आधारित था इसलिए क्षेत्र को सीमित किया गया है।

सुझाव :

1. ऑनलाइन क्रय के ज्यादातर उपभोक्ता 18 सें 25 आयु वर्ग के हैं। अन्य आयु वर्ग के उपभोक्ता में ऑनलाइन क्रय के हेतु जागरूकता फैलानी चाहिए ।
2. उपभोक्ता शिकायत के समाधान को प्रथामिकता दी जानी चाहिए।
3. ऑनलाइन व्यापारीयों को चाहिए की वह गृहणियो को ऑनलाइन क्रय हेतु प्रेरित करें, क्योंकि शोध क्षेत्र में ज्यादातर गृहणी ही क्रय निर्णय लेती हैं ।
4. अधिकांश उपभोक्ता सुपुर्दगी पर नकद अदायगी पसंद करते हैं इसलिए सभी उत्पादों पर सुपुर्दगी पर नकद अदायगी का विकल्प देना चाहिए ।
5. ऑनलाइन व्यापारियों को इटरनेट, सदेंश एवं फोन कॉल के माध्यम से अपने नए उत्पादों की जानकारी पूर्व में क्रय करने वाले उपभोक्ता को देनी चाहिए।

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DETERMINANTS OF CAPITAL STRUCTURE IN DPSUS ALL TOGETHER

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Introduction

The capacity of a firm to operate its activities is based on the availability of funds. Normally, these funds in finance literature are termed as long term funds, which are contributed by owners (shareholders) and outsiders. The owners'funds are represented by equity contributions and internally generated financial resources. A unique characteristic of procuring funds is that a firm may tap any of these sources and hence the blend of these different sources of long term funds is termed as capital structure in finance literature. Capital structure ordinarily implies the proportion of debt and equity in the total capital of a firm. In the term, capital structure,' capital refers to long term funds and structure refers to the proportion of debt and equity in capital. Further, capital is easily comprehended through accounting as the difference between total assets and current liabilities, and this residual difference is always represented by debt and equity.

This capital is supplied by long and short term borrowings, the sole of preferred and common stock and the reinvestment of earnings. He further states that, in analyzing the capital structure of an enterprise, short term debt is often excluded from considerations'. Many others include only long term sources of funds under the capital structure.

In this article, an attempt has been made to bring out the various determinants of Capital Structure of DPSUs in India. In the post liberalization and disinvestment era, the PSUs in India have become more market oriented on raising funds. The slow reduction in the budgetary support for the PSUs has become is notable factor for the PSUs. The PSUs depend more on extra-budgetary resources (EBR) for their requirements. The variables are considered keeping in view the established Capital Structure models like (i) Trade off Theory and (ii) Pecking Order Theory.

(i) Trade off Theory: The Companies have the options to trade off costs against the cost and benefit to arrive at decisions for availing borrowed funds. As per this theory, companies with stable and tangible assets will go for higher debts and vice versa.

(ii) Pecking Order Theory: As per this theory, there is a pecking order of financing under which internal financing, debt financing and equity financing are preferred in that order. The internal equity is kept at the top and the external equity at the bottom. It explains why highly profitable companies borrow less and less profitable companies borrow more.

The factors those determine the Capital structure decisions of a company generally are financial risk, operating risk, debt servicing capacity, profitability, sizes etc which are explained below.

(i) Financial Leverage (FL): This ratio is used to calculate the financial leverage of a company to get an idea to measure its ability to meet financial obligations. There are several ratios, but the main factors looked at include debt, equity, assets and interest expenses. Generally money is borrowed for enhancement production and sales which ultimately yield in rising earnings. It is measured through the ratio of total debt to total assets. The higher the amount of debt, the higher the financial leverage. Since interest is a fixed cost (which can be written off against revenue), a loan allows an organization to generate more earnings without   a   corresponding   increase   in   the equity   capital requiring increased dividend payments (which cannot be written off against the earnings). However, while high leverage may be beneficial in boom periods, it may cause serious cash flow problems in recessionary period

(ii) Operating Leverage (OL): The ratio indicates the proportion between the contributions to operating profit of a business. The comparison is made between the gross margins with the EBIT of the business. A business which has a higher proportion of fixed costs and a lower proportion of variable costs is said to have used more operating leverage. Those Companies which have lower fixed costs and higher variable costs are said to employ less operating leverage and vice versa.

(iii) Gross Interest Coverage Ratio (GICR):
A measure of a company's ability to meet its financial obligations. In broad terms, the higher the coverage ratio, the better the ability of the enterprise to fulfill its obligations to its lenders. The trend of coverage ratios over time is also studied by analysts and investors to ascertain the change in a company's financial position. Common coverage ratios include the interest coverage ratio, debt service coverage ratio and the asset coverage ratio. This ratio is used to assess a company's financial affordability by examining whether it is at least profitable enough to pay off its interest expenses. A ratio greater than 1 indicates that the company has more than enough interest coverage to pay off its interest expenses. The ratio is calculated as EBITDA/Interest payments

(iv) Net worth: The book value of a company is its net worth which represents the total assets minus the total liabilities. This shows how much the company gets, if it is sold out.
(v) Sales: It is the Revenue earned by the companies both from sale of goods and services. The sales reflect the growth in size of a company. The more the sales, there will be inflow of more funds which will affect the financial structure of the company.

An attempt has been made to study the impact of certain variables like financial leverage, operating leverage, debt servicing Capacity, profitability and size on the Capital structure decisions represented by the debt equity ratio DPSU wise as given below.

1.3.9 Determinants of Capital Structure of DPSUs all together:

The impact of variables like financial leverage, operating leverage, debt servicing Capacity, profitability and size on the Capital structure decisions of the Company is given below.

Table 1.1

Determinants of Capital Structure of DPSUs				
Year	Financial Leverage (Debt/Total assets)(In percentage)	Operating leverage(OL)-Cont/PBIT(in percentage)	Gross interest coverage ratio(GICR) (in percentage)	Net worth (Rs in lakhs)	Sales (Rs in lakhs)
2002-03	4.15	0.74	13.42	483806	862136
2003-04	4.33	0.74	19.92	542825	972691
2004-05	4.52	0.74	34.51	634621	1108909
2005-06	5.05	0.74	33.16	762861	1283344
2006-07	5.46	0.75	139.99	945162	1559420
2007-08	5.46	0.74	98.67	1232360	1650717
2008-09	5.19	0.75	75.89	1476942	1981703
2009-10	4.57	0.74	79.81	1735590	2509086
2010-11	5.20	0.74	71.51	2016927	2506927
2011-12	3.90	0.73	42.49	2316077	2841013

Source-Annual Accounts of DPSUs

The correlation among the above variables is shown in the table no 4.29 as given below. Each of the variables has been correlated with the other variable to ascertain the relationship among them.

Table-1.2

Correlation ship matrix of select financial parameters						
Variables	DE	FL	OL	GICR	NW	Sales
DE	1	0.68	-0.79	0.75	0.00	0.01
FL	0.68	1	-0.39	0.66	-0.31	-0.29
OL	-0.79	-0.39	1	-0.76	-0.54	-0.57
GICR	0.75	0.66	-0.76	1	0.31	0.36
NW	0.00	-0.31	-0.54	0.31	1	0.99
Sales	0.01	-0.29	-0.57	0.36	0.99	1

Source: Correlation based on calculated ratios**.**

To ascertain the impact , the debt equity ratio has been considered as dependent variable and the others like financial leverage(FL), operating leverage(OR) , Gross interest coverage ratio(GICR), Net Worth(NW) and Sales as independent variable. The regression analysis of the above determinants is shown in the following table no 4.30.

Table 1.3

Determinants of Capital Structure of DPSUs – Multiple Regression analysis

Multiple R	0.98
R Square	0.96
Adjusted R	0.91
Standard Error	0.17
Observations	10.00

ANOVA					
	df	*SS*	*MS*	*F*	*Significance*
Regression	5.00	2.70	0.54	18.64	0.01
Residual	4.00	0.12	0.03		
Total	9.00	2.81			

	Coefficients	*Standard*	*t Stat*	*P-value*	*Lower 95%*	*Upper*
Intercept	26.61	17.47	1.52	0.20	-21.88	75.10
FL	-26.70	23.37	-1.14	0.32	-91.59	38.19
OL	-0.61	0.12	-5.25	0.01	-0.93	-0.29
GICR	0.01	0.00	2.11	0.10	0.00	0.02
NW	0.00	0.00	1.53	0.20	0.00	0.00
Sales	0.00	0.00	-2.33	0.08	0.00	0.00

Source- Regression based on SPSS Statistics

Based on the above ratios, Correlation and regression analysis, the determinants of Capital structure in DPSUs are given below. The regression equation shows Cap structure=26.61+(-)26.70(FL)+(-)0.61(OL)+ 0.00(GICR) +0.00(NW) +0.00(Sales).The overall result indicates the model is significant. However a detailed analysis is given as follows.

(i) Financial Leverage (FL): An analysis of the data reveals that financial leverage lies in the range between 3.90 to 5.46 in DPSUs. The correlation analysis shows that there is positive relationship (0.68) of the financial leverage with D/E ratio. The P value as per the regression analysis is 0.32 which is above 0.05(5 percent level of significance).The regression result indicates that the impact of financial leverage on Capital structure is not significant.

(ii) Operating Leverage (OL): An analysis of the data reveals that operating leverage lies in the range between 0.73 to 0.15 in DPSUs. The correlation analysis shows that   there is negative association (-0.79) of the Operating leverage with D/E ratio. The P value as per the regression analysis is 0.01 which is below 0.05(5 percent level of significance) The regression result indicates that the impact of operating leverage on Capital structure is significant.

(iii) Gross Interest Coverage Ratio (GICR): An analysis of the data reveals that GICR lies in the range between 1.12 to 3.03 in DPSUs. The correlation analysis shows that   there is positive relationship (0.75) of the GICR with D/E ratio. The P value as per the regression analysis is 0.10 which is above 0.05(5 percent level of significance) The regression result indicates that the impact of GICR on Capital structure is not significant.

(iv) Net Worth: An analysis of the data reveals that the net worth lies in the range between Rs483806 lakhs to Rs 2316073 lakhs in DPSUs. The correlation analysis shows that   there is no relationship (0.00) of the net worth with D/E ratio. The P value as per the regression analysis is 0.20 which is above 0.05(5 percent level of significance) The regression result indicates that the impact of net worth on Capital structure is not significant.

(v) Sales: An analysis of the data reveals that Sales lies in the range between Rs 862131 lakhs to Rs 2841013 Lakhs in DPSUs. The correlation analysis shows that there is positive relationship (0.01) of the sales with D/E ratio. The P value as per the regression analysis is 0.0.08 which is above 0.05(5 percent level of significance)The regression result indicates that the impact of sales on Capital structure is not significant.

Thus from the above analysis it is noted that except OL, all other determinants are insignificant. However based on significance F (0.01), the overall model is significant at 5percent level of significance.

NEED AND IMPORTANCE OF HUMAN RESOURCE DEVELOPMENT CLIMATE IN HEALTH CARE SECTOR

Dr. Qurrat A Hamdani

ABSTRACT

The effectiveness of HRD depends on the prevailing developmental climate. Public service organizations have to ensure the existence of an optimal level of HRD climate to enable their employees to discover the hidden potentials; to improve their current skills and acquire new, relevant ones; and to utilize them according to the interest of their organizations. Human Resource is considered to be very crucial in the organization's well-being. The present study was carried on two hospitals SMHS and Fortis, Chandigarh to have a look at the current HRD climate and the perception of senior level staff towards HRD climate. The results revealed a dissatisfactory HRD climate prevalent in the two hospitals and a difference in the perception of senior level staff towards HRD climate.

Keywords: HRD,Human Resource Development Climate, General climate, OCTAPACE culture, HRD mechanisms.

Introduction

Humans in the organizations are given a status of important resources in comparison to all the material resources. Managing this resource is very important and tedious because of the emotions and feelings associated with it. Human Resource is one of the most important and dynamic capital in the growth of the organization (Balamurali & Pragadeeswarna 2010). Presently organizations have started realizing that it is the most important of all assets based on the emerging values of humanization. In spite of the rapid technological reformations, it remains the backbone of the organizations. Globalization dominates the competitive horizon and entails new markets, new products, new mindsets, new competencies and new ways of thinking about business. Global competition, apart from creating product/service in home market and marketing it to new markets, requires a complex network of global centers of excellence that draw on technologies invented in one locale and shared worldwide. The rapid movement of products, people, information and ideas around the world focus on local needs and management of the paradox of global economies of scale. It requires a global mindset and a local commitment: Thinking globally but acting locally. To accomplish this ambitious agenda, organizations will have to fundamentally redefine themselves as that of a global relay team. Organizations will have to build global capabilities such as the ability to seamlessly move talent, ideas and information around the world to create products and services at an optimum pace with quality above par.

Human Resource Management (HRM) is a means for improving efficiencies in terms of better productivity, reduction of costs, better generation of internal resources, better

profits and better customer service (Raavi & Radhika 2011). Having its origin from Japan, HRM is an area which deals with the management of this resource. Effective HR management does translate into higher productivity and market value. Human resource management plays a key role in success of joint ventures at global level. One of the aspects associated with human resource is their development which is inevitable in the present dynamic environment. Development of HR is and has been a burning issue ever since inception. The term 'Human Resource Development' was introduced in 1969 by Loard Nadler, at Miami Conference of the American Society of Training and Development (ASTD). Since then it is growing and becoming an influential discipline or professional field of practice, increasingly critical to the survival and success of all organizations (Wilson, 2005), but it is not synonymous with training, (Nayak, Ganihar, and Shivanand, 2007).

Organizations will have to build an employee infrastructure for hiring, maintaining, training and developing that takes a global perspective which is made possible through the Human Resource Development (HRD) activities (Priyadarshni, Geetha & Venkatapathy 2005). Developmental areas of HR are studied under HRD Climate wherein continuous and needful development of HR is focused upon. HRD Climate is extremely important for the ultimate achievement of the business goals. The positive HRD climate renders the existing systems more effective and makes the organizations more receptive to the introduction of relevant additional system (Athreya, 1988). An organization that has better HRD climate and processes is likely to be more effective than an organization that does not have them (Rao, 1992).

Review of Literature

One of the studies aimed to examine the nature of HRD Climate prevailing in Indian PSU.s and determine problematic areas. This research was also an attempt to examine the current status of structuring of HRD Climate and HRD Subsystems in Indian Public Sectors. The study also examined the interlinkages between HRD Subsystems and their effectiveness in Indian PSU.s. Data from Managerial and Non-Managerial staff of IOC Mathura Refinery was collected. Result revealed that the HRD Climate of the organization was conducive for the development of the employees and organization as well, whereas various shortcomings were found in the implementation of the HRD System. Findings of the study indicated that HRD function is not well structured, is inadequately differentiated, poorly staffed and fails to meet the requirements of HRD System framework.

Mulatu & Narendranath studied HRD Climate and Job Satisfaction in the Public Sector of Ethiopia. The purpose of the study was to examine employees' perception about HRD climate in relation to job satisfaction in the public sector (civil service organizations) of Ethiopia based on the selected Bureaus in two regional states viz., Amhara and Benishangul-Gumuz. The findings revealed that the extent HRD climate and the HRD climate elements were all below average, i.e., they indicated the existence of very poor HRD climate in the

selected bureaus or in the public sector of Ethiopia. There was a significant impact of HRD climate on job satisfaction. HRD climate influenced the job satisfaction of employees. Solkhe and Chaudhary (2010) in their study of the relationship and impact of HRD climate on job satisfaction in selected public sector organizations based on the managers (junior and middle level executives) from various departments, revealed that managers in general showed a favorable attitude towards HRD Policies and practices of the organization; satisfied with the developmental policies of the top management as well. Besides, HRD climate has a definite impact on job satisfaction which in turn leads to the increased organizational performance.

Studies conducted by Kumar and Patnaik (2002), about HRD climate and job satisfaction, attitude towards work and role efficacy of teachers reported that better HRD climate and higher role efficacy leads to developing a positive attitude towards work and higher job satisfaction. Rohmetra (1998) concluded job satisfaction is positively associated with HRD Climate; Kumar and Patnaik, (2002) noted the existence of positive relationship between HRD climate, job satisfactory attitude towards work, and role efficiency. Ravi (2009) also in his research of HRD climate and Job satisfaction pinpointed that all the dimensions of HRD climate yield a positive and significant correlation with job satisfaction value.

SAMPLE ORGANIZATIONS AT A GLANCE

The sample organizations include; 1) SMHS Hospital, Srinagar, 2) Fortis, Chandigarh. The brief description of the sample selected organizations is given as under:-

1) Shri Maharaja Hari Singh (S.M.H.S) Hospital, Srinagar. The S.M.H.S Hospital was established as a Government-owned General Hospital to provide patient care to needy patients. Primary and secondary medical care in the major specialties of medicine, surgery and gynecology was made available to the general public on OPD and inpatient basis. Currently patient care services are offered in the specialties of medicine, surgery, anesthesiology, radio diagnosis and imaging, ophthalmology, ENT, dermatology and radiotherapy.

2) Fortis, Mohali Chandigarh.**The Fortis Hospital at Mohali**in Punjab was the first facility of its kind in the region. The hospital is a super specialty cardiac hospital. Here cardiologists, heart surgeons, nurses and other healthcare professions provide the latest treatment and the best care for all forms of heart disease. The hospital has been designed and equipped with the latest technology, information technology s

ystems, a telemedicine program and carefully selected doctors, nurses and support staff.

OBJECTIVE OF THE PRESENT STUDY

1) To study the existing status of HRD Climate in the sample study organizations i.e. (a) SMHS Srinagar and b) Fortis, Chandigarh.
2) To see the difference in perception of senior level staff of the two hospitals towards HRD Climate.

Hypothesis

In consonance to the above objective, the hypotheses formulated for the present research are as under:

1) HRD Climate in the two hospitals is satisfactory.
2) There is no difference in the perception of senior level staffs of both hospitals towards HRD Climate.

RESEARCH APPROACH AND DESIGN

The tool used for obtaining the information was a 'Structured NonDisguised Questionnaire', a questionnaire was designed keeping in view both major and minor objectives of study. A close format questionnaire was used. Closed format questions offer many advantages in time and money. Questionnaire was used to measure the organizational ethos. This questionnaire is proposed by Dr. Udai Pareek. It consisted of two Sections and 39 statements. Sec "A" consisted of 38 statements, the rating for each to be done on a scale from 5 to 1,(5)=Almost always true,(4)=Mostly true,(3)=Sometimes true,(2)=Rarely true,(1)=Not at all true. Sec "B" sought for suggestions and name, gender, age, pay scale, designation of the respondent.

Simple Random Sampling Method (SRSM) was used to cover employees from Medical, Administrative, Supportive and Technical cadres in the sample selected organizations. A sample of 100-125 was targeted from each organization covering doctors, officers, engineers, nurses and others. Thus the total sample for the study was 200-250.

DATA ANALYSIS AND INTERPRETATION
Existing status of HRD Climate in the two hospitals.

Table I shows the existing status of HRD Climate in the two hospitals. Table I reveals that HRD Climate in the two organizations is satisfactory as maximum number of statements score a mean of greater than 3. Table I shows that SMHS recorded highest mean values of 3.7 for statement 24 i.e. *"When employees in health care sector are sponsored for training, they take it seriously and try to learn from the programs they attend"*. Same statement scored a highest mean of 3.8 for Fortis hospital. The table reflects that the lowest mean value for SMHS was recorded against statement No 19 (M.S=2.6) i.e. *"Employees in this organization are encouraged to experiment with new methods and try out creative ideas"* and statement No. 37 (M.S=2.6) i.e. "This organization ensures employee's welfare to such an extent that the employees can save a lot of their me*ntal energy for work purposes". Fortis hospital shows the least mean score for statement No. 28 (M.S=2.8) i.e. "Employees in health care sector are not afraid to discuss or express their feelings with their supervisors".*

Some of the statements show the same mean scores for both the organizations i.e. statement No. 2 (M.S=3.5), i.e. *"The top management on this organization believes the human resources are an extremely important resource and that they have to be treated more humanly", statement No. 6 (M.S=3.2), i.e. "Senior officers/executives in this organization take active*

*interest in their juniors and help them to learn their job", No. 26 (M.S=3.5), i.e. "Employees
are sponsored for training programs on the basis of genuine training needs in health care
sector" and statement No. 29 (M.S=3.1), i.e. "Employees in health care sector are not afraid to
discuss or express their feelings with their subordinates".*

TABLE 1: Existing status of HRD Climate in the two hospitals.

|		SMHS (No. 121)		Fortis (No. 70)	
St. No	Statements	M.S	S.D	M.S	S.D
1	The top management in health care sector goes out of its way to make sure that employees enjoy their work.	3	1.1	3.1	1.1
2	The top management on this organization believes the human resources are an extremely important resource and that they have to be treated more humanly.	3.5	1.1	3.5	1.1
3	Development of the subordinates is seen as an important part of their job by the managers/officers in health care sector.	3	1	3.3	0.9
4	The personnel policies in this organization facilitate employee development.	3.2	1.1	3.3	1.1
5	The top management in health care sector is willing to invest a considerable part of their time and other resources to ensure the development of employees.	2.9	1.2	3	1.1
6	Senior officers/executives in this organization take active interest in their juniors and help them to learn their job.	3.2	1.2	3.2	1.2
7	People in the health care sector lacking confidence in doing their job are helped to acquire competence rather than being left unattended.	3	1	3.2	0.9
8	Managers in this organization believe that employee's behavior can be changed and people can be developed at any stage of their life.	3.1	1	3.5	1.2
9	People in this organization are helpful to each other.	3.4	1.1	3.2	1
10	Employees in the health care sector are very informal and do not hesitate to discuss their personal problems with their supervisors.	2.9	1.2	3	1.2
11	The psychological climate of the health care sector is very conducive for any employee interested in developing himself by acquiring new knowledge and skills.	2.9	1.2	3.3	1
12	Seniors guide their juniors and prepare them for future responsibilities/roles that they are likely to take up.	3.3	1.2	3.5	1.2
13	The top management in the health care sector makes efforts to identify and utilize the potential of employees.	2.9	1.1	3.3	0.9

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14	Promotion decisions in this organization are based on the suitability of the promotee rather than on favoritism.	3.1	1.3	2.9	1.3
15	There are mechanisms in this organization to reward any good work done or any contribution made by employees.	2.8	1.2	3.5	1.1
16	When an employee in the health care sector does good work his supervising officers take special care to appreciate it.	3.1	1.2	3.4	1.1
17	Performance Appraisal reports in this organization are based on objective assessment and adequate information and not on favoritism.	3.1	1.1	3.2	1.1
18	People in health care sector do not have any fixed mental impressions about each other.	3.1	1.2	3.3	1
19	Employees in this organization are encouraged to experiment with new methods and try out creative ideas.	2.6	1.3	3.3	1.2
20	When an employee in health care sector makes a mistake, his supervisors treat him with understanding and help him to learn from such mistakes rather than punish him or discourage him	2.9	1.1	3.3	1.2
21	Weaknesses of employees in this organization are communicated to them in a non threatening way.	2.9	1.2	3.4	0.8
22	When behaviour feedback is given to employees in health care sector, they take it seriously and use it for development	3.1	1.1	3.5	1
23	Employees in this organization take pains to find out their strengths weaknesses from their officers and colleagues.	2.9	1.1	3.5	1
24	When employees in health care sector are sponsored for training, they take it seriously and try to learn from the programs they attend.	3.7	1.1	3.8	1.1
25	Employees in this organization when returning from training programs are given opportunities to tryout what they have learnt	3.3	1.1	3.4	1.2
26	Employees are sponsored for training programs on the basis of genuine training needs in health care sector.	3.5	1.1	3.5	1.2
27	People trust each other in this organization.	3.2	1.1	3	1.2
28	Employees in health care sector are not afraid to discuss or express their feelings with their supervisors.	3.1	1.1	2.8	1.1
29	Employees in health care sector are not afraid to discuss or express their feelings with their subordinates.	3.1	1.1	3.1	1
30	Employees in health care sector are encouraged to take initiative and do things on their own without having to wait for instructions from their supervisors.	2.7	1	3	1.1
31	Delegation of authority to encourage juniors to develop and handle higher responsibilities is quiet common in this organization.	3	0.9	3.2	1
32	When seniors in health care sector delegate authority to juniors use it as an opportunity for development.	3.4	0.9	3.3	1
33	Team spirit is of high order in this organization.	3.6	1.1	3.3	1.1

34	When problems arise in health care sector, people discuss these problems openly and try to solve them rather than keep accusing each other behind their backs.	3	1.2	3.1	1.2
35	Career opportunities are pointed out by juniors to senior officers in this organization.	2.7	1	3.1	1
36	The health care sector's future plans are made known to the managerial staff to help them to develop their juniors and prepare them for future.	3.1	1.1	3.3	1
37	This organization ensures employee's welfare to such an extent that the employees can save a lot of their mental energy for work purposes.	2.6	1	3	1.2
38	Job rotation in health care sector facilitates employee development.	3.2	1.3	3.4	1.1

Notes

1. Scoring Scale: Almost always true=(5),mostly true=(4),sometimes true=(3),rarely true=(2),not at all true=(1)
2. M.S=Mean Score
3. S.D=standard deviation

Figure 1: Statement wise existing HRD Climate in the two hospitals.
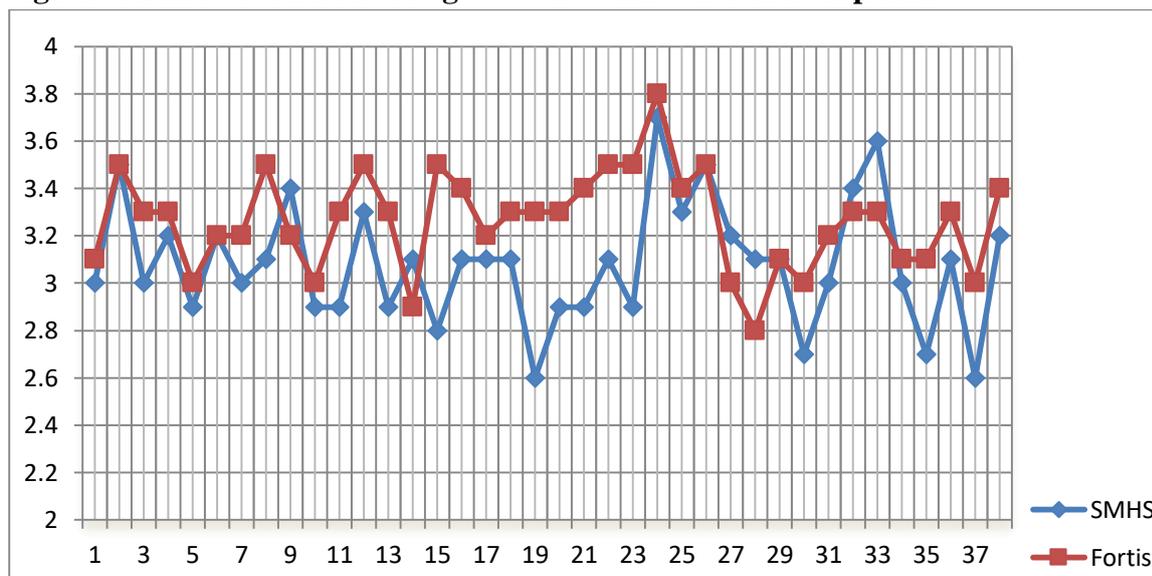
Existing HRD Climate in the two hospitals with Z values.

To test the level of significance, T test was conducted. On the basis of T test it is concluded from table II, that the mean score for SMHS and Fortis for the dimensions of General Climate, OCATPACE Culture and HRD Mechanisms is >3 depicting a satisfactory HRD environment in the sample study organizations. The P value for General Climate is (P value= 0.01), OCTAPACE Culture (P value=0.21) and HRD Mechanisms (P value=0.02). P value for general climate and HRD mechanisms is < 0.05 for which Ha i.e. "HRD Climate in the two hospitals is not satisfactory is accepted" while as P value >0.05 for the dimension of OCTAPACE thus Ho i.e. "HRD Climate in the two hospitals is satisfactory is accepted" at 0.05 level of significance.

Table II: Existing HRD Climate in the two hospitals with Z values.

Dimensions	SMHS (No. 121)		Fortis (No. 70)		M.S diff	T value	P Value
	M.S	S.D	M.S	S.D			
General Climate	3	0.5	3.3	0.7	-0.3	-2.4	**0.01****
OCTAPACE Culture	3	0.5	3.2	0.7	-0.2	-1.2	**0.21***
HRD Mechanisms	3.2	0.7	3.5	0.8	-0.3	-2.2	**0.02****

Note

1. Scoring Scale : same as in table 1
2. **Ha is accepted at 0.05 level of significance
3. *Ho is accepted at 0.05 level of significance.

Figure II: Statement wise existing HRD Climate in the two hospitals with Z values
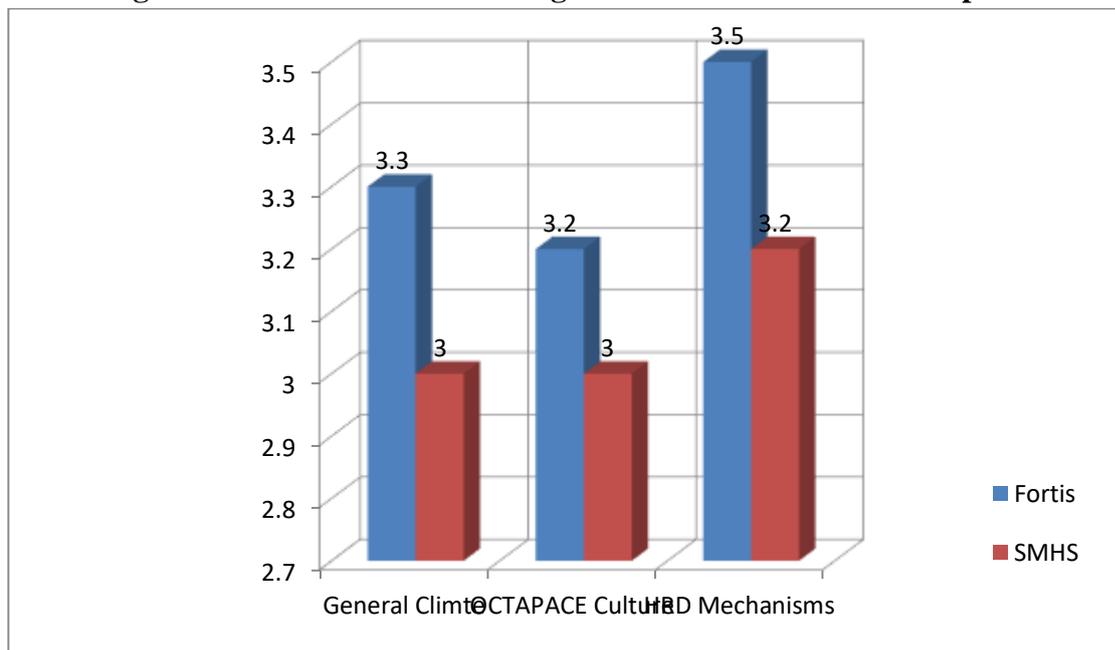
Perception of senior level staff towards HRD Climate in the two hospitals.

Table III shows the perception of senior level staff towards HRD Climate in SMHS and Fortis. It is revealed from the table that senior level staffs of both the hospitals differ in their perception towards HRD Climate. Table III shows that SMHS recorded highest mean value of (M.S=4) against statements 24, i.e. *"When employees in health care sector are sponsored for training, they take it seriously and try to learn from the programs they attend".* On the other hand Fortis, recorded the highest mean values of (M.S=4.1) against statement No.

24 and No. 25 i.e. ""*Employees in this organization when returning from training programs are given opportunities to tryout what they have learnt*", depicting that senior level staff in health care take training as an important aspect of job.

The table also reflects that the lowest mean value of (M.S=2.2) for SMHS was recorded against statement No 19, i.e. "*Employees in this organization are encouraged to experiment with new methods and try out creative idea*" and statement No 21, i.e. *"Weaknesses of employees in this organization are communicated to them in a non threatening way".* For Fortis, lowest mean of (M.S=2.9) was recorded for statement No. 28, i.e. *"Employees in health care sector are not afraid to discuss or express their feelings with their supervisors".* Maximum numbers of statements in both hospitals show an above average response. Only one of the statements shows the same mean scores for both the organizations i.e. statement No. 26, *"Employees are sponsored for training programs on the basis of genuine training needs in health care sector".*

TABLE III: Perception of senior level staff towards HRD Climate in the two hospitals.

| St. No | Statements | Senior Level Staff | | | |
| | | SMHS (No. 14) | | Fortis (No. 17) | |
		M.S	S.D	M.S	S.D
1	The top management in health care sector goes out of its way to make sure that employees enjoy their work.	3	1.2	3.5	1.2
2	The top management on this organization believes the human resources are an extremely important resource and that they have to be treated more humanly.	3.3	1.2	3.8	0.9
3	Development of the subordinates is seen as an important part of their job by the managers/officers in health care sector.	3.1	1	3.4	0.9
4	The personnel policies in this organization facilitate employee development.	3.3	1.2	3.4	1.2
5	The top management in health care sector is willing to invest a considerable part of their time and other resources to ensure the development of employees.	3.2	1.2	3.3	1.3
6	Senior officers/executives in this organization take active interest in their juniors and help them to learn their job.	3.5	1.5	3	1.5
7	People in the health care sector lacking confidence in doing their job are helped to acquire competence rather than being left unattended.	3	0.9	3.2	1.2
8	Managers in this organization believe that employee's behavior can be changed and people can be developed at any stage of their life.	3	0.9	3.5	1.2

9	People in this organization are helpful to each other.	3.3	1.2	3.2	0.9
10	Employees in the health care sector are very informal and do not hesitate to discuss their personal problems with their supervisors.	2.7	1	3.1	1.1
11	The psychological climate of the health care sector is very conducive for any employee interested in developing himself by acquiring new knowledge and skills.	2.7	1.1	3.8	1
12	Seniors guide their juniors and prepare them for future responsibilities/roles that they are likely to take up.	3.5	1	3.7	1.2
13	The top management in the health care sector makes efforts to identify and utilize the potential of employees.	2.9	0.9	3.6	1
14	Promotion decisions in this organization are based on the suitability of the promotee rather than on favoritism.	3	1.1	3.4	1.6
15	There are mechanisms in this organization to reward any good work done or any contribution made by employees.	2.5	1.1	3.5	1
16	When an employee in the health care sector does good work his supervising officers take special care to appreciate it.	2.7	1.1	3.5	1.1
17	Performance Appraisal reports in this organization are based on objective assessment and adequate information and not on favoritism.	3.1	1.2	3.5	1.3
18	People in health care sector do not have any fixed mental impressions about each other.	3	1.3	3.5	0.8
19	Employees in this organization are encouraged to experiment with new methods and try out creative ideas.	2.2	1.2	3.6	1.3
20	When an employee in health care sector makes a mistake, his supervisors treat him with understanding and help him to learn from such mistakes rather than punish him or discourage him	3	1.2	3.4	1.1
21	Weaknesses of employees in this organization are communicated to them in a non threatening way.	2.2	1.1	3.5	0.7
22	When behaviour feedback is given to employees in health care sector, they take it seriously and use it for development	3	1.3	3.6	1.1
23	Employees in this organization take pains to find out their strengths weaknesses from their officers and colleagues.	3	1.3	3.8	1.1
24	When employees in health care sector are sponsored for training, they take it seriously and try to learn from the programs they attend.	4	0.9	4.1	0.8
25	Employees in this organization when returning from training programs are given opportunities to tryout what they have learnt	3.2	0.9	4.1	0.9
26	Employees are sponsored for training programs on the basis of genuine training needs in health care sector.	3.7	1	3.7	1.1
27	People trust each other in this organization.	3	1.2	3.3	1.4
28	Employees in health care sector are not afraid to discuss or express their feelings with their supervisors.	2.5	1.3	2.9	1
29	Employees in health care sector are not afraid to discuss or express their feelings with their subordinates.	2.4	1.2	3.5	0.7

30	Employees in health care sector are encouraged to take initiative and do things on their own without having to wait for instructions from their supervisors.	3	1	3.5	1
31	Delegation of authority to encourage juniors to develop and handle higher responsibilities is quiet common in this organization.	3.2	0.4	3.5	1.1
32	When seniors in health care sector delegate authority to juniors use it as an opportunity for development.	3.4	0.6	3.9	1
33	Team spirit is of high order in this organization.	3.2	1.3	3.4	1.4
34	When problems arise in health care sector, people discuss these problems openly and try to solve them rather than keep accusing each other behind their backs.	2.7	1.3	3.3	1.3
35	Career opportunities are pointed out by juniors to senior officers in this organization.	2.9	1	3.6	1
36	The health care sector's future plans are made known to the managerial staff to help them to develop their juniors and prepare them for future.	3	1.1	3.7	0.9
37	This organization ensures employee's welfare to such an extent that the employees can save a lot of their mental energy for work purposes.	2.6	1.1	3.4	1.2
38	Job rotation in health care sector facilitates employee development.	2.5	1	3.6	1.2

Notes

4. Scoring Scale: Almost always true=(5),mostly true=(4),sometimes true=(3),rarely true=(2),not at all true=(1)

5. M.S=Mean Score

6. S.D=standard deviation

Figure III: Statement wise perception of senior level staff towards HRD Climate in the two hospitals.
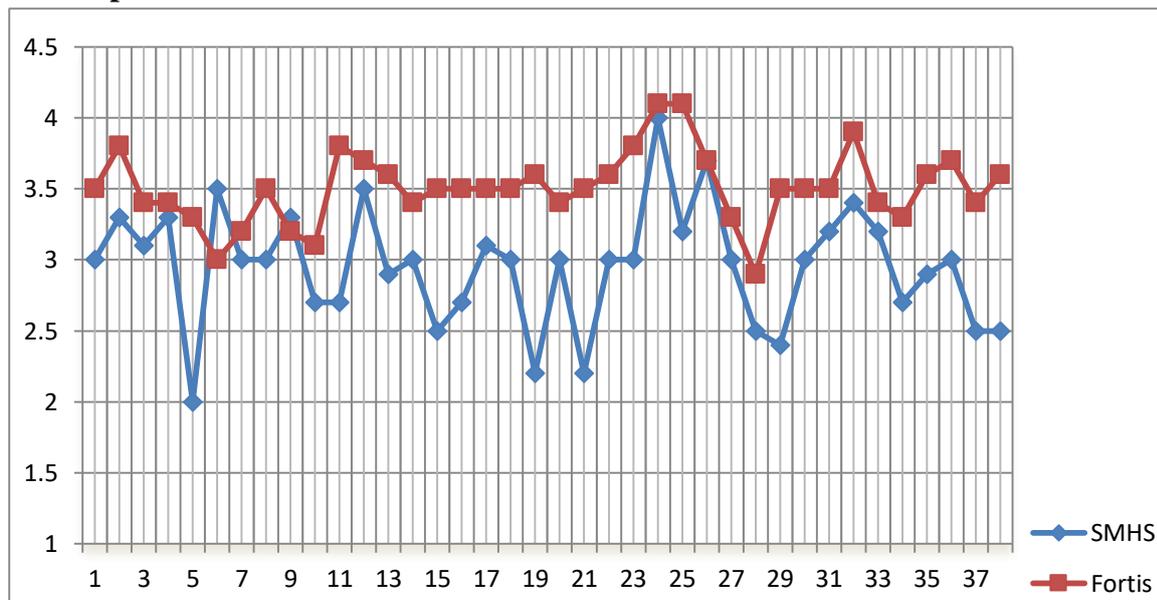
Perception of senior level staff towards HRD Climate in the two hospitals with Z Value

To test the level of significance, T test was conducted and it is concluded from table IV, that the mean for SMHS against the dimensions of General Climate, OCATPACE Culture and HRD Mechanisms is <3 depicting an average HRD environment while as for Fortis a mean of >3 is scored for the same dimensions. It depicts a satisfactory HRD climate in Fortis as compared to SMHS.The P value for General Climate (P value= 0.06) is >0.05, so Ho i.e. "There is no difference in the perception of senior level staffs of both hospitals towards HRD Climate" is accepted. For the dimension of OCTAPACE Culture (P value=0.04) and HRD Mechanisms (P value=0.04) P value < 0.05 so Ha i.e. "There is difference in the perception of senior level staffs of both hospitals towards HRD Climate" is accepted at 0.05 level of significance.

Table IV: Perception of senior level staff towards HRD Climate in the two hospitals with Z Value.

Dimensions	Senior Level Staff				M.S diff	Z value	P Value
	SMHS (No. 14)		Fortis (No. 17)				
	M.S	S.D	M.S	S.D			
General Climate	2.9	0.7	3.5	0.8	-0.6	-1.9	**0.06***
OCTAPACE Culture	2.8	0.7	3.4	0.8	-0.6	-2	**0.04****
HRD Mechanisms	3.1	0.7	3.7	0.8	-0.6	-2	**0.04****

Note
4. Scoring Scale : same as in table 1
5. **Ha is accepted at 0.05 level of significance
6. *Ho is accepted at 0.05 level of significance.

Figure IV: Statement wise perception of senior level staff towards HRD Climate in the two hospitals with Z values
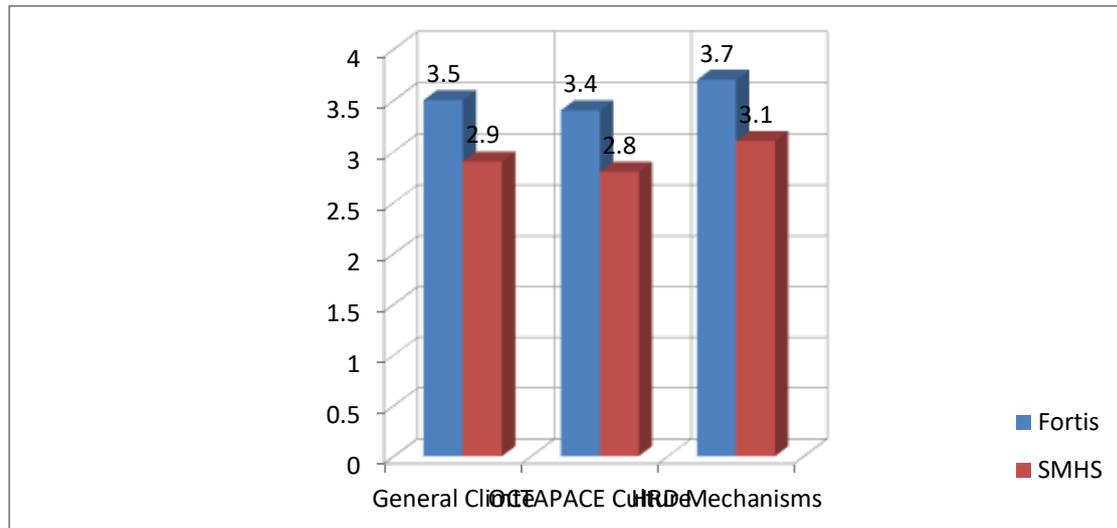
CONCLUSIONS

HRD Climate in the two hospitals is satisfactory and there is difference in the perception of senior level staff towards HRD Climate in the two organizations. HRD Climate in Fortis is better than that of SMHS. General Climate and HRD mechanisms are dissatisfactory in the two hospitals but the dimension of culture is found to be satisfactory. Employees in the two hospitals when sponsored for training, they take it seriously and try to learn from the programs they attend. Employees are not encouraged to experiment with new methods and try out creative ideas and employee welfare is not ensured so that the employees can save a lot of their mental energy for work purposes.Employees in Fortis hospital are not given space to discuss or express their feelings with their supervisors. Top management in both organizations believes that human resources are an extremely important resource and that they have to be treated more humanly. Senior officers/executives take active interest in their juniors and help them to learn their job. Employees are sponsored for training programs on the basis of genuine training needs in the two hospitals. Employees in health care sector are not afraid to discuss or express their feelings with their subordinates.

Senior level staffs of both the hospitals differ in their perception towards HRD Climate. Senior level staff of both the hospitals when sponsored for training takes it seriously and try to learn from the programs they attend.Senior staff after returning from training programs are given opportunities to tryout what they have learnt. Culture of experimentation is absent and the weaknesses of employees are communicated to them in a threatening way. Senior level staff in health care sector is afraid to discuss or express their feelings with their supervisors. Senior level staff perceives that they are sponsored for training programs on the basis of genuine training needs.

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A STUDY TO ACCESS THE WORK LIFE BALANCE AMONG THE WOMEN EMPLOYEES IN PRIVATE BANKS IN ERODE DISTRICT

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ABSTRACT OF THE STUDY

In the present scenario, work life balance for women employees is highly desirable and if there is no job satisfaction and consistency in life, it can create a dilemma for working women. Work life balance requires attaining equilibrium between professional work and personal work, so that it reduces friction between official and domestic life. The ultimate performance of any organization depends on the performance of its employees, which in turn depends on numerous factors. These factors can be related to job satisfaction or family or both. The objective of this research is to study the working environment and women's perception about the work life balance and job satisfaction, who are working in banking sector. Apart from it, another significant objective is to study effects of work life balance on job satisfaction and initiatives. WLB can be achieved by the factors responsible for job satisfaction such as: supportive colleagues, supportive working conditions, mentally challenging work, equitable rewards and employee-oriented policies etc.

INTRODUCTION TO THE STUDY

Human Resource Management (HRM) is a relatively new approach to manage people in any organisation. This approach considers people as the key resource. It is concerned with the people dimension in management of an organisation. Since an organisation is a body of people, their acquisition, development of skills, motivation for higher levels of attainments, as well as ensuring maintenance of their level of commitment are all significant activities. These activities fall in the domain of HRM. HRM is a process, which consists of four main activities, namely, acquisition, development, motivation, as well as maintenance of human resources. Human Resource Management is responsible for maintaining good human relations in the organisation. It is also concerned with development of individuals and achieving integration of goals of the organisation and those of the individuals.

According to John Storey, (1995), "Human resource management is a distinctive approach to employment management which seeks to achieve competitive advantage through the strategic deployment of a highly committed and capable workforce, using an integrated array of Cultural, structural and personal techniques". Work-life balance is not mere related to work and life; it is the positive state of mind.

Work-life balance, in its broadest sense, is defined as a satisfactory level of involvement or 'fit' between the multiple roles in a person's life (Hudson, 2005). Work-life balance is about the interaction between paid work and other activities, including unpaid work in families and community, leisure and personal development. Greenhaus, Collins & Shaw (2003) defined work-family balance as "the extent to which an individual is equally–self engaged and equally satisfied with –his or her work role and family role". Work-life balance does not mean an equal balance in units of time between work and life. It is not a tight rope walk between two poles acting as an organizational commitments and home demands at the same time, but it is about proper understanding of the priorities of the professional and personal level.

OBJECTIVES OF THE STUDY

1.To identify the major factors that influence the work life balance and Job satisfaction of women employees in banking sector

2.To measure the overall work life balance and Job satisfaction of women employee based on demographic variables

3.To study the perception about Work life balance and Job satisfaction among women employee.

4.Toanalyse the challenges associated with managing the balance between professional and personal life.

5.To determine the gender differences between the work life balance and job satisfaction among employees.

6.To identify the relationship of work life balance and Job satisfaction among employees

7.To study the initiative taken by the organization for effective work life balance and its relation with Job satisfaction.

REVIEW OF LITERATURE

1 **Amandeep Kaur Sidhu1 and Rajni Saluja, (2016)**The study will help to reduce problems of stress, absenteeism, turnovers, divorces and decline birth rate and extra martial affairs among women. This study attempts to find out the factors that enables or constrains the performance of working women in both roles as well as coping mechanisms that facilitate women professionals to manage their dual – roles.

2 **Raisinghani and Goswami (2014)** tried to reassess few antecedents of work life imbalance and its effects on both organization and individual point of view. The empirical research proposes to test a conceptual model. The planned model emphasized on the relationship existing between two parameters namely work and family and their impact on family to work interference and work to family interference. The conceptual model proposed also tried to associate various constructs of work life imbalance or conflict to the individual outcomes and organizational outcomes.

3 **Nasurdin& Hsia (2008)** this study sought to examine the influence of support at home (spousal support) in predicting work-family conflict on a sample of married accountants

in Malaysia. The moderating role of gender in these relationships was also investigated. Consistent with the hypotheses, the results revealed that managerial support and spousal support have significant effects on work-family conflict. Thus, the hypothesis that there is a significant relationship between family variables (family size, spouse profession, family support, family responsibility and age of children) and work life balance of working females.

4   **Meghna Virick et al., (2007)** examined how increased work overload of layoff survivors relates to their work-life balance and job and life satisfaction. The study examined work-life balance as a mediating mechanism through which role overload exerts its influence on job and life satisfaction and it is found that work domain variables such as organization position, nature of job, policies of organisation, and years of service, work schedule, and support from colleagues, etc., have a significant relationship with work life balance of working females.

5   **Panghal and Bhambu (2013)** in their published work concluded that job satisfaction is closely related to the nature of work, the quality of management, supervisor behaviour, co-worker behaviour, pay, promotion, organizational aspects, and working environment.

6   An empirical investigation by **Chang & Lee (2006)** in the manufacturing, banking, and service industries revealed that personality traits and job characteristics have a positive and significant influence on organizational commitment as well as job satisfaction.

7   **Bhuain&Menguc (2002)** explored the new configuration of job characteristics, organizational commitment, and job satisfaction.

8   **Bhuain, Al-Shammari, &Jefr (2001)** echoed the similar findings that job autonomy, task identity, and feedback have impacted job satisfaction, while task variety has influenced employees' commitment.

9   **Sanker& Wee (1997)** conducted a survey on the association of job characteristics and job satisfaction in three different countries and they reported that job characteristics influenced job satisfaction of the respondents in all of the countries.

10 **Purohit &Belal (1996)** found that professional accountants in Bangladesh are moderately satisfied with their job. They are highly satisfied with respect to the nature of work but for other factors, such as pay, promotion opportunities, supervision and colleagues they are found to be moderately satisfied. None of them was found to be dissatisfied with their position.

RESEARCH METHODOLOGY

The aim of a research design is to provide an intended and prepared way of achieving the research objectives and to increase the validity and reliability. The present study is a descriptive that seeks to explore the employees about their work life balance and job satisfaction. This type of study requires a research that does an in-depth investigation and description of phenomena, and systematically classifies the attributes as accurately and precisely as possible. In order to attain the aim of the research design, it should address the serious questions including the unit of analysis and the method of data collection. These components are therefore discussed in the following section.

In this study, the unit of analysis is employees working in banks operating in Erode district. The study adopted quantitative approach. In the quantitative approach the data is found

to be in the quantity form and it could be classified into three factors like inferential, experimental and simulation. The population includes employees from all levels who are working in banks operating in Erode district. 200 questionnaires were issued out of which 50 questionnaires were rejected due to its insufficiency and inaccuracy so therefore 150 respondents constituted the sample for the study. Systematic random sampling method is adopted for collecting the primary data. The study used both the primary and secondary data collection methods for the data.

ANALYSIS AND INTERPRETATION
CORRELATION:
Correlation refers to any of a broad class of statistical relationships involving dependence. Correlation can refer to any departure of two or more random variables from independence, but technically it refers to any of several more specialized types of relationship between mean values. There are several correlation coefficients, often denoted ρ or $r,$ measuring the degree of correlation. The most common of these is the Pearson correlation coefficient, which is sensitive only to a linear relationship between two variables (which may exist even if one is a nonlinear function of the other). Other correlation coefficients have been developed to be more robust than the Pearson correlation – that is, more sensitive to nonlinear relationships. In this study the correlation analysis is done to investigate the influence of the dimensions of Work Life Balance on Job Satisfaction.

	Support from Officers	Support from Co-workers	Positive Parenting	Parental Satisfaction	Spouse Support	Domestic Support	Role Overload	Job Satisfaction
Support from Officers	1							
Support from Co-workers	0.078	1						
Positive Parenting	0.074	0.923**	1					
Parental Satisfaction	0.102	0.573**	0.596**	1				
Spouse Support	0.057	0.599**	0.651**	0.437**	1			
Domestic Support	0.074	0.923**	1.000**	0.596**	0.651**	1		
Role Overload	0.019	0.371**	0.419**	0.125	0.235**	0.419**	1	
Job Satisfaction	0.509	0.528	0.648	0.608	0.785	0.648	0.465	1

**. Correlation is significant at the 0.01 level (2-tailed).

INTERPRETATION:

When the factors of work life balance were tested for correlation, the following results were found. 'Support from officers (r=0.102, p<0.01) is correlated with 'Parental Satisfaction', 'Support from co-workers' is highly correlated with 'Positive Parenting' (r=0.923, p<0.01) and 'Domestic Support' (r=0.923, p<0.01), 'Positive Parenting' is highly correlated with 'Spouse Support' (r=0.651, p<0.01), and ' Domestic support' is well correlated with 'Role Overload' s(r=0.419, p<0.01).

When the factors of work life balance were correlated with Job satisfaction, 'Spouse Support' (r=0.785, p<0.01) at 0.01 levels of significance seems to be having a high relationship, then comes the 'positive parenting' and 'domestic support' (r=0.648, p<0.01) and 'parental satisfaction' (r=0.608, p<0.01) also have a very good correlation with job satisfaction. 'Support from officers' (r=0.509, p<0.01) and 'support from coworkers' (r=0.528, p<0.01) have a moderate correlation with job satisfaction.

FINSDINGS OF THE STUDY

- It is noted that women employees are very much concerned about the spouse point of view. And they also expect the support from their spouse than anything else. And also their work life balance is well managed with positive parenting and satisfaction in parenting. And also, the domestic support from parents and in-laws are also needed for their work life balance. When the factors of work life balance were tested for correlation, the following results were found. 'Support from officers (r=0.102, p<0.01) is correlated with 'Parental Satisfaction', 'Support from co-workers' is highly correlated with 'Positive Parenting' (r=0.923, p<0.01) and 'Domestic Support' (r=0.923, p<0.01), 'Positive Parenting' is highly correlated with 'Spouse Support' (r=0.651, p<0.01), and ' Domestic support' is well correlated with 'Role Overload' s(r=0.419, p<0.01).

- It is noted that the women employees need a positive environment at home than at workplace to have a higher job satisfaction. When the factors of work life balance were correlated with Job satisfaction, 'Spouse Support' (r=0.785, p<0.01) at 0.01 levels of significance seems to be having a high relationship, then comes the 'positive parenting' and 'domestic support' (r=0.648, p<0.01) and 'parental satisfaction' (r=0.608, p<0.01) also have a very good correlation with job satisfaction. 'Support from officers' (r=0.509, p<0.01) and 'support from coworkers' (r=0.528, p<0.01) have a moderate correlation with job satisfaction.

CONCLUSION

Work life balance does not mean slicing out equal number of hours for each of your work and personal activities, which is highly unlikely in the real world. Also, an individual's work life balances will vary with time. The right balance will vary when you are single will be different when you marry and it changes again when you are blessed with children and again

when you are nearing retirement. There is no perfect, one-size that fits all balance you should be striving for. In fact, achievement and enjoyment are the two sides of an acceptable definition of work life balance. A good working definition of work life balance is "Meaningful daily achievement and enjoyment in each of my four life quadrants: Work, Family, Friends, and Self". At work you can create your own best Work life balance by making sure you not only achieve, but also reflect the joy of the job and the joy of life every day.

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SOCIAL MEDIA MARKETING: STRATEGIES AND IMPACT

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Abstract

Social Media Marketing or SMM is the form of internet marketing. With the advances and availability of internet, the connectivity between individuals is on rise. In todays era, people are so busy with their lives that they hardly find any time to interact with others. So social media provides a platform for them to interact with a minimal effort.Social media provides a platform not only for individuals to interact but it is also helpful for business concerns to join up or to collaborate with customers. Social media marketing provides an opportunity to business to establish brand loyalty and attract more customers. Customers, too, can team up through social media against deceptive products. They can also share their views regarding different products.

The research is conducted to explain the impact and strategies of social media marketing. For research purpose, some examples have been used of different companies using social media for marketing. To fulfil the purpose of research, many individuals are studied from different parts of Haryana. The study indicates that almost all the youngsters are using social media platforms to interact. About 50% of retired persons are using internet either for entertainment purpose or for seeking information. And even the teenagers below 18 years are also fond of using social media. This shows that the use of social media is at its peak. Thus it provides a wonderful platform to business for advertising their products.

Keywords- Social Media Marketing, interact , impact, strategies, opportunity.

INRODUCTION

In the present day world, social media is being used at a larger pace. It provides opportunity to both business and consumer to interact with one another. Social Media Marketing is the marketing through social media platforms. There are various platform available for social media marketing such as Facebook, Twitter, Instagram, snap chat, linkedln and many more. However social media marketing is often seen as similar to digital marketing. But the both terms are quite different. Where social media marketing is the marketing of products and services through social media, digital marketing means the marketing of products and services through digital technologies. Thus social media is a part of digital marketing and not same as digital marketing.Social media marketing is one of the powerful tool of marketing as it is used by both youngsters and old age. The inexpensive availability of internet has made this possible. The usage of social media marketing increases the trust of customer and affects his buying decision. With social media marketing, business concerns can easily communicate with the customers and can get the questionnaire filled. This way survey can be easily conducted. All

this is facilitated by the advancement in internet technology. This social media marketing is one of suitable method to approach consumers.

Different platforms for social media marketing

Social media marketing has various platforms that serves advertising. This facilities image sharing, video sharing and information sharing. The different platforms are categorised as under:

Social media networking –facebook, linkedln

Facebook is an American social media network. Facebook is the widely used platform for marketing. A survey conducted in May 2015 indicated that 93% marketers use facebook as a social media marketing tool to promote their available product. Through facebook, the marketer creates their pages for product. They can increase their brand awareness and preference by having maximum likes and followers.

Linkedln is also an American social media network which is useful for professionals and businessmen. Linkedln is a platform where different employers advertise the vacancies and various employees upload their C.Vs to get job.

Microblogging- Twitter

Twitter is social networking platform where one can share their messages and views known as tweets. It is also an american based social networking platform. Marketer usually creates their account on twitter and tweets about their product or service for advertisement.

Photo sharing- Instagram, snapchat

Instagram is a photo and video sharing app. In the recent time, Instagram seems to be the widely used social media platform by youth. Marketer create their pages on Instagram and share photos and videos related to their products. The number of followers indicates the spread of information.

Snapchatis a photo sharing app. It lets individual talk with their peers and share their live stories. Marketer uses story sharing to advertise their product.

Video sharing- YouTube, facebook live

You tube is an american video sharing platform of social media. It lets an individual to share, view, like and dislike videos. YouTube has more than 1 billion followers. Usually, marketer creates their youtube channel and upload videos. They always try to increase their number of subscriptions. The likes, comments and views indicates the spread of information.

Facebook live is a feature of facebook which lets an individual to share his live video on facebook. Marketer uses this feature to share the inauguration or launch of some new product or service.

How to make strategies for social media marketing?

Before constructing the social media marketing strategy, it is important to answer the following questions. These are as under:

- What message needs to be delivered?
- Where the message should be delivered?
- When the message is to be delivered?
- Why the message needs to be delivered?
- How the message should be delivered?

The answer of all these question leads to a better social media marketing strategy. Following steps should be followed to develop a social media marketing strategy:

1. **Set your goals-** The first and the foremost requirement for determining suitable strategy is to set your goals. The goals you set should be clear, attainable and quantitative.
2. **Select your target audience-** It is important for a marketer to select its target audience. Target audience may include youngsters, old age, teenagers, childrens, housewives etc.
3. **Analyse your competitor-** The next step is to analyse your competitor and his strategies used in social media. Do focus on his delivered message.
4. **Create rich content-** Make sure the message you prepare should be rich in content. The content of the message should be decided in advance. The audio and video message should be creative.
5. **Select the social media tool-** Every marketer should try to select their social media tool on the basis of your target audience. A mix of social media tool is useful for advertisement of product and services.
6. **Execution-** One should be cautious while executing the social media advertisement. They should look for maximum likes, subscriptions, response etc.
7. **Response to comments-**It is important for the marketer to respond all the comments appearing on the blog. However, sometimes the number of comments are large and can't be replied individually. In that case, common queries should be responded.
8. **Review-** The last but not the least is to review your social media marketing strategy. It should be observed that advertisement should not offend any person or community. The change should be made, if required.

The mentioned steps helps a marketer to prepare a suitable strategy. There are mainly two methods of advertising through social media. The first one is free advertising where a marketer advertises his product by increasing his followers or by providing some interesting content.

The second is paid advertising where a marketer pays for the advertisement. This could be in the form of collaboration with other pages having millions of followers.

Strategies for different social media platforms

Strategies are very important for effective social media advertising. For creating a positive impact on the target audience, one should have clear vision regarding his aims and objectives for advertisement. Different strategies are required for different social media platforms.

1. Facebook

As discussed earlier, Facebook is an american based social networking where one can interact and share their opinion. It is the most important tool for social media marketing as it has the maximum usage out of all the platforms available. Thus the content should be reviewed before uploading it.

While advertising on facebook, the marketer the gather the maximum towards his blog on page created. For this purpose he should use attractive icons. The marketer should determine the best to post the updates about product. He should make sure that there must be regular updates regarding the product. If possible, marketer should try to reply each comment by @feature. Some contests cam also be organised for promotion purposes.

2. YouTube

YouTube is a video based social networking platform. Marketer attracts consumers by supplying different videos. At the time the marketer decides to use youtube as social media marketing platform, he has to take care of some important aspect. As like the written content, the visual content should also be rich in data. To increase the popularity or views of the video, it is suggested that marketer should release trailer before launching the entire advertisement. If you are launching a new product, a video of demo of that product should be released. And if any query seems to be arising then a problem solving video should also be supplied. Apart from above mentioned, the marketer should provide clear descriptions of the content in video. They should use hashtags to make the search easy for the viewers.

3. Instagram

Instagram is the photo sharing social media platform. It is one of the fastest growing platform. Instagram is useful for businessmen as well as non-businessmen. Individuals can interact with each other and can easily share their stories. If the marketer moves on to instagram, he needs to follow some simple tips for the successful campaign.

While using instagram as a social media marketing tool, marketer should try to use the combination of visual and written content. A mix of these helps attracting customers. A hashtag approach should also be used. This approach will help the surfer to find all the related information by just searching the hashtag. Instagram also provides a live option. With this option, the marketer should try going live at the time of important events regarding the product or service.

This way different platforms have different strategies to follow which definitely makes advertisement more appealing. Using a mix of all the platforms available increases the chances of being more popular than other advertisements.

Impacts of social media marketing

The popularity of social media is growing with a higher pace. So there is no looking backwards for the business units. SMM is the suitable platform to influence customer. It has its impact on both consumers and traditional marketing methods.

Customers are said to be the king of market. It becomes important for a business to influence them in order to earn maximum profitability.

1. **Impact on trust-** Nowadays, customers are highly influenced by the different platforms of social media. Through social media platforms, customers are able to contact the business concern directly. They can also share their views with other customers. By receiving positive responses from other customers and businessmen, the trust of customer establishes. This definitely helps business to earn profits. But if consumer receive some negative responses, even the established trust breaks. This way trust is influenced by social media marketing.

2. **Impact on consumers purchasing decision-** Reliability towards a particular product or service leads to more repetitive purchases. Social media marketing brings the customer to the centre. Creating a positive image of customer towards the product becomes utmost important task. Social media marketing tries to deliver the most suitable advertisement. As most of the people are now engaged in social media, so it surely impacts the consumers purchasing decision.

3. **Impact on brand awareness-** Brand awareness indicates the knowledge of customer about quantity and quality of the product. Brand awareness is important to increase the repetitive purchases by the customers. It becomes important to understand thatsocial media marketing influence brand awareness. Online communities play a significant role in this regard.Business concern, too , can verify brand awareness by questionnaire.

4. **Impact on traditional marketing methods-** Traditional marketing methods seems to be the most unorganised method of marketing. The main disadvantage of this method is the lack of flexibility. Once the advertisement is displayed, it takes high cost to change it. On the other hand, social media marketing is more flexible. Having several disadvantages, traditional marketing has some advantages also. It helps the business to reach those people who does not use social media. But with the birth of social media marketing, traditional marketing seems to be vanishing. It becomes important for the business to use the combination of both the methods to reach maximum number of consumers.

SMM uses different social media platforms for marketing of product or service. These days most of the youth is associated with social media. Thus business concerns can advertise

their products by creating segments and post the advertisement as the segment's requirement.

Instances of social media marketing for advertisement

1. **KFC**

    KFC i.e. "**Kentucky Fried Chicken"** is an american fast food restaurant which, now, has its branches all over the world. KFC mainly specialises in fried chicken. KFC seems to be more active on social media. It is trying to boosts its presence on social media. For advertisement purpose, KFC initiated a "Radio KFC, RJ Hunt" contest. The primary aim of this contest was to increase sales and attract young customers. KFC invited RJ's to participate in this contest. FACEBOOK, a social media platform, was used for the execution. About 3000 RJs from different Indian cities participated in this competition. Participants were asked to record their voices with facebook app. The contest mainly target young people to attract towards KFC.

2. **KKR**

    KKR i.e. **Kolkata Knight Riders** is a cricket team. This team represents Kolkata in IPL i.e. INDIAN PREMIERE LEAGUE. The team is bought by actor Shahrukh Khan's company Red Chillies Entertainment in partnership with actress Juhi Chawla and her husband Jay Mehta. The cricket team is already much popular due to the presence of celebrities. But still social media is used to promote the team. Kolkata knight riders is the first team to start their YouTube blogging with their channel named 'Kolkata knight riders-official'.

    Through this blog, the followers of Kolkata knight riders can watch behind the scene footage and players also pass messages through the blog. KKR also started their mobile app named 'KKR Cricket Game Official'. The marketing team of KKR also uses facebook live to connect with followers. Today , there are around 16M followers of KKR on facebook and 1.2M on instagram.

3. **Dominos**

    Dominos is the first pizza selling restaurant. But it faces some critism on the ground of selling costly food items. Thus it moved on to social media to promote its brand. For this purpose, Dominos started 'PIZZA LEGEND CAMPAIGN' that lets people create their own taste and share their taste on facebook.

Social media marketing seems to be the most relevant tool of marketing as it attracts more customers. While advertising on social media, marketer also provides a hyperlink to the products details. The users of social media used to open the link and comes back to their social media platform.

Conclusion

As marketing is an important and challenging task of the modern world, it becomes important for the marketer to advertise its product by using innovative and creative approach. Marketer always tries to advertise by using modern means. Social media marketing is one of the new marketing method where products and services are advertised using different social media platforms. The research conducted for U.S companies indicates that in present 2019 almost 91% ofU.S companies are using social media marketing . This percentage was just 86.2% in 2013. This definitely indicates the growth rate of social media marketing. However it is not true that a marketer should blindly follow social media marketing. There should be a combination of all the methods based on the segment targeted.

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"THE CHANGING ENVIRONMENT OF HUMAN RESOURCE MANAGEMENT (HRM) IN CONTEMPORARY INDIA"

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Abstract:

Human resources is used to describe both the people who work for a company or organization and the department responsible for managing resources related to employees. The term *human resources* was first coined in the 1960s when the value of labor relations began to garner attention and when notions such as motivation, organizational behavior, and selection assessments began to take shape.

Changes has become ultimate reality of the life. Resultantly the business concept too in the last century have no relevance in the contemporary India. Most changes in this world also don't take place in a vacuum as artists and poets create their work in response to the times in which they live, wars emerge out of economic and political pressures, and companies changes their structures in response to the need to follow their customers overseas, for instance. Indian business passed through different phases of the changes. A plenty of changes and challenges forced Indian business to reengineer or rejuvenate themselves for competing with the global players. With the change in all the facts of life, new trends, frames and attitude in also developing in the field of Human Resource Management in the Contemporary India.

Along with the changing business environment, the Human Resource Environment has also been changing in contemporary India and is marked by characteristics like Globalization, Work-force Diversity, Reengineering, Downsizing, Economic Changes, Technological Changes, and Organizational Culture etc. The HR environment is changing and so in the role of HRM to adopt the changing trends.

*Key words; human resourse; organization; changes; environment; downsizing.

Introduction:

We are living in the age of changing world, because change is everywhere, and its pace is increasing. Change is the new buzzword and ethical issues in modern era i.e. in the 21st century or the new millennium. Change is the authority and the prestige of the person or group or HR that initiates the change. Changeis continuous and essential for evolution. It gives an opportunity to create and adopt to the change needs. According to general nation, change refers to a shift in attitude or behaviour from what it was to what it becomes. The shift could be socially acceptable or unacceptable, desirable or undesirable, helpful or harmful, catastrophic or evolutionary and so on. Change is inherent and can take place at all levels such as individual level, group level and organizational level affecting individual group, organization.

Figure 1: Image showing about 'Human Resource'.

In other words, change has become euphemeral everywhere - be it economy, politics, business environment and so on. More than decade has passedsince the economic reforms were announced. These reforms generated forces of change in the business environment. The changes in economy, technology and socio-political structure greatly influence the way organizations are run, theirpolicies, structure, objectives, methods and outcomes. Along with these, change are also occurring today the environment of Human Resource Management(HRM). These changes require HRM to play an ever crucial and pivotal role in organization.

Figure 2: Image showing about the map of 'HR'.

Thus, as part of an organization then, HRM must be prepared to deal with the effects of the changing world of work specially in contemporary India.For them, this means understanding the implications of globalization, environment, work force diversity, changing skill requirements, downsizing, reengineering, Role of HR, the contingent workforce, employees involment and organizational culture and so on.

Objectives of the Study:

 The above discussion amply justifies the necessity of examining the changing   environmental role of Human Resource Management(HRM) in 'Contemporary India'.

In this way, through various important aspects, we have to discuss or study the sub theme about;
   (1)what is environmnt;
   (2)what is HR & HRM;
   (3)HRM in contmporary India;
   (4)the Globalization, Work-force Diversity, Reengineering, Downsizing, Economic Changes, Technological Changes, and Organizational Culture etc related to HRM in brief.

Research Methodology:

This reserch work is based only on secondary data viz; prominent reffered books; periodicals; journals & magazines(various issues); reports; newspapers; Internets and so on.

About Environment:

The term 'environment of business' refers to the aggregate of conditions, events and influences that surround and affect it. Environment is an important variable in the Human Resource Model. The environment often provides a mass of ambiguous information. What to make out of the information? What to accept & what to reject?
Environment of HRM includes all those factors which have bearing on the functioning of HR department. These forces can be divided in two categories viz.; External forces & Internal forces.
i.e.;The environment human resource management comprises both external as well as internal environment or forces which have their impact on the practitioners of the profession.

What is Human Resource(HR)?

Human resources are the people who make up the workforce of an organization, business sector, or economy. "Human capital" is sometimes used synonymously with "human resources", although human capital typically refers to a narrower effect (i.e., the knowledge the individuals embody and economic growth). Likewise, other terms sometimes used include manpower, talent, labor, personnel, or simply people.
A human-resources department (HR department) of an organization performs human resource management, overseeing various aspects of employment, such as compliance with labor law and employment standards, administration of employee benefits, and some aspects of recruitment.

Figure 3: Images showing the key map of 'human resource'.

Human resources is used to describe both the people who work for a company or organization and the department responsible for managing resources related to employees. The term *human resources* was first coined in the 1960s when the value of labor relations began to garner attention and when notions such as motivation, organizational behavior, and selection assessments began to take shape.

In other words, human resources are defined as the people employed by a company or the department in a company in charge of hiring, training, benefits and records. An example of human resources is the department you would speak with to get more information about employee benefit.

What is Human Resource Management(HRM)?
Human resource management is a contemporary, umbrella term used to describe the management and development of employees in an organization. Also called personnel or talent management (although these terms are a bit antiquated), human resource management involves overseeing all things related to managing an organization's human capital.

Figure 4: Image showing the map of 'Human Resource Management'.

In simple words, human resource management, or HRM, is defined as the process of managing employees in a company and it can involve hiring, firing, training and motivating employees. An example of human resource management is the way in which a company hires new employees and trains those new workers.

HRM in Contemporary India:

 In a recent survey, according to Indian CEO's, Indian managerial leaders were less dependent on their personal charisma, but they emphasised logical and step by step implementation processes. Indian leaders focused on empowerment and accountability in cases of critical turnaround challenges, innovative challenges, innovative technology, product planning and marketing or when other similar challenges were encountered (Spencer, Rajah, Narayan, Mohan & Latiri 2007). These social scientists contend. Leaders in other countries often tell about why they chose a peculiar person for a certain role per task, detailing the personal characteristics that made that person right for that situation. They may also consider, in detail, how an assignment would help someone grow and develop their abilities.

In the contemporary context, the Indian management mindscape continues to be influenced by the residual traces of ancient wisdom as it faces the complexities of global realities. One stream of holistic wisdom, identified as the Vedantic philosophy, pervades managerial behaviour at all levels of work organisations. This philosophical tradition has its roots in sacred texts from 2000 B.C. and it holds that human nature has a capacity for self transformation and attaining spiritual high ground while facing realities of day to day challenges (Lannoy 1971). Such cultural based tradition and heritage can have a substantial impact on current managerial mindsets in terms of family bonding and mutuality of obligations. The caste system, which was recorded in the writings of the Greek Ambassador Megasthenes in the third century B.C., is another significant feature of Indian social heritage that for centuries had impacted organisational architecture and managerial practices, and has now become the focus of critical attention in the social, political and legal agenda of the nation.

Changing Environment of HRM:
There are some important factors, which involved in the "Changing Environment of HRM" are as under:
1.Globalization;
2.Work-Force Diversity;
3.Reengineering;
4.Downsizing;
5.Technological Changes;
6.Economic Changes;
7.Organizational Culture.
          The world of work is rapidly changing & business environment is changing environment and sois HR environment. As a part of organization, Human Resource Management (HRM) must be prepared to deal with effects of changing world of work. For the HR people it means understanding the implications of globalization, work-force diversity, changing skill requirements, corporate downsizing, continuous improvement initiatives, re-engineering, the contingent work force, decentralized work sites and employee involvement for which all and more have the financial implication to organization. Now look at the new changing scenario of HRM bellow:
1.Globalization:
The New Economic Policy 1991 has, among other things, globalised the Indian Economy. There has been a growing tendency among business firms to extend their sales or manufacturing to new markets aboard. The global economy establishes the need for constant

and continuous change in people, process and technology. The global competition and social trends need an on going stream of new business practices. HRM has become a central focus of effective and changing environment.

In the recent years. the world business has undergone tremendous changes. Liberalization, Globalization and Privatization have become the buzzword of today and the entire business seems to be going for these. In the era of globalization, a number ofmergers, acquisitions, joint ventures and other forms of partnerships across the national boarders are continuously increasing. Under this era of stiff competition, work place process and practices are under a constant state of flux.

2. Work-Force Diversity:

Generally, diversity means variety (according to dictionary), but in the field of Human Resource Management (HRM), 'diversity' means the situation that arises when employees differ from each other in terms of age gender, ethnicity, education etc. In other words diversity has been defined as "any attribute that human are likely to use to tell themselves, person in different from me and, thus includes such factors as race, sex, age, values and cultural norms (or culnorms)". While 'work-force diversity' means that organizations are becoming more heterogeneous in terms of age, gender, race, ethnicity, etc or work-force diversity.

In the past HRM was considerably simpler because our work force was strikingly homogeneous. Today's work force comprises of people of different gender, age, social class sexual orientation, values, personality characteristics, ethnicity, religion, education, language, physical appearance, marital status, lifestyle, beliefs, ideologies and background characteristics such as geographic origin, tenure with the organization, and economic status and the list could go on. Diversity is critically linked to the organization's strategic direction. Where diversity flourishes, the potential benefits from better creativity and decision making and greater innovation can be accrued to help increase organization's competitiveness. One means of achieving that is through the organization's benefits package. This includes HRM offerings that fall under the heading of the family friendly organization. A family friendly organization is one that has flexible work schedules and provides such employee benefits such as child care. In addition to the diversity brought by gender and nationality, HRM must be aware of the age differences that exist in today's work force. HRM must train people of different age groups to effectively manage and to deal with each other and to respect the diversity of views that each offers. In situations like these a participative approach seems to work better.

3. Reengineering:

Reengineering is a new process, a technology, enhancement, working in teams, having more decision-making authority, or the like, our employees are going to need new skills. Consequently, Human Resource Management (HRM) must be in a position to offer the skills training that is necessary in the new organization. Even the best process will fail if employees do not have the requisite skills to perform as the process task dictates. HR can contribute to reengineering process by its effect on building commitment to reengineering, team-building, changing the nature of work, and empowering jobs. Human Resource can play a vital role improving commitment of employees by hiring competent people, offering the right incentives and installing effective two way communication practices. Furthermore, as many components of the organization have been redefined so too will many of the HRM activities that affect employees. HRM can hire people who can work in process-oriented teams sharing their skills and expertise freely. HRM can also offer additional training to employees so as to improve

their 'team-related' skills and make them capable of handling multiple, cross functional, enriched tasks in a competent way.

4.Downsizing:

Now a days, more or less all the gignatic and diminutive organizations are in front of Downsizing i.e. chopping down the member of staffs in the organisation and industries. In downsizing, Human Resource Management acts as the employees advocate, communicating all necessary information to affected employees. Whenever an organization attempts to delayer, it is attempting to create greater efficiency. Efficiency, in part, means getting the same output with fewer inputs. That is the foundation of downsizing. Downsizing raises a number of other issues besides cost savings.

Whenever an organization attempts to delayer, it is attempting to create greater efficiency. The premise of downsizing is to reduce the number of workers employed by the organization. HRM department has a very important role to play in downsizing. HRM people must ensure that proper communication must take place during this time. They must minimize the negative effects of rumors and ensure that individuals are kept informed with factual data. HRM must also deal with actual layoff. HRM dept is key to the downsizing discussions that have to take place.

5.Technological Changes:

We are living in the age of technology. Every one has aware with it. In order to Human Resource Management, technology has become the hallmark of the modern organizations. Technology is the process by which inputs from an organization's environment are transformed into outputs. Certainly, modern organizations have become the technology driven organizations, because technology includes tools, machinery, equipment, work procedures and employee's knowledge and skills.

With the current technological advancement and its projection in the future, it has brought in new eyes in the face of HRM. A number of computerized systems have been invented to help in the HRM of which they are seen as simplifier of HR functions in companies. In recent years, several business trends have had a significant impact on the broad field of HRM. Chief among them was new technologies. These new technologies, particularly in the areas of electronic communication and information dissemination and retrieval, have dramatically altered the business landscape. Satellite communications, computers and networking systems, fax machines, and other devices have all facilitated change in the ways in which businesses interact with each other and their workers. Telecommuting, for instance, has become a very popular option for many workers, and HRM professionals have had to develop new guidelines for this emerging subset of employees.

6.Economic Changes:

Economic environment is external factors of an environment. It refers to all those economic forces which have a bearing on the Human Resource function. In India too, there is a perceptible shift in occupational structure from agriculture to industry to services. The New Economic Policy, 1991 has led to liberalization and globalization giving genesis to multinational organizations with their multicultural dimensions having certain implications for HRM. It can not be denying that our economy is gradually getting integrated with the global economy. Globalization has considerable influence on human resource functions. Employee hiring, training, motivations, compensation, and retaining use to be guided by the global are use perspective.

7.Organisational Culture:

Changes in organizational structure have also influenced the changing face of human resource management. Continued erosion in manufacturing industries in the United States and other nations, coupled with the rise in service industries in those countries, have changed the workplace, as has the decline in union representation in many industries (these two trends, in fact, are commonly viewed as interrelated). In addition, organizational philosophies have undergone change. Many companies have scrapped or adjusted their traditional, hierarchical organizational structures in favor of flatter management structures. HRM experts note that this shift in responsibility brought with it a need to reassess job descriptions, appraisal systems, and other elements of personnel management.

"Brain power ….has never before been so important for business. Every company depends increasingly on knowledge-patents, processes, management skills, technologies, information about customers and suppliers, and old-fashioned experience. Added together, this knowledge is intellectual capital".

"Fortune magazine"

Conclusive Remarks:

Thus and therefore, the business environment in 'contemporary India'is turbulent and fast changing. We have entered the era of global economy, global communication, global markets and also global management. The management has to face very keen competition and ever-increasing expectations of customers particularly in quality and delivery of products. This requires reengineering, downsizing, work-force-diversity, organisational culture and effective management systems.

As such, the Human Resource environment has changed. The challenges posed by changed environment is fostering intellectuals or human capital needs managing these differently than those of previous generation. At last, the changing environment of 'Human Resource Management' is delineated; we are ready to present the new HR management practices in such changing environment.

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A STUDY ON FACTORS INFLUENCING THE CONSUMER BUYING BEHAVIOUR WITH REFERENCE TO LIFE INSURANCE PRODUCTS

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ABSTRACT
Insurance plays a dynamic role in the general well-being of both the citizens and economy as a whole. The last decade has seen a tremendous growth in the insurance sector in India. Ranging from the number insurance companies to the number of innovative products as well as the market share. This exploratory and descriptive based study has been carried out with an objective to identify those factors that influence customer's policy buying decision and also analyse the preferences of customers while buying insurance products. Various insurance related factors have been discussed in the paper. The data for the study has been collected from both primary and secondary sources. The area of study is limited to Kozhikode, of Kerala and sample size is 150 policyholders of LIC India and other private companies .Sampling technique used is purposive sampling. The data has been analysed and presented in the form of table, bar graphs and pie-charts. The findings have been summed up to say that LIC is the most accepted and popular brand in life insurance along with a steep and gradual increase in the market share of other private life insurers too. Demographic factors are seen to be seen as the deciding factor in the purchase of these products

INTRODUCTION

Insurance Sector is basically divided into 2 Life Insurance and Non-life Insurance. The Non-life Insurance sector is also termed as General Insurance. Both of these are comes under the purview of the IRDAI (Insurance Regulatory and Development Authority of India). There are totally 57 insurance companies of which 24 companies are the life insurance providers and the remaining 33 are non-life insurers.

Life insurance companies' offers coverage to the life of the individuals and the non-life insurance companies offers coverage to day-to-day living like travel, health, our car and bikes, and home insurance. Along with this the non-life insurance companies also provide coverage to industrial equipment's as well. Crop insurance, gadget insurance, pet insurance etc. are some of the other forms of insurance products being made available by the general insurance companies.

LIC continues to be the market leader in India, but the coming of new private insurers has seen a vibrant expansion and growth of both life and non-life sectors since 2017. There is a demands for new insurance policies with affordable premium.

India being a country in the growth trajectory, there is quite a lot of disposable income. If well marketed with innovative products, affordable premium, payment options better claims management etc., then this industry is definitely on the rise.

The Government of India too has introduced a few insurance schemes for individuals belonging to the below poverty line category

- Pradhan Mantri Suraksha BimaYojana (PMSBY)
- RashtriyaSwasthyaBimaYojana (RSBY) and

- Pradhan MantriJeevanJyotiBimaYojana (PMJJBY).

All of the above factors along with the growing insurance awareness, retirement plans, the growing middle class and young insurable crowd, will substantially increase the growth of the Insurance sector in India.

Need for the Study - The study that was taken with an aim to analyse which are the factors that influence customers while buying insurance products. This study aims in identifying the level of customer awareness regarding various promotional offers, policies offered by the insurance companies. Since the LPG there has been an increase in the number global players in India. An economy which was solely monopolised by LIC had to revamp its marketing strategies to attract more customers as well as retain the existing ones The study is restricted to Kozhikode city of Kerala only.

Objectives of Study
1. To understand consumer behaviour with regard to buying of insurance products
2. The factors that influence the buying behaviour
3. The major players of insurance sector
4. Customer awareness regarding insurance products, claims, settlements etc.

REVIEW OF LITERATURE

Irda: Regulator of Insurance Sector in India by AsleshaParwatMukadam and Dr. PramodDeo (Indian Journal of Research, June 2016)[1], the paper discusses and provides insight into the regulatory role played by IRDA and the growth of private insurance companies in an economy where LIC had the monopoly. Also focusses on the grievance redressal, sale/advertising regulations related in insurance products and the imparting education to the masses. Also , the research paper titled ,Consumer buying behaviour towards life insurance: An analytical study D Siddhartha, M Sumanth (International Journal of Commerce and Management Research, July 2017)[2] discusses the different factors affecting the choice of investors in choosing a life insurance policy. S.Narender and L. Sampath (2014)[3]have stated that the awareness on rules, regulations and rights among the consumers is very negligible and future calls for much financial need like education, health, marriage etc. , to consumers. Dhalait (2007)[4] has described the importance service in the insurance business. The paper discusses the increase in the number of insurance holders and the focus needs to be shifted to customer service too. Ajay Suneja and Kirti Sharma (2009)[5] made a study entitled _Pre-purchase behaviour regarding life insurance products'. With an increase in the private players in the insurance sector there has been a mighty change in the way products are being showcased, using of technology to ease the process of insuring as well as a speedy claim settlements.

Research Methodology

Descriptive research has been undertaken and primary data collection has been done using questionnaire. Secondary data has been analysed by referring different journals and research paper written on the topic of interest. A sample of 150 person's has been taken within Kozhikode city. Sampling technique used is purposive sampling.

Data Analysis and interpretation

1. Demographic Factors

Details		Frequency	Percentage
Age	Below 30	29	19
	31-40	42	28
	41-50	36	24
	51-60	24	16
	60 and above	19	13
	Total	150	100
Gender	Male	109	73
	Female	41	28
	Total	150	100
Qualification	Below SSLC	0	0
	12thstd	3	2
	Graduate	52	35
	Post Graduate and above	95	63
	Total	150	100
Occupation	Un employed	0	0
	Salaried	74	49
	Self employed	26	18
	Professional	50	33
	Total	150	100

Inference: Following inferences can be drawn from the above table

- Major insures belong to the age group of 31-40.
- Males were found more in number
- Most of the responded were post graduates
- Salaried employees were found to take insurance more than any other category

2 .Insurance Company chosen

Company	Frequency	Percentage
LIC	63	42
HDFC Standard life	17	11
ICICI Prudential	28	19
SBI Life	15	10
Bajaj Allianz	7	5
Max life Insurance	20	13
others	0	0
Total	150	100

Inference: The above analysis shows that the most preferred insurance company is LIC of India.

1. Policy Type

Police type	Frequency	Percentage
Endowment	32	21
Money back	40	27
Unit Linked	20	13
Term Plan	54	36
Child Plans	4	3
Others	0	0
Total	150	100

Inference: The above analysis points to the fact that the most preferred policy type by customers is the' Term Plan'.

2. Factors considered for choice of insurance company

Factors	Frequency	Percentage
Brand name	51	34
Product variety	14	9
Service quality	19	13
Technological ease	10	7
Premium	26	17
Ease of claim	30	20
Total	150	100

Inference: the above analysis clearly indicates that the brand name plays a major role in the choice of company. Amount of premium and the ease with which the claims are settled are also a major factor in the choice of insurance company.

5 . Rationale behind investment

Reason	Frequency	Percentage
Risk coverage	52	35
Tax benefits	48	32
Money back	16	11
Growth & Return	20	13
Security	14	9
Total	150	100

Inference

Risk coverage seems to be the rationale behind the investment of majority of respondents along with tax benefits that these investments provide.

6. Risk bearing capacity

Level of risk	Frequency	Percentage
Low risk with security	102	68
Moderate risk with minimum return	36	24
High risk with high return	12	8
Total	150	100

Inference: Majority seem to be risk averse. The most preferred level is low risk and high security.

7. Term chosen

Term	Frequency	Percentage
Up to 5 years	24	16
5 to 10 yrs.	16	11
10 to 15 yrs.	38	25
15 to 25 yrs.	52	35
25 yrs. and above	20	13

Inference – Majority of the customers has opted for the 15 to 25 year term. 10 to 15 yrs. term is also sufficiently preferred.

8.Premium options

Options	Frequency	Percentage
Monthly	17	11
Quarterly	26	18
Half yearly	48	32
Yearly	59	39
Total	150	100

Inference: of the varied premium options available the most preferred seems to be the yearly option. Half yearly also seems to be a favoured choice.

Findings: through the above analysis the findings can be summarised as follows .The insurance market seems to be more than vibrant. It is evident from the fact that majority of policy holders belongs to the category of 31 -40 and that the younger generation are more convinced with new forms of financial securities whereas the older generation seem to go the traditional way opting for NPS, FD etc. Though women are in the forefront in many fields, of respondents majority of the insurers seems to be males, still indicating who the decision maker of the family is. Educated lot seems to opt insurance as an investment option which is indicated by the higher percentage of post graduates among the respondents. Salaried employees as well as professional seems to prefer insurance as their investment avenue this can be thought in line with the tax savings that is offered by investment in the insurance. Customers are also seen to be highly risk averse, around 52 % of the respondents seems to choose insurance as means to avoid any future risk. LIC of India seems to be the market leader. But by offering better service quality, state of art technology, better premium options and by maintaining good customer relationships other players too have gained entry into the Indian market. Very soon these could prove highly competitive to LIC. The close contender of the market giant seems to be ICICI Prudential and MaxLife. Term plans are chosen by majority of the customers along with money back policy gaining a slight edge over the other policy types. To make a choice regarding the company from which insurance is to be taken, majority of respondents seems to go by the Brand Name. LIC seems to be the most trusted brand since its inception. Other major factors that effect choice is the amount of premium to be paid and also the ease with which the claims of the customers are settled. Majority of the respondents seems to go for long term investments with 15 to 25 years being the preferred choice and most are comfortable in paying the premium on yearly basis.

Conclusion – Since the onset of new millennia the mind-set and preference of customers have changed. Education level, exposure to international market and environment has added to this. Investment as the preferred avenue for investment has been on the rise. This product which was of a latent demand seems to have gained momentum. LIC of India is a household name. No other company Indian or foreign has changed this. Youngsters are found to be risk verse and their choice of vehicle is definitely is insurance. Though organisations have come up with varied and innovative products people still seems to prefer the term plan and are looking for long term investment through insurance. Salaried and professional being in the tax bracket opts this avenue to save tax payments. Insurance companies need to come with more convincing products since there is a lot of untapped market especially in the rural areas. Kerala now being prone to lot of weather changes and natural calamities, it is the need of the hour of the public to realize the importance of insuring themselves as well as their family. Along with life insurance, non –life insurance products should also be amply marketed. And the customer awareness should be increased so that they safe guard themselves from, any future peril that might befall them. Being insured seems to be the safest and rationale choice.

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CERTAIN INTERESTING TRANSFORMATION FORMULAE FOR BASIC HYPERGEOMETRIC SERIES

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1. INTRODUCTION :

Gasper (1) established the q-analogue of Karlsson-Minton summation formula in the form :

$$_{r+2}\Phi_{r+1}\left[\begin{array}{c} a, b, b_1\ q^{m_1},......,b_r\ q^{m_r}; q; \dfrac{q^{1-(m_1+m_2+.....+m_r)}}{a} \\ bq, b_1,........,b_r \end{array}\right]$$

$$= \dfrac{\left(a, \dfrac{bq}{a}; q\right)_\infty \left(\dfrac{b_1}{b}; q\right)_{m_1} ....\left(\dfrac{b_r}{b}; q\right)_{m_r}}{\left(bq, \dfrac{q}{a}; q\right)_\infty (b_1; q)_{m_1}..........(b_r; q)_{m_r}} \times b^{m_1+m_2+.....+m_r} \qquad (1.1)$$

where $m_1, m_2,......, m_r$ are non-negative integers

We will make use of the following known summation formula to establish the transformations for basic hypergeometric serie $\displaystyle\sum_{r=0}^{m}\sum_{s=0}^{n} \dfrac{\left(q^{-m}; q\right)_r \left(q^{-n}; q\right)_s \left(\dfrac{c}{a}; q\right)_r (a; q)_s\ q^{r+s}}{(c; q)_{r+s}\ (q; q)_r (q; q)_s}$

$$= \dfrac{(a; q)_m \left(\dfrac{c}{a}; q\right)_m q^{mn} \left(\dfrac{c}{a}\right)^m a^n}{(c; q)_{m+1}}$$

(1.2)

2) MAIN RESULT: In this section we shall establish the following transformation:

$$\Phi\left[\begin{array}{c} (a)\ \ ;;\ a, (b); \dfrac{c}{a}, (b^1); q; \dfrac{xc}{a}, ya \\ (c), c\ ;;\ (d)\ \ ; (d^1)\ \ \ ; q, q, q \end{array}\right]$$

$$= \sum_{r,s=0}^{\infty} \frac{[(a)]_{r+s}\ [(b)]_r\ [(b^1)]_s \left(\dfrac{c}{a}\right)_r (a)_s\ (-x)^r\ (-y)^s}{[(c)]_{r+s}\ [(d)]_r\ [(d^1)]_s\ (c)_{r+s}\ (q)_r\ (q)_s}$$

$$\times \Phi \begin{bmatrix} (a)\ q^{r+s}\ ;;\ a,\ (b)\,q^r\ ;\ (b^1)\ q^s\ ;q;x,\ y \\ (c)\ q^{r+s}\ ;;\ (d)\,q^r\ \ ;\ (d^1)q^s\ ;q,\ q,\ 0 \end{bmatrix}$$

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Proof of (2.1):

$$\Phi \begin{bmatrix} (a)\ \ \ ;;\ a,\ (b);\ \dfrac{c}{a},\ (b^1)\ ;q;\dfrac{xc}{a},\ ya \\ (c),c\ \ ;;\ c\ ,(d);\ (d^1)\ \ \ \ ;q,\ q,\ q \end{bmatrix}$$

$$= \sum_{m,n=0}^{\infty} \frac{[(a)]_{m+n}\ [(b)]_m\ [(b^1)]_n\ x^m\ y^n\ q^{\frac{m(m-1)}{2}+\frac{n(n-1)}{2}}}{[(c)]_{m+n}\ [(d)]_m\ [(d^1)]_n\ (q)_m\ (q)_n}$$

$$\left\{ \frac{(a)^m \left(\dfrac{c}{a}\right)_n \left(\dfrac{c}{a}\right)^m a^n q^{mn}}{(c)_{m+n}} \right\}$$

$$= \sum_{m,n=0}^{\infty} \frac{[(a)]_{m+n}\ [(b)]_m\ [(b^1)]_n\ x^m y^n\ q^{\frac{m(m-1)}{2}+\frac{n(n-1)}{2}}}{[(c)]_{m+n}\ [(d)]_m\ [(d^1)]_n\ (q)_m\ (q)_n}$$

$$\times \sum_{r=0}^{m} \sum_{s=0}^{n} \frac{\left(\dfrac{c}{a}\right)_r (a)_s \left(q^{-m}\right)_r (q^{-n})_s\, q^{r+s}}{(c)_{r+s}\ (q)_r\ (q)_s} \qquad \text{(From (1.2)}$$

Now putting $m+r$ for m and $n+s$ for n in above result we get the right hand side of (2.1) after some simplifications.

Applications of (2.1)

Putting $A = C = 0$ in (2.1) we get:

$$\Phi \begin{bmatrix} & ;; & a, (b) \; ; \; \dfrac{c}{a}, \left(b^1\right) ; q; \dfrac{xc}{a}, ya \\ (c) & ;; & (d) \; ; \; \left(d^1\right) \quad\quad ; q, q, q \end{bmatrix}$$

$$= \sum_{r,s=0}^{\infty} \frac{[(b)]_r \, \left[(b^1)\right]_s \left(\dfrac{c}{a}\right)_r (a)_s \, (-x)^r \, (-y)^s}{[(d)]_r \left[(d^1)\right]_s (c)_{r+s} (q)_r (q)_s}$$

$$\times_B \Phi_D \begin{bmatrix} (b)\, q^r & ; & q & ; x \\ (d) q^r & ; & & q \end{bmatrix} {}_{B^1}\Phi_{D^1} \begin{bmatrix} (b^1)\, q^s & ; q; & y \\ (d^1) q^s & ; & q \end{bmatrix}$$

Taking $B = D = B^1 = D^1 = 1$, x = -d/b & y = $-\dfrac{d^1}{b^1}$ in (2.2) and summing the inner ${}_1\Phi_1$ -

series, we get.

$$\Phi \begin{bmatrix} & ;; & a, b; \dfrac{c}{a}, b^1 \; ; q; -\dfrac{cd}{ab}, -\dfrac{ab^1}{b^1} \\ (c);; & d & ; \; d^1 \; ; q, \; q, q \end{bmatrix}$$

$$= \frac{\left(\dfrac{d}{b}, \dfrac{d^1}{b^1}; q\right)_{\infty}}{\left(d, d^1; q\right)_{\infty}} \, \Phi \begin{bmatrix} & ;; & \dfrac{c}{a}, b \; ; a, b^1 \; ; \; q; \dfrac{d}{b}, \dfrac{d^1}{b^1} \\ (c) & ;; & \text{------} \; ; \; \text{------} \end{bmatrix}$$

Putting c = 0 in (2.3), we find

$${}_1\Phi_1 \begin{bmatrix} b^1 \; ; \; q \; ; \; -\dfrac{ad^1}{b^1} \\ d^1 \; ; \quad\quad q \end{bmatrix} = \frac{\left(\dfrac{d^1}{b^1}; q\right)_{\infty}}{(d^1 \,; q)\infty} \; {}_2\Phi_0 \begin{bmatrix} a \; ; \; b^1; \; q; \; \dfrac{d^1}{b^1} \end{bmatrix}$$

If we take $d^1 = 0$ in (2.3), we obtain

$$
{}_2\Phi_2 \begin{bmatrix} a, \ b \,; \ q \,; -\dfrac{cd}{ab} \\ c, d \ ; \quad q \end{bmatrix} = \dfrac{\left(\dfrac{d}{b}\,; q\right)_\infty}{(d\,; q)_\infty} \ {}_2\Phi_1 \begin{bmatrix} \dfrac{c}{a}, \ b\,; \ q\,; \dfrac{d}{b} \\ c \end{bmatrix}
$$

$\square$

which is a known result (Srivastava & Karlson (1))

If we take b= q^{-m}, b^1 = q^{-n} in (2.3), we find

$$
\Phi \begin{bmatrix} \ ; ; \ a, \ q^{-m} \,; \dfrac{c}{a}, q^{-n}\,; \ q, \ -\dfrac{cd}{a}\,q^m, \ -ad^1 q^n \\ (c) \ ;; \quad d \qquad ; \quad d^1 \qquad ; \qquad q, \ q, \ q \end{bmatrix}
$$

$$
= \dfrac{1}{(d\,; q)_m\,(d^1; q)_m} \ \Phi \begin{bmatrix} \ ;; \ \dfrac{c}{a}, q^{-m}\ ; \ a, \ q^{-n}\,; \ q, \, ; d^1 q^n \\ (c)\ ;; \ \underline{\qquad}, \underline{\qquad}, \end{bmatrix}
$$

$\square\square\square\square\square\square\square\square$

   If we take b, b^1 $\square\square$ ∞ in (2.3), we get

$$
\Phi \begin{bmatrix} \ ;; \ a, \dfrac{c}{a}\,; \ q\,; \ \dfrac{cd}{a}, \ ad^1 \\ c \ ;; \ d\,; \ d^1 \ ; \quad q^2, q^2, q \end{bmatrix} = \dfrac{1}{(d, d^1; q)_\infty} \ \Phi \begin{bmatrix} \ ;; \quad \dfrac{c}{a}\,; \ a, \ q\,; -d, -d^1 \\ c \ ;; \ \underline{\quad}; \underline{\quad}; \qquad q, q, 0 \end{bmatrix}
$$

$\square$

Taking d^1 = 0 in (2.7), we find

$$
{}_1\Phi_2 \begin{bmatrix} a \ \ ; q \,; \dfrac{cd}{a} \\ c, d \ ; \qquad q^2 \end{bmatrix} = \dfrac{1}{(d, q)_\infty} \ {}_1\Phi_1 \begin{bmatrix} \dfrac{c}{a} \ \ ; q \,; -d \\ c \quad ; \qquad q \end{bmatrix}
$$

$\square$

For d = a, (2.8) yields

$$
{}_0\Phi_1 \begin{bmatrix} \underline{\quad} \ ; q \,; c \\ c \ ; q^2 \end{bmatrix} = \dfrac{1}{(a\,; \ q)_\infty} \ \dfrac{(a\,; q)_\infty}{(c\,; q)_\infty} = \dfrac{1}{(c\,; \ q)_\infty}
$$

$\square$

For c = a, (2.8) gives

$$_0\Phi_1 \left[\begin{matrix} \underline{\quad\quad} & ; & q & ; & d \\ d & ; & & & q^2 \end{matrix} \right] = \frac{1}{(d\,;\,q)_\infty}$$

□□□□□□□□□□□□□□□□□

If we take d = q in (2.10), we get the identity:

$$\sum_{r=o}^{\infty} \frac{q^{r^2}}{(q\,;q)_r^2} = \frac{1}{(q\,;q)_\infty}$$

□□□□□□□□□□□□□□□□□□

For d = -q, (2.10) gives

$$\sum_{r=o}^{\infty} \frac{(-)^r\, q^{r^2}}{(q^2\,;q^2)_r} = \frac{1}{(-q\,;q)_\infty}$$

□□□□□□□□□□□□□□□□□□

Taking a, b □□□□in (2.5), we get

$$\sum_{r=o}^{\infty} \frac{(-cd)^r\, q^{\frac{3r(r-1)}{2}}}{(q,\,c,\,d\,;\,q)_r} = \frac{1}{(d\,;q)_\infty} \sum_{r=o}^{\infty} \frac{(-d)^r\, q^{\frac{r(r-1)}{2}}}{(q,\,c,\,q)_r} \quad □□□$$

□□□□□□□□□□□□□□□□□□□□□□□□□□□□□

For C = 0 in (2.13), we find

$$\sum_{r=o}^{\infty} \frac{(-d)^r\, q^{\frac{r(r-1)}{2}}}{(q\,;\,q)_r} = (d\,;\,q)_\infty \tag{2.14}$$

If we take d = -q in (2.14), we get :

$$\sum_{r=o}^{\infty} \frac{q^{\frac{r(r-1)}{2}}}{(q\,;\,q)_r} = (-q\,;\,q)_\infty \tag{2.15}$$

For d = q (2.14), yields

$$\sum_{r=o}^{\infty} \frac{(-)^r\, q^{\frac{r(r+1)}{2}}}{(q\,;\,q)_r} = (q\,;\,q)_\infty \tag{2.16}$$

If we take c = d = q in (2.13), we find

$$\sum_{r=0}^{\infty} \frac{(-)^r q^{\frac{r(r+1)}{2}}}{(q;q)_r^3} = \frac{1}{(q;q)_\infty} \sum_{r=0}^{\infty} \frac{(-)^r q^{\frac{r(r+1)}{2}}}{(q;q)_r^2} \qquad (2.17)$$

for c = q, d = - q in (2.13), we get

$$\sum_{r=o}^{\infty} \frac{q^{r\frac{(3r+1)}{2}}}{(q;q)_r (q^2;q^2)_r} = \frac{1}{(-q;q)_\infty} \sum_{r=o}^{\infty} \frac{q^{r\frac{(r+1)}{2}}}{(q;q)^2_r} \qquad (2.18)$$

Also, for c = - q, d = q, (2.13) gives

$$\sum_{r=o}^{\infty} \frac{q^{r\frac{(r+1)}{2}}}{(q;q)_r (q^2;q^2)_r} = \frac{1}{(q;q)_\infty} \sum_{r=0}^{\infty} \frac{(-)^r q^{r\frac{(r+1)}{2}}}{(q^2;q^2)_r} \qquad (2.19)$$

Comparing (2.18) and (2.19), we find the identity:

$$\sum_{r=o}^{\infty} \frac{q^{\frac{r(r+1)}{2}}}{(q;q)_r^2} = \frac{(-q;q)_\infty}{(q;q)_\infty} \sum_{r=o}^{\infty} \frac{(-)^r q^{r\frac{(r+1)}{2}}}{(q^2;q^2)_r} \qquad (2.20)$$

If we take D + 1 for D, D^1 + 1 for D^1, d_{D+1} = □, $d^1_{D^1+1}$ = □□□□ x   for x, □y for y and then □□□□ □ □ in (2.2), we get

$$\Phi \begin{bmatrix} \quad ;; \quad a, (b) \; ; \dfrac{c}{a},(b^1) \; ; \; q; -\dfrac{xc}{a}, -ya \\ (c) \;;\; (d) \quad ; (d^1) \quad ; \quad 0,0,q \end{bmatrix}$$

$$= \sum_{r,s=0}^{\infty} \frac{[(b)]_r \, [(b^1)]_r \left(\dfrac{c}{a}\right)_r (a)_s \, x^r y^s}{[(d)]_r [(d^1)]_s \, [(c)]_{r+s} (q)_r (q)_s \, q^{\frac{r(r-1)}{2}+\frac{s(s-1)}{2}}}$$

$$\times {}_B\Phi_D \begin{bmatrix} (b)q^r \;; q \;; \; -xq^r \\ (d)q^r \end{bmatrix} {}_{B^1}\Phi_{D^1} \begin{bmatrix} (b^1)q^s \;; q \;; \; -yq^{-s} \\ (d^1)q^s \end{bmatrix} \text{□□□□□□□} \text{ provided}$$

series terminates i.e. one of b & b^1 are of the form q^{-m}& q^{-n}, respectively. We can write (2.21) in the following form.

$$\Phi \begin{bmatrix} \;;; \; a, (b)\, q^{-m} \;; \dfrac{c}{a}, (b^1)\, q^{-n} \;; \; q, \dfrac{xc}{a}, -\, ya \\ (c) \;;; \; (d) \quad\quad ; \quad (d^1) \quad\quad ; \quad 0, 0, q \end{bmatrix}$$

$$= \sum_{r=o}^{m} \sum_{s=o}^{n} \frac{[(b)]_r \, [(b^1)]_s \left(\dfrac{c}{a}\right)_r (a)_s \, (q^{-m})_r \, (q^{-n})_s \, x^r y^s}{[(d)]_r \, [(d^1)]_s \, [(c)]_{r+s} \, (q)_r \, (q)_s \, q^{\frac{r\,(r-1)}{2}+\frac{s\,(s-1)}{2}}}$$

$$\times_{B+1} \Phi_D \begin{bmatrix} (b)\, q^r, \; q^{-m+r} \;; \; q; \, -xq^{-r} \\ (d)\, q^r \end{bmatrix} \quad \times_{B^1+1} \Phi_{D^1} \begin{bmatrix} (b^1)\, q^s, \; q^{-n+s} \;; \; q; \, -xq^{-s} \\ (d^1)\, q^s \end{bmatrix}$$

□□□□□

If we take □ = □^{1} = D = D^1 =0 in (2.22), we get after some simplifications the following transformation

$$\Phi \begin{bmatrix} \;; \; a, q^{-m} \;; \dfrac{c}{a}, q^{-n} \;; \; q; -\dfrac{xc}{a}, -\, ya \\ (c) \;; \; \underline{\quad} \;; \; \underline{\quad} \quad ; \quad 0, 0, 1 \end{bmatrix}$$

$$= \frac{x^m y^n \left(-\dfrac{q}{x}\right)_m \left(-\dfrac{q}{y}\right)_n}{q^{\frac{m\,(m-1)}{2}+\frac{n\,(n-1)}{2}}} \, \Phi \begin{bmatrix} \;;; \; \dfrac{c}{a}, q^{-m} \;; \; a, q^{-n} \;; \; q; q, q \\ c \;;; \; -\dfrac{q}{x} \;; \; -\dfrac{q}{y} \end{bmatrix}$$

□□□□□□□□□□□□

For c = 0, (2.23), gives.

$${}_1\Phi_1 \begin{bmatrix} q^{-m} \;; \, q \;; \, q \\ -\dfrac{q}{x} \end{bmatrix} = \frac{q^{\frac{m\,(m+1)}{2}}}{x^m \left(-\dfrac{q}{x}\right)_m}$$

□□□□□□□□□□□□□□□□

Taking □ = D = □^{1} =D^1 = 1, b$_1$=b, d$_1$ = d, $b_1^1 = b^1$, $d_1^1 = d^1$ □□□ $x = \dfrac{-d}{b} \, q^m$, $y = \dfrac{-d^1}{b^1} \, q^n$ in

(2.21) and then summing the inner $_2\Phi_1$ series, we get

$$\Phi \begin{bmatrix} \;;; \; a, b, q^{-m} \;; \dfrac{c}{a}, b^1\, q^{-n} \;; \; q; \dfrac{cd}{ab} q^m, \dfrac{ad^1}{b^1} q^n \\ (c) \;;; \; d \quad ; \quad d^1 \quad ; \quad 0, \; 0, \; 1 \end{bmatrix}$$

$$= \frac{\left(\frac{b}{d}\right)_m \left(\frac{d^1}{b^1}\right)_n}{(d)_m (d^1)_n} \, \Phi \left[\begin{array}{c} ;; \; b, \frac{c}{a}, \; q^{-m} \; ; \; a, b^1, \; q^{-n} \; ; \; q; q, q \\ c \;;; \; \frac{b}{d} q^{1-m} \quad ; \quad \frac{b^1}{d^1} q^{1-n} \end{array} \right]$$

Taking b, $b^1 \square \square \square$ in (2.25), we obtain

$$\Phi \left[\begin{array}{c} ;; \; a, \; q^{-m} \; ; \frac{c}{a}, b^1 \; q^{-n} \; ; \; q; -\frac{cd}{a} q^m - ad^1 q^n \\ c \;;; \quad d \; ; \quad d^1 \quad ; \end{array} \right]$$

$$= \frac{1}{(d)_m (d^1)_n} \Phi \left[\begin{array}{c} ;; \; \frac{c}{a}, q^{-m} \; ; \; a, \; q^{-n} \; ; \; q \; ; dq^m, d^1 q^n \\ c \;;; \underline{\qquad} ; \underline{\qquad} \end{array} \right]$$

$$\square \square \square \square \square \square \square \square \square \square \square \square \square$$

which is (1.6).

A number of similar other interesting results can also be deduced.

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A DETAILED STUDY ON CONTRIBUTION OF LIFE INSURANCE CORPORATION ON ECONOMICAL DEVELOPMENT OFPOLICY HOLDERS.

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Abstract

Life Insurance Corporation basically deals with social security of the people. Insurance provides risk cover in case of mishaps to the policy holders. It also works as saving option for most of the people. Various literature reveals that society can live proper life if it can provide sufficient insurance to its citizens.

When we look at the urban areas, we find that people are having good awareness about the insurance policies. However, in sub-urban areas and rural areas, awareness is low. There should be proper study on contribution of insurance in economical up liftman of society and development of the region. The existing literature hardly focuses on this area.

The present study tries to provide inputs on economical impact of the largest insurance company i.e. LIC on the economy of Chandrapur District. Chandrapur district comprises of semi-urban areas, rural areas and Naxalite affected areas. There is a need to understand that how can the region develop with contribution from LIC. The present study is an effort to satisfy this need. The role is very critical in the country like India where less than 10% people are insured.

Keyword: Social Security, Insurance, Sub-Urban, Development

Introduction

The nationalization of life insurance was another goal on the road the country had selected in order to achieve its goal of socialistic pattern of society.Into the lives of millions in the rural areas, it begins a new sense of awareness of building for the future in the spirit of cool confidence which insurance alone can give. It is a measure visualized in a genuine spirit of service to the people. It is for the people to respond, confuse the doubter and make it a ringing success. Life insurance, one of the largest and most important industries in America, is a business with far getting social and economic suggestions. Its first concern is with economic security. It presents individual with a private institution through which they can acquire financial security for their families and businesses. It also gives the economy as an important channel through which capital is made available to business for economic growth. Life Insurance influences everyone either directly or indirectly.

LIC of India, Act was approved by the parliament on June 18, 1956 and came into effect from July1, 1956. LIC of India initiated its working as a corporate body from September 1, 1956. Its working is directed by the LIC Act.

Product diversification is necessary to meet the changeable needs, changing preferences and rising ambitions of the customers. Realizing the importance of product diversification LIC has commenced various insurance plans so as to increase its business multifold. Money back polices have enlarged to the level of Rs.20000 crores. It is major assurance policy because of its advantages of investment.

The govt. of India in 1993 had set up a high powered committee headed by R.N. Malhotra former Governor RBI, to inspect the structure of the insurance industry and advisechanges to

make it more efficient and competitive keeping in view structural modifies in other parts of the financial system of the economy.

The Government of India recognized the necessities of setting-up Insurance Regulatory and Development Authority (IRDA) in 1999.The IRDA was set-up to give for the establishment of an Authority, for defending the interests of holders of insurance policies, to control, promote and insurer orderly growth of the insurance industry and for matters associated there with or incidental there to. With the birth of IRDA, the Government modified the Insurance Act, 1938, the Life Insurance Corporation Act, 1956 and the General Insurance Business (Nationalization) Act, 1972 for the sake of proper control at top level. IRDA implement the supervisory control or insurance companies and these powers flow from Insurance Act, 1938 as well as from IRDA Act, 1999 states."Subject to the provision of this Act and any other law for the time being in force, the Authority shall have the duty to control promote and make sure orderly growth of insurance business and reinsurance business". Regulatory and supervisory powers of the authority are wide and persistent.

Research Methodology

This research is designed to study the **"A Study on Contribution of Life Insurance Corporation for Policy Holders With Special Reference to Chandrapur District".** To keep the research design in-line with the research objectives the researcher has taken due care, that the tools used in research are objective oriented. The study is prepared as a part of PhD work and hence, the design and framework of the study is prepared while keeping in mind the rules and guidelines for preparing a PhD thesis.

Objectives of Study

a) To study of policies of the taken by policy holders.
b) To study the economic development of the people through LIC

Hypothesis

Null Hypothesis-

H_0: According to the Policy Holders' of LIC, there is no effect of schemes of LIC on the growth of people savings.

Alternative Hypothesis-

H_1: According to the Policy Holders' of LIC, there is a positive effect of   schemes of LIC on the growth of people savings.

Data analysis

	Are you satisfied with the LIC plans you purchased?	Will you be economically empowered after receiving the policy among on maturity?	Will you be able to maintain standard of life after receiving the policy among on maturity?	Do you feel safe after getting Policy from the LIC?	LIC policies are better than private insurance company's policies	Have you taken life insurance of all the persons of your family?
Chi-Square	138.164^a	93.160^a	116.612^a	138.164^a	100.685^a	181.562^a
df	1	1	1	1	1	1
Asymp. Sig.	.000	.000	.000	.000	.000	.000

All the 6 attributes reflect Asymp. Sig value i.e. p value <0.05 , we reject the Null Hypothesis H_0 and accept the alternative Hypothesis H_1 to say that , according to LIC Policy Holders, there is a positive effect of schemes of LIC on the growth of people savings. This is sufficient to strongly agree the fact that LIC Policy Holders are in the opinion that the People savings are growing by the schemes of LIC.

Findings

1. It is a reflexive question asked to the LIC Employees to know the actual benefits they are receiving from the LIC Policies they have purchased. Almost 65% of the LIC Employees are in the opinion that, their saving share had not been grown if they had not purchased the LIC Policies. The support for this fact can be seen from the graph of "Distribution of LIC Policy Purchased by the LIC Employees ", that, about 50% of the Employees found to have purchase 5-7 LIC Policies among the given 12 LIC Policies. 35% of non-support may involve personal experiences as to some of the private insurance company give more benefits. There are also Banking Schemes which provides more saving benefits. People now days also expect short term gains.

2. Almost 84% of the LIC Employees are in the positive opinion that, they will be economically empowered after receiving the policy among on maturity. The LIC Policies are well transparent and the factor of market risk is very well handled by this Organization. Direct Payment with the Bonus amount at the time of maturity make the Employee to feel economically empowered. 16% of the employees don't think so. The non-support may involve personal experiences or due to the time period of maturity. People now days also expect short term gains. One of the new trends is of Mutual funds or more coverage of risk factors; more returns etc may be the non-supportive factors. But overall scenario seems to support the fact under consideration.

3. Almost 73% of the LIC Employees are in the positive opinion that, they will be **able** to maintain their standard of life after receiving the policy among on maturity. The LIC Policy is well transparent and the factor of market risk is very well handled by this

Organization. Direct Payment with the Bonus amount at the time of maturity make the Employee to feel economically empowered and hence can maintain their standard of living. 27% of the employees don't think so. The non-support may involve the fact that their Standard of living is not affected by the LIC returns. Many of them take policy as to save income tax only. People now days also expect short term gains. Among many of these non-supportive Employees- Maturity period and maintain of Standard of living seems to be independent factors.

4. Almost 84% of the LIC Employees are in the positive opinion that, they do you feel safe after getting Policy from the LIC. The employees are well aware of their liabilities towards their Family members. The LIC Policies are well transparent and the factor of market risk is very well handled by this Organization. Direct Payment with the Bonus amount at the time of maturity make the Employee to feel economically empowered. 16% of the employees don't think so. The non-support may involve personal opinion regarding future prospects or due to the time period of maturity. People now days also expect short term gains. One of the new trends is of Mutual funds or more coverage of risk factors; more returns etc., may be the non-supportive factors. But overall scenario seems to support the fact under consideration.

5. Almost 98% of the LIC Employees are in the positive opinion that, LIC policies are better than private insurance company's policies. The LIC Policies are well transparent and the factor of market risk is very well handled by this Organization. Positively thinking leads to the facts of income tax benefits, low premiums, handsome returns, better services and response etc. The LIC Employees are well aware of the facts and figures regarding the saving amounts as compared to the other private insurance policies. The private insurance company charges heavy penalties on over dues as compared to LIC. 2% non-support may involve non-response or some personal experiences as to some of the private insurance company give more benefits. But overall scenario seems to support the fact under consideration.

Conclusion

LIC is not just maintaining saving of the people but also providing financial protection to people. There are two major incidents when a family can find its financial backbone broken. The first one is when the earning person dies and second when any of the family member suffer with the deases or accidents. LIC use to provide risk cover to both these incidences. The policy holders of LIC in Chandrapur have specified that they are getting financial security and protection because of LIC. It is also to note that people have trust that LIC will pay their claims properly. Other private companies may not be trusted by them.

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"A study on E-Commerce in India"

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ABSTRACT

There are different types of online transaction has been done in Indore. Indore is education hub so there are so many students and people are come to stay here so E-commerce and online transaction play vital role in this activity. E-commerce provides multiple benefits to the consumers in form of availability of goods at lower cost, wider choice and saves time. The general category of ecommerce can be broken down into two parts: E-Merchandise & E-finance. Many companies, organizations, and communities in India are doing business using E-commerce and also are adopting M-commerce for doing business. Ecommerce is showing tremendous business growth in India. Information Technology has been playing a vital role in the future development of financial sectors and the way of doing business In Indore. Increased use of smart mobile services and internet as a new distribution channel for business transactions and international trading requires more attention towards e-commerce security for reducing the fraudulent activities. The advancement of Information and Communication technology has brought a lot of changes in all spheres of daily life of human being. E-commerce has a lot of benefits which add value to customer's satisfaction in terms of customer convenience in any place and enables the company to gain more competitive advantage over the other competitors.

This study predicts some challenges in an emerging economy.

In Indore there are different types of E-commerce transaction has been done .E-commerce involves an online transaction. E-commerce provides multiple benefits to the consumers in form of availability of goods at lower cost, wider choice and saves time. Ecommerce is showing tremendous business growth in India. Ecommerce is also showing tremendous business growth In M.P at Indore is also increasing internet users have added to its growth. India Despite being the second largest user base in world, only behind China (650 million, 48% of population), the penetration of e-commerce is low compared to markets like the United States (266 M, 84%), or France (54 M, 81%), but is growing at an unprecedented rate, adding a round 6 million new entrants every month. The industry consensus is that growth is at an inflection point. India's e-commerce market was worth about $3.9 billion in 2009, it went up to $12.6 billion in 2013. In 2013, the e-retail segment was worth US$2.3 billion. About 70% of India's e-commerce market is travel related. According to Google India, there were 35 million online shoppers in India in 2014 .E-commerce market is growing is 17 percent in financial year

Keywords:
E-commerce, information technology, customer satisfaction, business, market
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INTRODUCTION

E-Commerce or Electronic Commerce means buying and selling of goods, products, or services over the internet. E-commerce is also known as electronic commerce or internet commerce. These services provided online over the internet network. Transaction of money, funds, and data are also considered as E-commerce. These business transactions can be done in four ways: Business to Business (B2B), Business to Customer (B2C), Customer to Customer (C2C), and Customer to Business (C2B) .India has emerged as one of the major players on the new international business scene. Its unstoppable economic growth since reforms in 1991 has become the focus of attention of Researchers in the area of Indore in   international business and management. The purpose of this paper is to review the impact of e-commerce in Indore on Indian Commerce that has been published in top business and management journals, with the aim of knowing what are the most influential papers, what are the issues that have received the most attention, which are the main findings or what more needs to be done in terms of research e-commerce is a paradigm shift. It is a ``disruptive" innovation that is radically changing the traditional way of doing business Electronic commerce is a type of business model , or segment of a larger business model, that enables a firm or individual to conduct business over an electronic network, typically the Internet . E-commerce is the buying and selling of goods and services, or the transmitting of funds or data, over an electronic network, primarily the Internet. These business transactions are business -to-business, business -to-consumer, consumer-to-consumer or consumer-to-business. The term e-tail is used in reference to transactional processes around online retail. E-commerce is conducted using a variety of applications, such as email, fax, online catalogs and shopping carts, Electronic Data Interchange (EDI), File Transfer Protocol, and Web services. It can be thought of as a more advanced form of mail - order purchasing through a catalogue e -Commerce is the movement of business onto the World Wide Web. The effects of e-commerce are already appearing in all areas of business, from customer service to new product design. It facilitates new types of information based business processes for reaching and interacting with customers like online advertising and marketing.

Statistical Data Collection of E-commerce in India
Growth and Prospects of E-Commerce in India:
Increasing internet and mobile penetration, growing acceptability of online payments and favorable demographics has provided the e-commerce sector in India the unique opportunity to companies connect with their customers, it said. There would be over a five to seven fold increase in revenue generated through e-commerce as compared to last year withal branded apparel, accessories, jewellry, gifts, footwear are available at a cheaper rates and delivered at the doorstep, (as per industry body Assoc ham). It is noted that the buying trends during 2016 will witness a significant upward movement due to aggressive online discounts, rising fuel price and wider and abundant choice will hit the e-commerce industry in 2016. It observed mobile commerce (m-commerce) is growing rapidly as a stable and secure supplement to the e-commerce industry. Shopping online through smart phones is proving to be a game changer, and industry leaders believe that m-commerce could contribute up to 70 percent of their total revenues. In India roughly 60 -65 per cent of the total e-commerce sales are being generated by mobile devices and tablets, increased by 50 per cent than in year 2015 and also likely to continue upwards. It noted that the browsing trends, which have broadly shifted from the desktop to mobile devices in India, online shopping is also expected to follow suit, dia's e-

commerce market was worth about $3.9 billion in 2009, it went up to $12.6 billion in 2013. In 2013, the e-retail segment was worth US$2.3 billion. About 79% of India's e-commerce market is travel related. According to Google India, there were 35 million online shoppers in India in 2014 and was expected to cross 100 million mark by end of year 2016. CAGR vis-à-vis a global growth rate of 8–10%. Electronics and Apparel are the biggest categories in terms of sales. According to a study conducted by the Internet and Mobile Association of India, the e-commerce sector is estimated to reach Rs. 211,005 crore by December 2016. The study also stated that online travel accounts for 61% of the e-commerce market. According to Google India Research, by 2021 India is expected to generate $100 billion online retail revenue out of which $35 billion will be through fashion e-commerce. Online apparel sales are set to grow four times in coming years.

Research Methodology
The paper has been written on the basis of secondary data. The secondary data were collected From published books, journals, research papers, magazines, daily newspaper, internet and official statistical documents. The study is qualitative in nature.

Types of E-Commerce Models
Electronic commerce can be classified into four main categories. The basis for this simple classification is the parties that are involved in the transactions. So the four basic electronic commerce models are as follows,

1. Business to Business
This is Business to Business transactions. Here the companies are doing business with each other. The final consumer is not involved. So the online transactions only involve the manufacturers, wholesalers, retailers etc.

2. Business to Consumer
Business to Consumer. Here the company will sell their goods and/or services directly to the consumer. The consumer can browse their websites and look at products, pictures, read reviews. Then they place their order and the company ships the goods directly to them. Popular examples are Amazon, Flipkart, Jabong etc.

3. Consumer to Consumer
Consumer to consumer, where the consumers are in direct contact with each other. No company is involved. It helps people sell their personal goods and assets directly to an interested party. Usually, goods traded are cars, bikes, electronics etc. OLX, Quaker etc follow this model.

4. Consumer to Business
This is the reverse of B2C; it is a consumer to business. So the consumer provides a good or some service to the company. Say for example an IT freelancer who demos and sells his software to a company. This would be a C2B transaction.

Historical Development of E-Commerce A timeline for the development of e-commerce:
- 1971 or 1972: The ARPANET is used to arrange a cannabis sale between students at the Stanford Artificial Intelligence Laboratory and the Massachusetts Institute of Technology, later described as "the seminal act of e-commerce" in John Mark off'sbook What the Dormouse Said .
- 1979: Michael Aldrich demonstrates the first online shopping system.

- 1981: Thomson Holidays UK is first business-to-business online shopping system to be installed.
- 1982: Minitel was introduced nationwide in France by France Telecom and used for online ordering.
- 1983:California State Assembly holds first hearing on "electronic commerce" in Volcano, California.Testifying are CPUC, MCI Mail, Prodigy, CompuServe, Volcano Telephone, and Pacific Telesis. (Not permitted to testify is Quantum Technology, later to become AOL.)
- 1984: Gateshead SIS/Tesco is first B2C online shopping system and Mrs Snowball, 72, is the first online home shopper
- 1984: In April 1984, CompuServe launches the Electronic Mall in the USA and Canada. It is the first comprehensive electronic commerce service.
- 1990: Tim Berners-Lee writes the first web browser, WorldWideWeb using a NeXT computer.
- 1992: Book Stacks Unlimited in Cleveland opens a commercial sales website (www.books.com) selling books online with credit card processing.
- 1993: Paget Press releases edition No. 3 of the first app store, The Electronic AppWrapper
- 1994: Netscape releases the Navigator browser in October under the code name Mozilla .Netscape 1.0 is introduced in late 1994 with SSL encryption that made transactions secure.
- 1994: Ipswitch Email Server becomes the first software available online for sale and immediate download via partnership between Ipswich, Inc.and Open Market.
- 1994: "Ten Summoner's Tales" by Sting becomes the first secure online purchase.
- 1995: The US National Science Foundation lifts its former strict prohibition of commercial enterprise on the Internet.
- 1995: Thursday 27 April 1995, the purchase of a book by Paul Stanfield, Product Manager for

CompuServe UK, from W H Smith's shop within CompuServe's UK Shopping Centre is the UK's first national online shopping service secure transaction. The shopping service at launch

Featured W H Smith, Tesco, Virgin Megastores/Our Price, Great Universal Stores (GUS), Interflora, Dixons Retail, Past Times,PC World (retailer)and Innovations.

- 1995: Jeff Bezos launches Amazon.com and the first commercial-free 24-hour, internet-only radio stations, Radio HK and Net Radio start broadcasting. EBay is founded by computer programmer Pierre Omidyar as Auction Web.
- 1996: IndiaMART B2B marketplace established in India.
- 1996: ECPlaza B2B marketplace established in Korea.
- 1998: Electronic postal stamps can be purchased and downloaded for printing from the Web.
- 1999: Alibaba Group is established in China.Business.comsold for US $7.5 million to e-Companies, which was purchased in 1997 for US $149,000. The peer-to-peer file sharing software Napster launches.ATG Stores launches to sell decorative items for the home online.
- 2000: The dot-com bust.

- 2001:Alibaba.com achieved profitability in December 2001.
- 2002: eBay acquires PayPal for $1.5 billion. Niche retail companies Mayfair and NetShops are founded with the concept of selling products through several targeted domains, rather than a central portal.
- 2003:Amazon.com posts first yearly profit.
- 2003: Bossgoo B2B marketplace established in China.
- 2004:DHgate.com, China's first online b2b transaction platform, is established, forcing other b2b sites to move away from the "yellow pages " model.
- 2007:Business.com acquired by R.H. Donnelley for $345 million.
- 2009:Zappos.com acquired by Amazon.com for $928 million. Retail Convergence, operator of private sale website RueLaLa.com, acquired by GSI Commerce for $180 million, plus up to $170 million in earn-out payments based on performance through 2012.
- 2010: Groupon reportedly rejects a $6 billion offer from Google. Instead, the group buying websites went ahead with an IPO on 4 November 2011. It was the largest IPO since Google.
- 2011: Quidsi.com, parent company of Diapers.com, acquired by Amazon.com for $500 million in cash plus $45 million in debt and other obligations.GSI Commerce , a company specializing in creating, developing and running online shopping sites for brick and mortar businesses, acquired by eBay for $2.4 billion.
- 2014: Overstock.com processes over $1 million in Bit coin sales. India's e-commerce industry is estimated to have grown more than 30% from 2012 to $12.6 billion in 2013.US eCommerce and Online Retail sales projected to reach $294 billion, an increase of 12 percent over 2013 and 9% of all retail sales.Alibaba Group has the largest Initial public offering ever, worth $25 billion.
- 2015:Amazon.com accounts for more than half of all ecommerce growth,selling.ince 2014, the Government of India has announced various initiatives namely, Digital India, Make in India, Start-up India, Skill India and Innovation Fund. The timely and effective implementation of such programs will likely support the e-commerce growth in the country. Some of the major initiatives taken by the government to promote the e-commerce sector in India are as follows:

- In order to increase the participation of foreign players in the e-commerce field, the Indian Government hiked the limit of foreign direct investment (FDI) in the E-commerce marketplace model for up to 100 per cent (in B2B models).

- As of August 2018, the government is working on the second draft of e-commerce policy, incorporating inputs from various industry stakeholders.

- The heavy investment of Government of India in rolling out the fiber network for 5G will help boost ecommerce in India.

- In the Union Budget of 2018-19, government has allocated Rs 8,000 crore (US$ 1.24 billion) to Baronet Project, to provide broadband services to 150,000 gram panchayats

- In February 2019, the Government of India released the Draft National e-Commerce Policy which encourages FDI in the marketplace model of e-commerce. Further, it states that the FDI policy for e-commerce sector has been developed to ensure a level playing

field for all participants. According to the draft, a registered entity is needed for the e-commerce sites and apps to operate in India.

Advantages to Society

- Customers need not travel to shop a product, thus less traffic on road and low air pollution.
- E-commerce helps in reducing the cost of products, so less affluent people can also afford the products.
- E-commerce has enabled rural areas to access services and products, which are otherwise not available to them.
- E-commerce helps the government to deliver public services such as healthcare, education, social services at a reduced cost and in an improved manner.

Technical Disadvantages

- There can be lack of system security, reliability or standards owing to poor implementation of e-commerce.
- The software development industry is still evolving and keeps changing rapidly.
- In many countries, network bandwidth might cause an issue.
- Special types of web servers or other software might be required by the vendor, setting the e-commerce environment apart from network servers.
- Sometimes, it becomes difficult to integrate an e-commerce software or website with existing applications or databases.
- There could be software/hardware compatibility issues, as some e-commerce software may be incompatible with some operating system or any other component.

Convenience

E-Commerce has become the preferred method of shopping for many people. They love the ease with which they can shop online from their home at any time of the day or night. Purchasing options are quick and convenient with the ability to transfer funds online. Consumers save time and money by searching for items and making their purchases online. It can take several days of physically going from location to location, costing time and fuel, to purchase a hard-to-find item.

Efficiency

ECommerce is an efficient retail method for business transactions. Start-up costs for establishing an E-Commerce business is far less than expanding your business with more brick and mortar locations. Fewer licenses and permits are required to start an online business than

that of a physical store location. You will also save money by using fewer employees to perform operations such as managing inventory and billing customers. You won't have to search for an appropriate geographic location or worry about paying high utility costs for the facility.

Privacy

Some consumers are reluctant to embrace eCommerce because of privacy issues. Making an online purchase often requires disclosing personal information such as an address, telephone number and banking or credit card account information. While many people feel making an online purchase does not compromise their personal information, some still prefer not to take a chance of having their account information accessed by a third party, and will only make their purchases at a storefront operation.

Unfamiliarity

There are always going to be people who prefer to do their shopping at a brick and mortar location. Some people are resistant to change and may not want to embrace eCommerce due to a lack or knowledge about the process or a general reluctance to purchase an item they cannot physically examine. If the product does not meet the customer's expectations in some way, such as being the wrong size or defective, he must then spend time sending it back and waiting for the replacement product to arrive.

Conclusion

Growth of e-commerce depend to a great extent on effective IT security systems for which necessary technological and legal provisions need to be put in place and strengthened constantly. While many companies, organizations, and communities in India are beginning to take advantage of the potential of e-commerce, critical challenges remain to be overcome before e-commerce would become an asset for common people. With the explosion of internet connectivity through mobile devices like Smartphone and tablets, millions of consumers are making decisions online and in this way enterprises can build the brand digitally and enhance productivity but government
policies must ensure the cost effective methods/solutions. E-Commerce in India is destined to grow both in revenue and geographic reach. The challenge of establishing consumer trust in e -commerce poses problems and issues that need further research

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Salvage Materials: Advanced Techniques for Construction of dirt Road

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Abstract
People have used sand and stones for establishments for a large number of years. The critical refinement of the generation and use of the total occurred in the middle of the Roman Empire, which used in total to assemble its huge system of roads and water systems. Land roads or unpaved roads are basic cross roads to India. A clearly visible view in groups of countries, the dirt roads offer a sense of immortality, helping the inhabitants to interact with the truck stations and the transport roads. From time to time, narrow and flanked by stone partitions and shade trees, and, often following a line of action parallel to streams and streams, the dirt roads offer a fantastic escape from the substances of the link and the top black the insurance of unpaved roads is also essential. The naturally conscious way of dealing with road development occurred in India some 15 years earlier, in light of the problem of developing plastic waste. Over time, polymer paths have proved incredibly difficult, getting help from researchers and politicians in India and neighboring countries such as Bhutan. "The plastic roads have not created bumps, furrows, devastation or defects on board, despite the fact that these roads are more than four years old," said a report on the anticipated execution of the Central Pollution Control Board of the India.
Keywords: strength, improvement, unpaved roads, plastic.

Introduction –As we know construction is growing day by day according to construction work of engineer should know how to decrease the cost of project if we will use of recycle materials for construction of village road we can easily decrease our cost as well as environment can make eco-friendly **.Journal main motive is to decreasing the cost .** recycle materials as a raw materials mixed with cement, rice husk, marble sullery,fly-ash ,water ,geo-textiles material etc .according to engineering and science technology must know the value for money and environment .

Road Construction is vital to the economic development, trade and social integration. It facilitates smooth conveyance of both people and goods. Size of the road network, its quality and access has a bearing on transport costs. Besides, road network promote specialization, extend markets and thereby enable exploitation of the economies of scale. Global competition has made the existence of efficient road transport and logistics systems in delivery chain an absolute imperative. Easy accessibility, flexibility of operations, door-to-door service and reliability has earned road transport an increasingly higher share of both passenger and freight traffic vis-à-vis other transport modes. Transport demand in India has been growing rapidly. In recent years this demand has shifted mainly to the advantage of road transport, which carries

about 87 per cent and 61 per cent of passenger and freight transport demand arising for land based modes of transport (i.e. roadways and railways taken together) respectively. Road transport has grown despite significant barriers to inter-State freight and passenger movement compared to inland waterways, railways and air which do not face rigorous *enroot* checks/barriers. Given the importance of road network, it is vital to have comprehensive data on road infrastructure to assist in policy planning and investment decisions.

ROAD NETWORK EXPANSION CATEGORIES The data compiled on road network can be broadly classified into five broad categories: (1) National Highways (NHs) (2) State Highways (SHs) (3) Other PWD Roads (4) Rural Roads (5) Project Roads. The National Highways, running across the length and breadth of the country, had a length of 66,754 km at the end of March 2008. National Highways comprise less than 2 per cent of the road network, but carry a high volume of the road-based traffic. State Highways (SHs) and Major District Roads (MDRs) constitute the secondary system of road transportation in the country. The State Highways connect National Highways, district headquarters, important towns, tourist locations and minor ports. The total length of State Highways is about 1,54,522 km. The remaining predominantly large segment of the total road network of about 3.89 million km is covered by the Other PWD Roads, Rural Roads and Project and Urban Roads. About 60 % of the total road length in India is accounted for by rural roads consisting of (i) Panchayat Raj Roads (about 33 %) i.e. Zilla Parishad roads, Village Panchayat Roads and Panchayat Samiti roads; and (ii) roads constructed under Jawahar Rojgar Yojna (JRY) and Pradhan Mantra Gram Sadak Yojana (PMGSY) accounting for a 26% share in rural roads. Roads constructed under the JRY (about 22 %) are of limited value from the point of view of movement of heavy traffic as only about 20 % of such roads are surfaced. The decadal figures of the road network under all these categories are provided in the Table 3. As would be seen from the table, the aggregate length of roads, which was 0.4 million km in 1950-51, had increased more than 10 fold to 4.11 million km by 2007-08. **WASTE MATERIALS USED IN ROAD CONSTRUCTION** Several researchers have tried to incorporate bottom ash and fly ash in various layers of pavement. Fly ash has been used as bulk filler in construction of embankments and flyovers. However, due to corrosive nature of bottom ash, its usage near metallic structures is limited. Studies have indicated that bituminous concrete containing bottom ash is susceptible to rutting but more resistant to stripping. Some field studies have indicated increased skid resistance when bottom ash is used as top wearing course of road.

Fly ash is generally final than Portland cement (1 to 50 microns in diameter) and consists mostly of small spheres of glass of complex composition involving 40 to 50 percent silica oxide, 5 to 40 percent ferric oxide and 5 to 35 percent alumina oxide. It is useful in cement and concrete application. Fly ash is a pozzolana, a siliceous material which in the presence of water will react with calcium hydroxide at ordinary temperature to produce cementations compound. It is removed from the plant by exhaust gas. Fly ash is a product of burning finely ground coal in a boiler to produce electricity.

Recycled Aggregate Concrete: With the concept of its use in making Bricks and Highway Pavement, the recycled aggregate concrete was used for casting curve, chute drain; median drain & side drain components of Highways. A concrete mix with recycled aggregate was designed in the grade of M 25 with cement content of 300 Kg/cum. Chute drain Components were pre-cast with this concrete mix. A typical chute drain element is shown in figure 8. This has been used at elevated road side embankment and is performing very well.

Growth in Road Length

The total road length in India had increased significantly from 3.99 lakh km as on 31.3.1951 to 41.10 lakh km as on 31.3.2008. Concomitantly, the surfaced road had increased from 1.57 lakh km to around 20.36 lakh km over the same period. The increase in road length during 1950-51 through 2007-08 is depicted in Figure 1. The share of the surfaced road length in the total road length also reflected an improvement. Surfaced road length accounted for 49.5 % of total road length as of 31.3.2008, compared with 39.3% of the total road length as of 31.3.1951.The total road length had expanded significantly since 1970s. It increased from 9.15 lakh km in March 1971 to 41.10 lakh km in March 2008 - an increase of 349 % over these 37 years yielding a compound annual growth rate (CAGR) of 4.1 %. The total road network in the country grew from 36.21 lakh in March 2004 to 41.10 lakh in March 2008 reflecting an increase of 4.89 lakh km yielding a CAGR of 3.2 % over this period. **Category wise Growth in Roads**

As seen from the Table 1, the total surfaced road length grew from 3, 97,948 km (accounting for 43.5% of the total road length) in 1971 to 20,36,063 km (accounting for 49.5 % of the total road length) in 2008 reflecting a more than fivefold increase in surfaced road length. Category wise classification of road length showed that

Objectives –Risen new sorts of soil adjustment procedures, a significant number of which are delegated "green advancements".

A portion of the 'green advancements' available in AggreBind are: catalysts, surfactants, biopolymers, engineered polymers, co-polymer based items, cross-connecting styrene acrylic polymers, tree pitches, ionic stabilizers, fiber fortification, calcium chloride, sodium chloride and that's only the tip of the iceberg. These new balancing out methods make hydrophobic surfaces and mass that keep keeps street disappointment from water entrance or substantial ices by repressing the entrance of water into the treated layer.

Nonetheless, late innovation has expanded the quantity of customary added substances utilized for soil adjustment purposes. Such non-conventional stabilizers include: Polymers Based Products (e.g. cross-connecting water-based styrene acrylic polymers that fundamentally enhances the heap bearing limit and elasticity of treated soils for adjustment), Copolymer Based Products, fiber fortification, calcium chloride, and Sodium Chloride.

Generally and broadly acknowledged sorts of soil adjustment for earth streets strategies utilize items, for example, bitumen emulsions which can be utilized as a coupling specialists for creating a street base. In any case, bitumen is not naturally inviting and winds up plainly fragile when it dries out. Bond has been utilized as an other option to soil adjustment. Notwithstanding, this can regularly be costly and is not a decent "green" option.

There are preferences and hindrances to a considerable lot of these dirt stabilizers.

The National Society of Professional Engineers (NSPE) has investigated a portion of the fresher sorts of soil adjustment innovation, particularly searching for "compelling and green" options. AggreBind uses new soil adjustment innovation, a procedure in view of cross-connecting styrene acrylic polymer. Another case of the AggreBind item utilizes long gems to make a shut cell development that is impermeable to water and is ice, corrosive, and salt safe.

Using new soil adjustment innovation with AggreBind, a procedure of cross-connecting inside the polymeric detailing can supplant customary street/house development techniques in a naturally benevolent and successful way.

Dirt roads using waste materials

Waste Aggregate consists of hard, graduated fragments of inert mineral materials, including sand, gravel, crushed stone, slag, rock dust, or powder. Plastics are usually classified by their chemical structure of the polymer's backbone and side chains. Some important groups in these classifications are the acrylics, polyesters, silicones, polyurethanes, and halogenated plastics.

Plastics: Plastics can also be classified by the chemical process used in their synthesis, such as condensation, poly addition, and crosslinking. There are two types of plastics: thermoplastics and thermosetting polymers. Thermoplastics are the plastics that do not undergo chemical change in their composition when heated and can be moulded again and again. Examples include polyethylene, polypropylene, polystyrene, polyvinyl chloride, and poly tetrafluoroethylene (PTFE In the thermosetting process, a chemical reaction occurs that is irreversible. The vulcanization of rubber is a thermosetting process. Before heating with sulfur, the polyisoprene is a tacky, slightly runny material, but after vulcanization the product is rigid and non-tacky. The properties of plastics are defined chiefly by the organic chemistry of the polymer. Such as hardness, density and resistance to heat, organic solvents, oxidation, and ionizing radiation.

Bitumen: Bitumen is used as binders in pavements constructions. Bitumen may be derived from the residue left by the refinery from naturally occurring asphalt. As per definition given by the American Society of Testing Materials bitumen has been defined as "Mixtures of hydrocarbons of natural or pyrogenous origin, or combination of both, frequently accompanied by their non-metallic derivatives, which may be gaseous, liquid, semi-solid or solid, and which are completely soluble in carbon disulphide." Bitumen found in natural state known as asphalt contains large quantities of solid mineral matter. When petroleum crude is refined in a refinery, they are separated by fractional distillation in the order of decreasing volatility. On distillation of the residual bituminous residue, straight-run bitumen is obtained. This bitumen is known as penetration grade bitumen or steam refined petroleum bitumen.

Crumbed Rubber: Crumbed rubber can be used in numerous applications including sport fields, rubberized asphalt for paving and a wide variety of molded products. The steel and fiber removed during this process is also recycled into various products. In addition, the waste tire rubber can be used as a waste to energy source. Crumb rubber can not be considered a waste material. It is a valuable commodity with ongoing expansion and growth in diversified markets. Its use in asphalt is not making a highway into a linear landfill. Crumb rubber has proven to be one of the only additives to hot mix asphalt derived from a waste material that has a beneficial impact and actually improves performance.

Paving Bitumen: The paving bitumen available in India is classified into two categories: Paving bitumen from Assam petroleum denoted as A-type and designated as grades A35, A90, etc. Paving bitumen from other sources denoted as S-type and designated as grades S35, S90, etc. Important properties of bitumen are: Viscosity of bitumen should be adequate at the time of mixing and compaction. It is achieved by heating prior to mixing and by use of cutbacks and emulsion. In presence of water bitumen should not strip off from aggregate. Bitumen should be durable in all seasons. It should not become too soft during summers and develop cracks during winters.

Road Tar: This bituminous material is obtained by the destructive distillation of organic matters such as wood, coal shale etc. In the process of destructive distillation, the carbonation results in the production of crude tar which is further refined by distillation process.

Glass: Recyclable glass, or cullet, is recovered from glass containers used for food and beverage. Beer and soft drink.

2. Survey of the Literature

Roy Aparna studied the effect of rice chaff ash (RHA) together with the cement on the characteristics of the lower grade clayey soil. It has been found that as the proportion of rice and cement ash increases, the moisture content and CBR increase, while the maximum dry density decreases. Kumar and Preethi [5, 8] studied the behavior of clayey soil mixed with rice husk and lime and was Observed that the maximum improvement in CBR value is with combination of 6% lime + 10% RHA. Shrivastava [7] had seen the effect of lime and RHA on engineering properties of black cotton soil and found that there is a major increase in CBR and UCS strength, whereas optimum moisture content increases and maximum dry density decreases. Basha *et al*. [1] replaced the soil with various extent of rice husk ash and cement. It was found that 6–8% of cement and 15–20% RHA shows the optimum value. Addition of rice husk ash to the cement stabi-lized soil shows the significant result in CBR. [2] Investigated the influence of agricultural wastes in soil stabilization. Agricultural wastes such as sugar cane bagasse ash, rice husk ash and groundnut shell ash are used to stabilize the weak sub grade soil [9]. And carried out experiments on stabilization of Actuate Lateritic Soil with Sugarcane bagasse ash and cement. Result of CBR showed tremendous improvement [3]. Kiran & Kiran had analyzed the strength characteristics of black cotton soil using bagasse ash as stabilizer. The strength parameters like CBR, UCS were determined. It was observed that the blend results of bagasse ash with deferent percentages of cement for black cotton soil gave change in density, CBR and UCS values. Kiran *et al*. [4] studied the stabilization of lateritic soil using sugarcane straw ash and cement. Sugarcane straw ash was an effective stabilizer at 6% with 5% of cement for improving the geotechnical properties of local lateritic soil sample [6]. Investigated the pozzolanic potential of cow dung ash when used in concrete by partial replacement of cement at 0, 5, 10, 15, 20, 25 and 30%. It was found that not more than 15% of cow dung ash could be use to produce well and quality mortar and concrete.

3. Physical and chemical properties of the stabilizers

The rice husk was obtained from the nearest and burned mill at a temperature range of 600-700 LC in an open fire until it was transformed into amorphous silica. The bagasse obtained from the sugar cane in dry conditions was obtained from the oil mill (gur) and burned at a temperature of 800-1000 LC, while the cow dung pies were collected from the villages and burnt at a time. Temperature of 400-500 LC. These ashes were tested in the laboratory for chemical compositions as shown in Table 1. The physical properties of the stabilizers used in this study were determined in the soil mechanics laboratory shown in Table 2.

The Atterberg's Limits test of the natural soil and soil mixed with three selected ash were conducted as per IS: 2720 (Part-5)-1985. Liquid limit and plastic limit values are indicated in the Table 3. shows the variation in the plasticity index of the soil and soil–ash composites, the effect of adding the deferent ashes in varying proportions. It is observed that plasticity indexes (PI) of the natural soil is 12.36%. In ash stabilization the liquid limit of soil generally Decreases but the plastic limit increases. Thus the plasticity index of soil decreases. In general reduction in the liquid limit is the indicative of reduction in the compressibility and swelling characteristics. From the change in liquid limit it may be inferred that there is an overall

improvement in the behavior of alluvial soil on the addition of RHA and SCBA. The general decrease in liquid limit at all soil–ash combination is attributed to the fact that the ash reaction forms compounds possessing cementation properties namely calcium silicate cement with soil particles. The general trend of plasticity index for ash stabilized soil declines. RHA and SCBA stabilized soil indicates almost same rate of decrease in plasticity index with an increase in percentage contribution of ash. But, CDA stabilized soil shows there is no significant change in plasticity index with an increase in percentage contribution of ash

Methodology –Recycle Materials As A Raw Materials Mixed With Cement, Rice Husk, Marble Sullery,Fly Ash ,Water ,Geo-textiles Material.

Conclusion –5.
On the basis of the present study following conclusions have been drawn:
The alluvial soil was identified as intermediate plastic clay (CI) on Indian Standard classification system. Three waste materials like RHA, SCBA and CDA were used to stabilize the soil for road construction. An enough cementations property was found in RHA and SCBA rather in CDA.
On addition of deferent ash in the soil, the plasticity index decreases with an increase in the proportion of ash from 2.5% to 12.5%. The percentage decreases in plasticity index value of soil from 13 to 24, from 16.8 to 50 and from 13 to 52.4 for RHA, SCBA and CDA stabilized soil respectively.
The compaction characteristic of stabilized soil found to be International Journal of Advanced Research and Development .

Fig.-Dirt Road

1.2 Fig- Pressed Dirt

dependent on the plastic nature of the soil. For med-ium plastic soil, addition of stabilizer to soil reduced the maximum dry density while increasing the optimum moisture content irrespective of stabilizer type.

The soaked and unsoaked CBR of the soil is found to be increasing and a peak point is achieved then decreasing. Therefore, an optimum CBR is obtained at 92.5% soil and 7.5% ash composition. The value of soaked CBR at peak point when stabilized with RHA, SCBA and CDA is increased by 134%, 79.81% and 48.92% respec-tively when compared to unstabilized soil.

A similar trend of the CBR was obtained for UCS. The value of UCS at peak point when stabilized with RHA, SCBA and CDA is increased by 45.94%, 27% and 38.51% respectively when compared to unstabilized soil.

On the basis of maximum CBR and UCS value, the ash content for stabilization is obtained as optimum value i.e.7.5%. At this value there is relatively low dry density and high moisture content that will be helpful in con-trolling the volumetric changes. Hence, this optimum value may be considered for stabilization of soil for sub-grade construction.

Thickness implication indicates that there is a significant reduction in thickness while using ash stabilized soil for sub-grade construction. Hence, this will economize the cost of construction.

Comparatively priority may be given in this sequence to RHA, SCBA and then CDA for stabilization of soil. CDA is not a very good stabilizer but can still be used to improve.

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MARKETING OF MILK PRODUCTION IN WESTERN PLAIN ZONE OF UTTAR PRADESH WITH ADOPTION OF NEW TECHNOLOGY: AN ANALYSIS

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Abstract

The importance of milch animals raring and its main and by-products in agricultural economy of the country, stats and as well as in the study area, the present study was undertaken in Western Plain Zone of Uttar Pradesh. The findings of the present study would be a great significance to the policy makers administrators, economist, research workers, bankers and business communities for formulating new strategies and for developing sound programme in future in connection with the production and productivity of milk, milk products, its by-products and breading policy for livestock development according to changing scenario of world trade, globalization and liberalization of dairying in particular and agriculture in general. The study will also be useful for the smooth and fresh supply of milk and milk products to consumers.Analysis indicates that optimal dairy farm plan was more feasible, as the same was expected to create more employment opportunity to the marginal dairy farm families in the study area. It was observed that the traditional as well as the modern dairy farming and marketing in western Plain zone of Uttar Pradesh was practiced in this research. Therefore, it is suggested that more emphasis should be laid on need based and market   oriented   dairy farming system which would accelerate the adoption of improved technologies for efficient use of available dairy farm resources as well as their marketing strategies

1. OVERVIEW

The dairy has become an important source of secondary income for millions of rural families and has taken on the most important role in providing employment opportunities and generating income, particularly for marginalized farmers and women. Most milk is produced from animals raised by small marginal farmers and work without land. Of the total milk production in India, around 48% of the milk is consumed at the producer level or sold to non-producers in the rural area. The balance of 52% of milk is a salable surplus available for sale to consumers in urban areas. Of the marketable surpluses, it is estimated that around 40% of the milk sold is managed by the organized sector (i.e. 20% by Cooperative & Private Dairies) and the remaining 60% by the unorganized sector.

India ranks first among the milk producing nations in the world since 1998 and has the largest Cow &Buffalow population in the world. Milk production in India in the period 1950-51 - 2017-18, increased from 17 million tons to 176.4 million tons compared to 165.4 million tons in 2016-17, registering a growth of 6.65 %. FAO recorded a 1.46% increase in world milk production from 800.2 million tons in 2016 to 811.9 (estimated) million tons in 2017.

Nearly 16.6 million farmers were included in the scope of approximately 1.85.903 dairy farms (DCS) at the village level until March 2018. Despite the drop in the world market and the best

purchase prices by dairy cooperatives, along with the decrease in the volume of purchases by the main players the players have led to an 11% increase in milk collection by dairy cooperatives. Dairy cooperatives achieved an average daily milk of around 475.6 liters Lakh per day (LKgPD) during 2017-18, compared to 428.7 liters lakh purchased during 2016-17. The sale of liquid milk reached 349.6 Lakh Liter per day (LLPD) during 2017-18, registering a growth of 6% compared to the 331 LLPD marketed in 2016-17[1-9].

Status of Dairy Development in India (2016-17)

Sl. No.			Quantity
1	Milk Production (Thousand Metric Ton)		1,63,563.94
2	Per Capita Availability (India-355 gm/day)		355
3	Total Number of Villages		6,12,428
4	Total Number of Milk Potential Villages		320,000 (52.25% of total villages)
5	Milch Animal Owning Households (MAH)		6,91,00,000
6	Number of Milk Producers enrolled		1,58,05,000 (22.87% of total MAH)
7	Number of Dairy Cooperative Societies (DCS)		1,76,000 (55% of total potential villages)
8	Milk Procurement by Cooperatives (in Thousand Litres per day)		45,434 (27.78% of total milk production)
9	Milk Chilling facility		
	Bulk Milk Coolers (BMC)	Number	12,941
		Capacity (TLPD)	32,437
10	Milk Processing	Capacity	67,091

	Centre	(TLPD)	(67.72% capacity utilization)

> ➢ Milch Animal Productivity Average (2016-17)-

Coverage

18 major milk producing States, viz. Andhra Pradesh, Bihar, Chhattisgarh, Gujarat, Haryana, Jharkhand, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Odisha, Punjab, Rajasthan, Tamil Nadu, Telangana, Uttar Pradesh, Uttarakhand and West Bengal. These States account for more than 90 per cent of the country's milk production. However, the benefits from the project are accruing across the country.

Government of India is making efforts for strengthening infrastructure for production of quality milk, procurement, processing and marketing of milk and milk products through following Dairy Development Schemes:

- National Programme for Dairy Development (NPDD)
- National Dairy Plan (Phase-I)
- Dairy Entrepreneurship Development Scheme(DEDS)
- Support to Dairy Cooperatives
- Dairy Processing and Infrastructure Development Fund (DIDF)

While the passage of time, the dairying in India has become a business rather than a way of life in the country ride as was in the past. A large part of population in our country is vegetarian and milk is the major source of animal protein, minerals and vitamins for it. Despite having a large Cow &Buffalow population, about one half of the world's buffaloes and on sixth of the world's cattle. India's share in world milk production is only about 6.5 percent. However, in the recent past India has made rapid growth in milk production and presently it ranks first in the World, with annual production level of 104.85 million tons during the year 2007-08. The milk production of world is increasing @ of 1.00 percent per annum, while in India it is increasing @ of more than 4 percent per annum. The milk availability in the country falls much short of the nutritional requirements since the availability of milk is only 198 gms/day/capita against the recommended level of 250 gms.

Despite the largCow &Buffalow population and the highest milk production in the world, dairy production in India has not increased in the commercial lines. The fact that this amount does not mean quality. The low productivity of our cattle can be attributed to various factors, such as inadequate breeding methods that involve little genetic potential, inadequate nutrition, insufficient management, poor hygienic conditions that lead to a greater incidence of diseases, inadequate health coverage, lack of milk marketing. organized and, above all, insufficient credit facilities.

2. CLASSIFICATION OF MILCH BREEDS OF COWS & BUFFALOWS

1.2.1 Indigenous Breed of Cow

Indigenous Breeds are classified under three groups based on utility / purpose.

   a) Milch breeds / Milk breeds

  b) Dual Purpose breeds
  c) Draught breeds

Milch Breeds / Milk Breeds:

The cows of these breeds are high milk yields and the male animals are slow or poor work animals. The examples of Indian milch breeds are shahiwal, Red Sindhi, Gir and Deoni the milk production of milk breeds is on the average more than 1600 liter per lactation

Dual Purpose Breeds:

The cows in these breeds are average milk yielder and male animals are very useful for work. Their milk production per lactation is 500 liters to 1500 liters. The example of this group is Ongole, Hariana, Kankrej, Tharparker, Krishna valley, Rathi and GoaloMewathi.

Draught Breeds:

The male animals are good for work and Cows are poor milk yielder, their milk yield as an average is less than 500 liters per lactation. They are usually white in color. A pair of bullocks weight is 1000 kg. Net with an iron typed cart on a good road at walking speed of 5 to 7 km per hour and cover a distance of 30 - 40 km per day. Twice as much weight can be pulled on pneumatic rubber tube carts. The example of this group Kangayam, Umblacherry, Amritmahal, Hallikar.

3. SELECTION OF DAIRY COW & BUFFALOW

The right selection is the first and most important step taken in the dairy. The recordings are the basis for the selection and, therefore, the correct identification of the animals and the registration is essential. Cross-bred animals are preferred with an exotic legacy of around 50 percent. This preference is based on comparing the performance of animals with different percentages of exotic heritage. Fifty percent of the native germplasm is useful for maintaining adaptability, heat tolerance and endurance. Treat local animal diseases at cross-breeds. use of the zebu germplasm (Sahiwal) in forming Friesian breeds, such as the (Australian Sahiwal 50% and 50% Holstein Sahiwal) and its international recognition as a race for the tropics is an example.

Keeping animals sustainable for the situation is the best policy. Bringing animals of different agro-climatic conditions cause problems due to lack of regulation in many cases. If the purchase becomes absolutely essential, it must be of similar environmental conditions as far as possible.

General selection procedures for dairy breeds

Selection of dairy cows and buffalow

Selecting a calf in calf show, a cow in cattle show by judging is an art. A dairy farmer should build up his own herd by breeding his own herd. Following guidelines will be useful for selection of a dairy cow.

- Each time an animal is purchased at a cattle fair, it must be selected based on the characteristics of its breed and the capacity to produce milk

- The history sheet or family tree page that is usually kept on organized farms reveals the complete history of the animals
- The maximum yields of dairy cows are detected during the first five lactations. Therefore, in general, the selection must be made during the first or second lactation, and this happens even a month after birth.
- A subsequent and complete milking should be done and an average of it will give a good idea about the production of a particular animal.
- A cow must allow anyone to milk and must be docile.
- It is best to buy animals during the months of October and November.
- Maximum performance is recorded up to 90 days after delivery.

Breed characteristics of high yielding dairy cows and buffalow

- Attractive individuality with feminity, vigour, harmonious blending of all parts, impressive style and carriage
- Animal should have wedge shaped appearance of the body
- It should have bright eyes with lean neck
- The udder should be well attached to the abdomen
- The skin of the udder should have a good network of blood vessels
- All four quarters of the udder should be well demarcated with well-placed teats.

Selecting breeds for Commercial Dairy Farm - Suggestions

- In Indian conditions, a commercial dairy farm should consist of a minimum of 20 animals (10 cows, 10 buffaloes); This force can easily increase up to 100 animals in a 50:50 or 40:60 ratio. After this, however, it is necessary to review its strength and market potential before opting for expansion.
- Health-conscious middle-class families prefer low-fat milk for consumption as liquid milk. It is always better to go to a mixed-type commercial farm. (Breeds, cows and buffaloes are crossed in separate rows under a shed).
- Conduct a comprehensive study of the immediate market in which milk is expected to be marketed. You can mix the milk of both types of animals and sell it according to market needs. Hotels and some general customers (around 30%) prefer pure buffalo milk. Hospitals, sanatoriums prefer cow's milk.

Selection of cow/buffalo breeds for commercial farm
Cows

- Good quality cows are available in the market and it cost around Rs.1200 to Rs.1500 per liter of milk production per day. (E.g. Cost of a cow producing 10 liter of Milk per day will be between Rs.12, 000 to Rs.15, 000).
- If proper care is given, cows breed regularly giving one calf every 13-14 month interval.
- They are more docile and can be handled easily. Good milk yielding cross breeds (Holstein and Jersey crosses) has well adapted to Indian climate.

- The fat percentage of cow's milk varies from 3-5.5% and is lower than Buffaloes.

(Source: BAIF Development Research Foundation, Pune)

4. ADOPTION OF NEW TECHNOLOGY FOR MILKING PROCESS

Machine Milking

Modern milking machines are capable of milking cows quickly and efficiently, without injuring the udder, if they are properly installed, maintained in excellent operating conditions, and used properly. The milking machine performs two basic functions.

- It opens the streak canal through the use of a partial vacuum, allowing the milk to flow out of the teat cistern through a line to a receiving container.
- It massages the teat, which prevents congestion of blood and lymph in the teat.

Advantage

The advantages of this milking machine are many. It is easy to use, cheap, saves time during milking from 1.5 to 2 liters per minute. It is also very hygienic and saves energy, since electricity is not needed. All milk can be extracted from the breast. The machine is also easily adaptable and gives a feeling of suckling to the cow and prevents breast pain, as well as the loss of milk.

Milking machine

- A calf and the machine- similar fashion
- Tongue, Dental pallet and jaw movement of the calf by the inflation tube, pulsator and vacuum pump.
- 352mm Hg- Cattle
- 400mm Hg in Buffaloes

Machines for milking buffaloes

Since the udders and teats in buffaloes are different compared to cattle, cattle milking machines must be modified to fit buffaloes. In general, a heavier group, a larger operating vacuum and a higher pulse rate are required. The results of recent studies in India indicate that it may be possible to reduce the weight of the group and the rate of flow of the coating by applying an appropriate combination of design and weight of the group layer.

Not only the total weight of the group is important, but also the distribution of its weight in the breast. Unequal weight distribution can cause uneven milk production. long and empty milk tubes must be aligned and lengthened to ensure uniform weight distribution in the breast.

Milking characteristics depend on vacuum levels and pulse rates, among others. Studies in Egyptian buffalo revealed that a depression of 51 kPa and a pulse rate of 55 cycles / min led to milking much longer than a depression of 60 kPa and a pulse speed of 65 cycles / min (6.21 min. In comparison with 3, 18 min.). However, the highest vacuum level caused a significant increase in somatic cell counts. higher milk production was found in an acceptable time when 56 kPa and 65 cycles / min were used. In all the tests, a pulse ratio of 50:50 was used. Pakistan studies indicated that the rate of pulsation and ration should be 70 cycles / min and 65:35 respectively for Nili-Ravi buffalo. In Italy, most farms use the same machines for both

buffaloes and cattle. It is a simple "livestock machine" with a vacuum level that works at around 40 cm Hg.

In India, recent milking tests have been conducted with Duovac TM by Alfa Laval Agri. Successful milking was performed with a vacuum level of 55 kPa, 70 cycles / min. Pulsation frequency and a pulse ratio of 65:35 for milk flows greater than 0.2 liter / min. For milk flows lower than 0.2 liter / min, the respective data were 38 kPa, 48 cycles / min and the same pulse ratio. The Duovac TM is physiologically correct for the animal, as it helps to gently stimulate the descent and is also softer for the nipples after maximum flow.

Milking with machines

To get all the benefits with machine milking, the correct technique must be used. The milkers and buffaloes must be familiar with the machines. If the buffalo are afraid or feel uncomfortable, they will keep the milk and, therefore, they will give up less. This, in turn, will result in economic losses for the farmer and will eventually lose his confidence in mechanical milking.

Introducing machine milking

The concept of mechanical milking must be introduced slowly by the people to whom the buffalo are accustomed and with whom they feel at ease under the supervision of an expert from Alfa Laval Agri. The process of introducing buffaloes to automatic milking presented below Alfa Laval Agri is applicable for a complete farm where neither animals nor humans are familiar with automatic milking. If some buffaloes/cows continue to show signs of nervousness or stress, it is advisable to repeat the above mentioned steps until the animals are calm. The buffaloes that after this procedure did not accept that the milk of the machines should be returned to manual milking. One or two scared or uncomfortable buffaloes can cause serious problems to the whole herd.

Consistency with regard to milking routine, including preparation prior to milking, should be applied from the beginning of the introduction period. The normal milker must perform the milking of the machine during the introduction period.

When the deck is firmly attached to the udder, the milker must stay with the buffalo to make sure it is comfortable. Gently speaking, brushing and scratching are the best ways to calm an animal. These first machine milking sessions generally require more time than the following. However, it is worth spending this time to ensure the calm and easy milking of the buffalo.

Marketing of Dairy form by respondents

For the marketing of dairy form transportation was need Table 4.14, So out of 200 respondent, 68.0% of respondent were gone by foot for marketing, 67.0% of respondent were using bicycle, 43.0% of respondent were using ox-cart, 93.0% of respondent were using own vehicles and 81.5% of respondent were using hired vehicles. Similarly, 92.0% of respondent were agreed with having some difficulties for selling the milk and 8.0% of respondent were not agreed with it.

For the difficulties for selling the milk, 69.0% of respondent had poor quality of milk/sour milk, 78.0% of respondent had not market for it, 57.0% of respondent had low price, and 62.0% of respondent had lack of transportation. So, 91.0% of respondent were agreed with having delayed in getting paid for the milk sold and 9.0% of respondent were not agreed for it. Similarly, 56.0% of respondent were agreed with for some incentives systems paid for better milk and 44.0% of respondent were not agreed with it.

The Cost incurred during production and marketing of milk over the last 12 months

We concluded Table 2 that we had calculated the average of the cost incurred during production and marketing of milk over the last 12 months. The average cost for processing of milk was Rs 125000, similarly for the cost for using extension and veterinary services for the dairy farm was 112000 and so on.

Table 2:- Marketing of Dairy form by respondents

	Frequency	percent
Mode of transport normally use to get the MILK Bank		
Go by foot	136	68.0
Bicycle	134	67.0
Ox-cart	86	43.0
Own vehicle	186	93.0
Hired vehicle	163	81.5
Other	29	14.5
Have any difficulties for selling the milk		
Yes	184	92.0
No	16	8.0
Difficulties for selling the milk		
Poor quality of milk/sour milk	138	69.0
No market	156	78.0
Low price	114	57.0
Lack of transportation	124	62.0
Other	23	11.5
Have ever delayed in getting paid for milk sold		
Yes	182	91.0
No	18	9.0
Any incentives systems (additional payment) paid to farmer for better milk		

Yes	112	56.0
No	88	44.0

Difficulties for selling the milk

Mode of transport
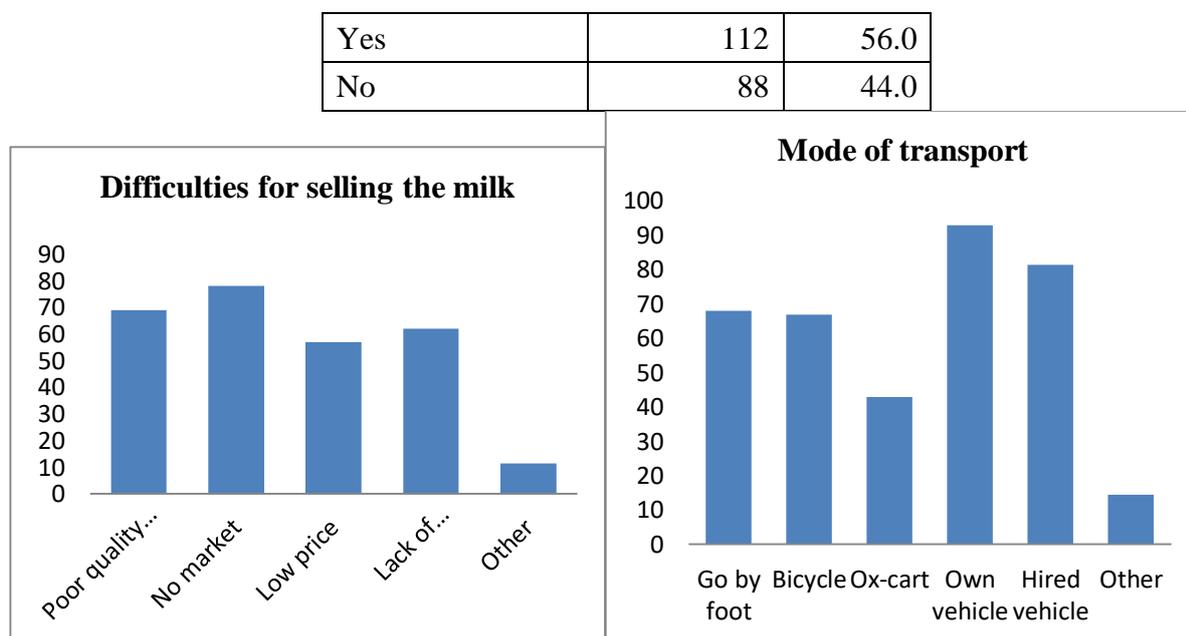
Figure 1 Marketing of Dairy form by respondents

Milk bulking groups and dairy co-operatives from the respondents

Now we were discussing Table 3 for the milk bulking groups and dairy co-operatives with the diary form. So we concluded that out of 200 respondents, 72.5% of respondent were agreed for being a member of a dairy co-operatives (other than milk bank) and 12.5% if respondent were not agreed with it.

Now for the services of the milk bank, 96.0% of respondent were agreed for the milk collection, 72.0% of respondent were agreed for veterinary services and livestock extension, 62.5% of respondent were agree with feeding services.

Table 3:- represented Milk bulking groups and dairy co-operatives from the respondents

	Frequency	percent
A member of a dairy co-operative (other than MILK BANK)		
Yes	175	72.5
No	25	12.5
Services of the MILK BANK or dairy co-operatives use to do		
	Yes (%)	No (%)
Milk collection	192 (96.0)	8 (4.0)
Veterinary services and livestock extension	144 (72.0)	56 (28.0)

Feed	125 (62.5)	75 (37.5)
Veterinary drugs	155 (77.5)	45 (22.5)
Artificial insemination	165 (82.5)	35 (17.5)
Other farming inputs	164 (82.0)	36 (18.0)
Credit	166 (83.0)	34 (17.0)
Other	26 (13.0)	174 (87.0)
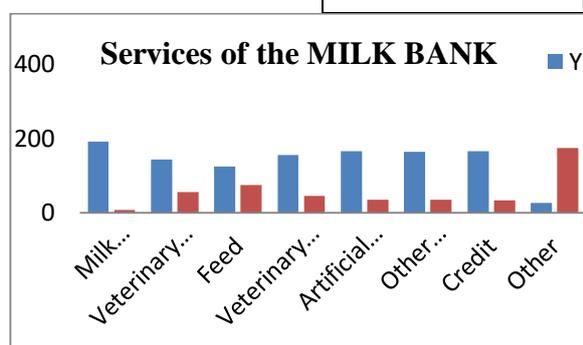
Figure 2:- Milk bulking groups and dairy co-operatives from the respondents

5. CHALLENGES & ISSUES IN DAIRY MARKETING

In order to increase the competitiveness of the Indian dairy industry, efforts must be made to reduce production costs, increase animal productivity, improve health and breeding facilities and manage dairy animals. It can reduce the cost of milk production. The government and the dairy industry can play a vital role in this direction. If India is to emerge as an exporting country, it is essential to develop an adequate production, processing and marketing infrastructure capable of meeting the international quality requirements. A global strategy for producing safe and quality dairy products should be formulated with adequate legal support. In addition to its performance, there are also some threats, we must correct it again and take advantage of global market opportunities. Centralized marketing, centralized quality control, centralized purchasing and efficient milk pooling. Global marketing strategies must meet the twin needs of global standardization and local customization. In their quest to maximize local responsiveness, companies should not overlook opportunities to standardize and reduce costs. On the other hand, excessive emphasis on generating efficiencies through a standard marketing mix can result in loss of flexibility. The challenge for global marketers is to identify the features that can be standardized and create a base product. In real life, finding the right balance between standardization and personalization can be extremely difficult. Greater professionalism could be imparted in breeding, milking and handling during milk distribution. Lessons can be learned from individual and small dairy farms in the cooperative sector, which has managed to impart a certain amount of professionalism in its operations. Several areas of the dairy industry could be strengthened by the induction of cutting-edge technologies,

transferred from other dairy specialties in the world. Operational efficiencies are needed, not only to improve yields but also to reduce waste and minimize fat and protein losses during milk processing. A review of dairy development in the country shows encouraging trends, in terms of milk production, per capita availability of milk, milk production sources, and milk accessibility. Undoubtedly, government policy has played an important role in achieving this magnificent success on an aggregate level, but all this happened under the regulated trade regime.

Some of the main problems arising from the intense discussions that should be examined below are: 1) Lack of quality in dairy products to meet the challenge in the world market 2) Milk production per animal is very low Demand for dairy products Quality dairy is on the rise worldwide, particularly in developing countries, therefore, to improve the quality of milk and dairy products, the Indian dairy industry needs to identify and address problems related to quality at every stage, from the producer of the village cooperative to the dairy plant and the final delivery process to the consumer. Furthermore, it facilitates the improvement of hygiene, sanitation, food safety and operating efficiency in dairy plants and raises awareness among dairy industry personnel on aspects of product quality according to international standards. While to increase the productivity of milk-fed animals, it is necessary to research scientific practices at milking, an adequate availability of fodder in all the stations allows for better management and provides sufficient veterinary services for dairy cattle. Moreover, if India wants to prepare to access global markets, it needs possible take-off strategies.

Western Plain Zone is one of the few developed and prosperous in zone of Uttar Pradesh where animal husbandry practices followed by farmers are some better than that of rest districts/ zones of the state. A large number of milch animal holders' households having improved breeds of milk buffaloes, crossbred cows and improved indigenous cows in all the districts of Western plain Zone which resulted high milk productivity per animal and more milk production in comparison to other districts/ zones of the state. However, farmers are facing various serious problems in rearing of milch animals' production and marketing of milk and milk products due to various socio-economic reasons especially by marginal and small categories households.

6.CONCLUSION

Efforts to increase milk production by milk producers are strongly influenced by the degree to which the signals of demand are transmitted through the marketing system. Since the demand in the urban scenario is rapidly increasing so is the supply generated by all the milk collection and distribution agencies with the help of rural milk venders as well as commercial dairyman of urban and rural periphery area. Cooperatives/ organized dairies have played an important role in supply of liquid milk and milk products direct to consumers at large extent. The demand of commercial sweet makers, hotels, other milk products sellers and some consumers fulfilled by the supply of private milk collection and distribution agencies. These private agencies are collecting liquid milk from the rural areas and some extent from the urban and urban periphery

areas and sold in milk makers of urban areas. Uttar Pradesh is a largest milk producing state in the country, it produce about 16 million tones liquid milk which accounted more than 18 percent total milk production. The availability of milk in UP is about 150 mg/capita/day which is very low in comparison of Punjab, Haryana, Rajasthan, Uttaranchal, J&K, Himachal Pradesh and Gujrat.

In the study it was noted that all the milk producers in the sample believed that there were not enough cold storage facilities. Therefore, the government and the union of milk producers must organize sufficient cold storage facilities for milk companies. Since milk is one of the highly perishable products, it is necessary to have a suitable condition on the way to collect milk from the producer in time for storage. Therefore, the government through the local administration must take the necessary measures to improve the road on all milk routes. The government through the union of milk producers must provide the necessary equipment for milking to the members of the company of milk producers. The cost of the equipment must be borne by both the company and the combination of their profits, which reduces the cost of investment in the fixed assets of milk producers. Owners of dairy animals should receive the education and training needed by the government to understand and practice more advanced scientific techniques and methods in milk production. Government and non-governmental organizations often have to organize veterinary medicine camps for the benefit of milk producers in rural areas to escape seasonal and epidemic diseases

The researcher recommends the following suggestions based on the analysis of this study and the experience gained during the survey. It is suggested that better results can be obtained if the government decides for the regular supply of green fodder and concentrates at cheaper rates. It is desirable and will be useful if the government distributes animal feed and fodder at subsidized prices to milk producers through the dairy farm.

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ऑनलाइन खाद्य आदेश के प्रति उपभोक्ता का क्रय व्यवहार : मुजफ्फरपुर जिले के संदर्भ में

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सारंश :
21 वीं शताब्दी में ऑनलाइन खाद्य आदेश का महत्व बढ़ रहा है। प्रत्येक व्यक्ति को जीवित रहने के लिए भोज्य पदार्थ का सेवन करना आवश्यक हैं। समय की बचत एवं खाद्य पदार्थ में स्वाद की परिवर्तन के लिए आज के उपभोक्ता ऑनलाइन खाद्य आदेश की तरफ आकर्षित हो रहे है। ऑनलाइन खाद्य आदेश के अर्न्तगत एक उपभोक्ता को कम समय , कम कीमत पर अनेक प्रकार के भोज्य पदार्थ आसानी से उपलब्ध हो जाते हैं। इटरनेट की सुविधा होने से उपभोक्ता घर बैठे अपने मनपंसद खाने का चुनाव, बजट के अनुसार ऑनलाइन खाद्य आदेश के माध्यम से कर पाते हैं।
सूचक शब्द : ऑनलाइन उपभोक्ता, उपभोक्ता क्रय व्यवहार, उपभोक्ता संतुष्टि, ऑनलाइन
          खाद्य आदेश ।

परिचय :
ऑनलाइन खाद्य आदेश ऐप एक टूल है जो सभी लोंगो को अपने आस पास के जलपान गृह के खाना के मेन्यू के अनुसार खाना उपलब्ध कराती है। ऑनलाइन खाद्य आदेश के माध्यम से एक उपभोक्ता घर बैठे या मनचाहे स्थान से खाद्य पदार्थ के लिए ऑर्डर दे सकते है एवं अपने इच्छानुसार स्थान पर खाद्य पदार्थ को मंगवा सकती है। इन ऐपो के माध्यम से एक उपभोक्ता स्नैक्स, नाश्ता, मध्याहन भोजन, रात का भोजन इत्यादि अनेको प्रकार के व्यजन को प्राप्त कर सकता है। आज के ई व्यापार युग में ऑनलाइन खाद्य वितरण व्यापार सबसे तेजी से बढ़ता व्यापार है। ऑनलाइन खाद्य आदेश में उपभोक्ता को जलपान गृह या अन्य किसी स्थान पर जाना नही पड़ता है, वे जहाँ भी रहे वही से अपने मनचाहे ऑर्डर को इटरनेट या कॉल के माध्यम से दे सकते है , ऑर्डर मिलने के कुछ समय बाद दिए गए पते पर भोजन या खाद्य पदार्थ को पहुँचा दिया जाता हैं। एक उपभोक्ता आदेश देने से पहले विभिन्न भोजनालय की मेन्यू की तुलना कर सबसे उपयुक्त खाद्य पदार्थ का आदेश देता है।भारत में ऑनलाइन खाद्य आदेश का व्यापार तेजी से बढ़ रहा है।

बिहार राज्य जनसंख्या की दृष्टि से तीसरा सबसे बड़ा राज्य है । वही मुजफ्फरपुर जिला जनसंख्या की दृष्टि से तीसरा सबसे बड़ा जिला है। भोजन प्रत्येक व्यक्ति को जीवित रहने के लिए आवश्यक है। आज के व्यस्त जीवन एवं समय की कमी के कारण ऑनलाइन खाद्य आदेश का महत्व बढ़ता ही जा रहा है। ऑनलाइन खाद्य वितरण उपभोक्ताओं को रेडी टू इट या पके हुए भोजन की आपूर्ति करता है। मुजफ्फरपुर जिला आबादी के दृष्टिकोण एवं विकासशील जिले के दृष्टिकोण से ऑनलाइन खाद्य आदेश एक उभरता हुआ व्यवसाय हैं। पिछले कुछ वर्षों मे ऑनलाइन खाद्य आदेश छोटे शहरों में भी प्रसिद्ध हुआ है।

उद्देश्य :
इस शोध पत्र के निम्नलिखित उद्देश्य हैं।
1. उपभोक्ता के पसदीदा ऑनलाइन खाद्य वितरण ऐप का पता लगाना ।
2. उपभोक्ता के ऑनलाइन खाद्य आदेश को प्रभावित करने वाले कारकों पता लगाना।
3. उपभोक्ता के ऑनलाइन खाद्य आदेश के क्रय व्यवहार को ज्ञात करना।

परिकल्पना :
1. उपभोक्ता की सबसे पंसदीदा ऑनलाइन खाद्य वितरण ऐप जोमैटो है।
2. उपभोक्ता ऑनलाइन खाद्य आदेश का प्रेरित कारक समय की बचत है।

3. ऑनलाइन भोजन का ऑर्डर सबसे ज्यादा मध्याहन भोजन के समय करते हैं।

4. उपभोक्ता ऑनलाइन खाद्य आदेश से संतुष्ट हैं।

कार्यप्रणाली :

हमारे शोध का कार्य क्षेत्र बिहार राज्य का मुजफ्फरपुर जिला है। प्रस्तुत शोध कार्य में उत्तरदाताओं का चुनाव नमुने के रूप में यादृच्छिक किया गया है। हमारा शोध पत्र का क्षेत्र सीमित हैं एवं यह शोध पत्र क्षेत्र के सर्वेक्षण पर आधारित है। प्रश्नावली की सहायता से सर्वेक्षण किया गया है। उत्तरदाताओं के पास स्वय जाकर उनसे प्रश्नावली को भरवायी गयी हैं प्रस्तुत शोध प़त्र मे उत्तरदाताओं की कुल संख्या 100 लिया गया है। इस सभी उत्तरदाताओं से प्राप्त उत्तरों का विश्लेषण किया गया है। इस शोध पत्र में मुजफ्फरपुर जिला के अर्न्तगत ऑनलाइन खाद्य आदेश के प्रति उपभोक्ताओं के व्यवहार को बताया गया हैं।

प्रस्तुत शोध पत्र में उपभोक्ताओं से प्रश्नावली के माध्यम से उत्तर प्राप्त किया गया है एवं इन सभी प्राप्त उत्तरों का विश्लेषण किया गया है जो निम्नलिखित है।

1. ऑनलाइन खाद्य आदेश देने वाले उत्तरदाताओं की आयु 15 वर्ष से कम 25 प्रतिशत हैं, 16 से 25 आयु वर्ग वाले उत्तरदाताऐं 32 प्रतिशत हैं, 26 से 35 आयु वर्ग वाले उत्तरदाता 33 प्रतिशत हैं, 36 से 45 आयु वर्ग वाले उत्तरदाताऐं 06 प्रतिशत हैं तथा 46 से अधिक आयु वर्ग वाले उत्तरदाताऐं 04 प्रतिशत हैं।

2.   ऑनलाइन खाद्य आदेश प्रत्येक दिन 09 प्रतिशत उत्तरदाता देते है, वही सप्ताह में एक बार आदेश 19 प्रतिशत उत्तरदाता देते है, पखवाड़े में एक बार आदेश 26 प्रतिशत उत्तरदाता देते हैं, जबकि महीने में एक बार आदेश 28 प्रतिशत उत्तरदाता देते हैं, छमाही में एक बार आदेश 14 प्रतिशत उत्तरदाता देते है तथा वर्ष में एक बार 04 प्रतिशत उत्तरदाता ऑनलाइन खाद्य आदेश देते हैं।

3. 18 प्रतिशत उत्तरदाता ऑनलाइन खाद्य आदेश देने का प्रेरित कारक सुविधाजनक होना मानते हैं , 25 प्रतिशत उत्तरदाता ऑनलाइन खाद्य आदेश देने का प्रेरित कारक पैसों की बचत होना मानते हैं, वही 26 प्रतिशत उत्तरदाता ऑनलाइन खाद्य आदेश देने का प्रेरित कारक तेजी से सुपूदर्गी का होना मानते हैं तथा 31 प्रतिशत उत्तरदाता ऑनलाइन खाद्य आदेश देने का प्रेरित कारक समय की बचत होना मानते हैं।

4. ऑनलाइन खाद्य आदेश का भुगतान 27 प्रतिशत उत्तरदाता डेबिट या क्रेडिट से करते हैं, वहीं नकद से भुगतान 43 प्रतिशत उत्तरदाता करते हैं , तीसरे पक्ष के माध्यम से 21 प्रतिशत तथा 09 प्रतिशत उत्तरदाता ऑनलाइन खाद्य आदेश का भुगतान अन्य माध्यमों से करते हैं।

5. ऑनलाइन खाद्य आदेश के लिए 36 प्रतिशत उत्तरदाताओं का सबसे पंसदीदा ऐप जोमैटो हैं, 31 प्रतिशत उत्तरदाताओं का सबसे पंसदीदा ऐप स्विग्गी हैं तथा 33 प्रतिशत उत्तरदाताओं का पंसदीदा ऐप अन्य है।

6. ऑनलाइन खाद्य आदेश सेवा का चुनाव करते समय 08 प्रतिशत उत्तरदाता अच्छी पैंकिंग को महत्व देते हैं, वही 20 प्रतिशत उत्तरदाता समय पर सुपूदर्गी को महत्व देते है, जबकि 21 प्रतिशत उत्तरदाता आदेश देने में आसानी होती हैं इसलिए ऑनलाइन खाद्य आदेश को महत्व देते है, तथा 51 प्रतिशत उत्तरदाता सेवा का चुनाव करते समय महत्व अच्छा ऑफर एवं छूट कों देते है।

7. ऑनलाइन खाद्य आदेश सेवाओं का उपयोग 05 प्रतिशत उत्तरदाता स्नैक्स के लिए , 03 प्रतिशत उत्तरदाता नाश्ता के लिए , 31 प्रतिशत उत्तरदाता रात के भोजन के लिए , तथा 61 प्रतिशत उत्तरदाता मध्याहन भोजन के लिए करते हैं।

8. ऑनलाइन खाद्य आदेश में सबसे अच्छी गुणवत्ता सेवा देने में 36 प्रतिशत उत्तरदाता जोमैटो को मानते हैं, 35 प्रतिशत उत्तरदाता स्विग्गी को मानते हैं तथा 29 प्रतिशत उत्तरदाता अन्य को मानते हैं।

9. ऑनलाइन खाद्य आदेश से संतुष्ट उत्तरदाता 61 प्रतिशत हैं , 32 प्रतिशत असंतुष्ट उत्तरदाता हैं तथा 07 प्रतिशत उत्तरदाता असमंजस की स्थिति में है।

10. ऑनलाइन खाद्य आदेश में 42 प्रतिशत उत्तरदाता शाकाहारी भोज्य पदार्थ मंगवाते हैं, 36 प्रतिशत उत्तरदाता मांसाहारी भोज्य पदार्थ मंगवाते हैं तथा 22 प्रतिशत उत्तरदाता दोनों प्रकार के भोज्य पदार्थ मंगवाते हैं।

निष्कर्ष :

प्रस्तुत शोध पत्र में प्रत्यक्ष साक्षात्कार किया गया हैं एवं इनसे प्राप्त आँकड़े का विश्लेषण किया गया है । प्रस्तुत विश्लेषण के आधार पर निम्नलिखित निष्कर्ष प्राप्त हुए हैं।

1. प्रस्तुत शोध पत्र में किए गए सर्वे के आधार पर यह निष्कर्ष निकलता हैं कि मुजफ्फरपुर जिले के उपभोक्ता की पसंदीदा ऑनलाइन खाद्य आदेश ऐप जोमैटो हैं।

2. सर्वे से यह भी निष्कर्ष निकलता हैं कि उपभोक्ता के ऑनलाइन खाद्य आदेश को प्रेरित करने वाला कारक समय की बचत हैं।

3. सर्वे से यह भी निष्कर्ष निकलता हैं कि उपभोक्ता ऑनलाइन खाद्य आदेश सबसे ज्यादा मध्याहन भोजन के समय करता हैं।

4. सर्वे से यह भी निष्कर्ष निकलता हैं कि उपभोक्ता ऑनलाइन खाद्य आदेश से लगभग संतुष्ट हैं।

प्रस्तुत शोध पत्र में चार परिकल्पनाओं को लिया गया हैं। निष्कर्ष के रूप में हम कह सकते है कि सभी परिकल्पनाऐं सत्य हैं।

सीमायें :

बिहार राज्य में कुल 38 जिला हैं। प्रस्तुत शोध पत्र में सिर्फ मुजफ्फरपुर जिले के शहरी क्षेत्र को शामिल किया गया हैं। प्रस्तुत शोध पत्र प्रत्यक्ष साक्षात्कार पर आधारित हैं एवं यह साक्षात्कार को फरवरी 2019 से अप्रैल 2019 के बीच संपन्न किया गया हैं।

सुक्षाव :

1. जलपान गृह को अपने नये उत्पादों की जानकारी पुराने उपभोक्ताओं देती रहनी चाहिए ।

2. भोज्य पदार्थ सुपूर्द करने के पश्चात उपभोक्ताओं से बहुमुल्य सुक्षाव लेना चाहिए एवं उन सुक्षावों पर अमल करना चाहिए ।

3. ऑनलाइन खाद्य आदेश के क्षेत्र के दायरे का बढ़ाकर ग्रामीण क्षेत्रों तक भी करना चाहिए।

4. उपभोक्ताओं के खास पल (जन्मदिन, शादी की सालगिरह इत्यादि) के समय विषेश छूट देनी चाहिए ।

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ROLE OF COATING & LAMINATION PROCESSES FOR DEVELOPING SMART TEXTILE APPLYING POLYMERS

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ABSTRACT

Coating and lamination are two functional processes which are used make a proper finishing to the textile material. The coating formulation with different textile grade polymer like PVC, PU, acrylic, PTFE are hugely used to make a textile product with multipurpose way like water proof protective clothing, electrical insulation etc. on the other hand lamination process is used to prepare some important textile products with daily uses in our practical life. Coating and laminating are increasingly important techniques for adding value to technical textiles. Coating and lamination enhance and extend the range of functional performance properties of textiles and the use of these techniques is growing rapidly as the applications fortechnical textiles become more diverse. Cheaper fabric structures may be coated or laminated to provide higher added value to end-users and higher profit margins to manufacturers. The key to success in textile coating and lamination depends uponthe application of appropriate technology using modernmachinery. Machine productivity is important, but flexibility in terms of production speed and the versatility of coating/lamination methods are important factors to consider, as well as a high level of process monitoring, process control and automation to satisfy demanding technical specifications.

The machinery and method of application of the coating formulation must be versatile, minimize tensions on the fabricthatmay lead to distortionorstretch,a ndeliminateproblems in knitted fabrics such as curling selvedges. Smart textiles refer to the emergence of electronic components with advanced fibres, polymers, yarns and fabrics. Theysensethein formationaboutitswearer's body and informthewearerofthe conditions of the body or send the information to the outside world . The emergence of devices and miniaturized electronic apparatus has a great influence on modern people's life patterns. Smart textiles that are manufactured mainly for the purpose of protection are referred to as protective textiles such as to provide thermal comfort and antifreeze safety. Metallic wires are also used in heated fabrics and personal heating garments. Electrical wires have be enused in electrically heatedwearingapparelandinheatinggloves.Heatingtextilescanalsobeusedforhouseholduse, such as to heated floors, walls and roof, *etc.* The coating and lamination gives a powerful tool for the advancement of textile technology. It provides the opportunities to produce the special fabrics

Keywords: *textile coating, protective clothing, coating, lamination.*

INTRODUCTION

Coating is a process in which a polymeric layer is applied directly to one or both surfaces of the fabric. Thepolymercoatingmustadheretothetextileandabladeorsimilaraperture controls the thickness of the viscous polymer. The coated fabric is heated and the polymeriscured (that is,

polymerized). Where a thick coating is required this may be built up by applying successive coating layers, layer on layer, Interlayer adhesion must therefore be high [1].Finally, at hintoplayer may be applied for technical enhancement of the coating. Depending upon the end-use requirements, heavy duty technical textile coatings may be applied at high weight, fen while other end-uses for high-technology apparel may require coating weights very low.The chemical formulation of the coating, the coating thickness and weight, the number of layers, the form of the technical textile and the nature of any pre-treatment (such as to stabilize the fabric dimensions prior to coating) are of great importance. Traditionally, coating has been applied to woven technical textiles, but increasingly warp-knitted, raschel [2],weft-knittedandnon woven fabrics must be coated on the same line.

The overall properties of a polymer coated textile are mainly dependent upon the:

- Characteristics of the textile substrate (with the exception of metallic, glass, and inorganic fibre woven textiles, all other textile substrates are always polymeric).
- Characteristics of the coat applied (which is also a polymer).
- Coating/Adhesion methods selected and employed [3] in which the adhesive used is polymeric in general.

The first step in the production of a coated textile fabric is 'direct spreading' of the (thickened liquid or paste) polymer in liquid form over the textile surface. The thickened liquid is allowed to evaporate, leaving the polymer on the fabric (if solvent-based) or allowed to transform into a coat (if plastisol- or dispersion-based); both of these processes are carried out in special ovens. During this process, appropriate cross linking ('curing') of the polymer coat is achieved to improve durability to abrasion and resistance to solvents (and water). This type of processing has the advantage of producing coats without mechanical or thermal stresses.

A laminated (or combined) fabric consists of two or more layers, one of which is a textile fabric, bonded closely together by means of an added adhesive, or by the adhesive properties of one or more of the component layers. Conventional laminated technical textiles normally consist of one or more textile substrates that are combined using a pre- prepared polymer film or membrane by using adhesives or by using heat and pressure. Usually the layer in a laminated fabric consists of a polymeric substance; however, in some metalized fabrics the metal is not deposited by chemical deposition but is laminated using an adhesive or by use of an electric arc. Adhesion in lamination may be over the whole fabric surface or of the discrete type [4].

POLYMERIC MATERIALS COMMONLY USED FOR TEXTILES

The formulation of a coating is complicated, and it can contain a wide range of chemicals depending upon the nature of the polymer, the necessary additives for the specific end use, whether the coating has to be foamed prior to application, and the type of coating machinery to be used. Coatings may be coloured, translucent or opaque, fluorescent, photo- luminescent or retro-reflective, according to the end user requirements [5]. Some thermoplastics are used as they allow the material to be used as they allow the material to be used as hot melt adhesive and in some cases for welding techniques. They are used as coating polymers. It is important to

realize that coating formulations consists of several additives. Amongst these are UV radiation and heat stabilizers, antioxidants, fillers to improve the mechanical properties.

POLYMERS: -

Poly Vinyl Chloride (PVC)
Polyvynilidene Chloride (PVDC)
Polyurethane (PU)
Acrylic
Ethylene Vinyl Acetate (EVA)
Polyolefins, LDPE, HDPE, Polypropylene
Silicon
Poly Tetra Fluoro Ethylene (PTFE)
Natural Rubber (NR)
Styrene Butadiene Rubber (SBR)
Nitrile Rubber (Acrylonitrile/Butadiene) NBR
Neoprene Rubber
EPDM Rubber
Butyl Rubber (BR)
Polychloroprene Rubber

TYPES OF COATING METHODS

There are several processes for the application of coating to the textile material depending upon the requirement of end product. Some of these processes are described below:

- **Direct Coating**

The simplest coating procedure is the direct method, sometimes called the 'floating knife' or knife over air technique where the fabric is stretched flat to form an even uniform surface and is transported under a stationary doctor blade[6]. As the fiber moves forward, it is scraped by the knife and the polymer resin compound is spread evenly over the surface. Waterproof protective clothing fabric, automotive car seat fabrics, tarpaulins and light weight material for inflatable are produced by the direct method.

- **Foamed and Crushed Foam Coating**

This is possible because the foam, which is rather like shaving cream, sits on the top of coating. Crushed foam coating increases the no. of fabrics which can be coated; it also greatly reduces penetration of resin into the fabric, which allows the production of much softer handles and better drape than can generally produced by direct coating[7]. This technique is used for apparel goods, floor coverings, wall coverings, black-out curtains and curtain linings and filter materials.

- **Transfer Coating**

The principle of transfer coating is first to spread the polymer on to release paper to form a film and then to laminate this film to the fabric. The main uses of this type of coating technique are the transfer coated polyurethane fabrics is in up-market and the waterproof protective clothing

- **Hot Melt Extrusion Coating**

This method is used for thermoplastic polymers such as polyurethane, polyolefins and PVC, which are applied by feeding granules of the material into the nip between moving heated rollers. This process is used to produce light weight coverings or tarpaulins.

- **Calender Coating**

Calenders are primarily used to produce unsupported films of PVC and rubbers from compounded polymer 'dough'. This process can also be adapted to apply freshly produced film to fabric. The thickness of the film is determined by the gap separation of the rollers, but there is usually a limit to the thinness of films which may be produced by this method [8].

- **Rotary Screen Coating**

The rotary screen technique which applies compound to a fabric by forcing it through a cylindrical screen, it is used mainly for textile printing. The technique can also be used for coating polymer onto fabric with add-ons. When deposited on to the fabric, the resin in the dots flows and merges together to form a continuous coating.

- **Phase Change Materials**

Phase change materials (PCM) take advantage of latent heat that can be stored or released from a material over a narrow temperature range[9]. PCM possesses the ability to change their state with a certain temperature range. These materials absorb energy during the heating process as phase change takes place and release energy to the environment in the phase change range during a reverse cooling process. Insulation effect reached by the PCM depends on temperature and time. Recently, the incorporation of PCM in textiles by coating to make thermo-regulated smart textiles is going on.

Figure 1. Change in phase change material with the change in temperature
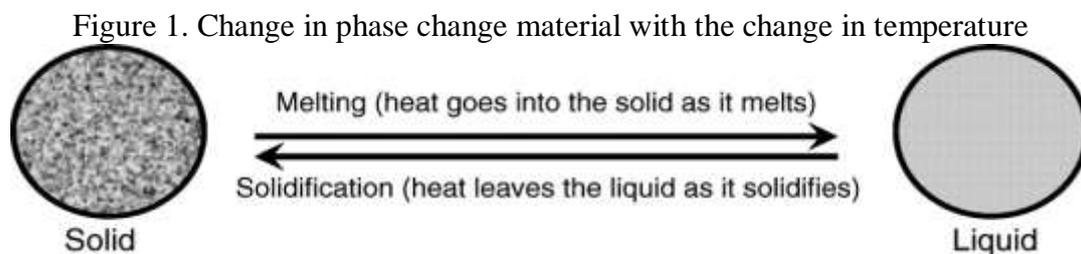
The PCMs change phases within a temperature range just above and below human skin temperature would be suitable for application in textiles. This interesting property of PCMs would be useful for making protective textiles in all-season.

- **Antibacterial Coating**

The cotton fabric is coated with PBA-chitosan particles by using a conventional pad-dry-cure method. The cotton treated with PBA-chitosan particles demonstrates an excellent antibacterial activity with bacterial reductions more than 99%. The presence of apatite-coated TiO2 shows antibacterial activity in the presence of black light or visible light, suggesting its potential use in reducing the risk of microorganism transmission for textile applications. A novel antibacterial coating for cotton fabrics has been developed using core-shell particles that consist of poly (n-butyl acrylate) (PBA) cores and chitosan shells.

- **Conductive Coating**

Polypropylene (PP) and viscose (VS) textiles were modified by the in situ synthesis of a conducting polypyrrole (PPy) overlayer. To improve adhesion of the conducting layer to the textile surface, a pyrrole-functionalized silane (SP) was synthesized and bonded onto the surface before polypyrrole formation. Moreover, to introduce hydroxyl groups into the surface, PP was pretreated by grafting vinyltrimethoxysilane by means of a radiofrequency plasma discharge.
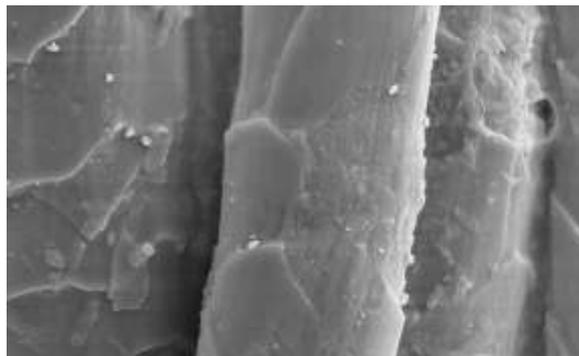
Figure 2. Polypyrrole applied to a wool substrate by the vapour polymerization method. Magnification 6590x[14]

TYPES OF LAMINATION METHODS

- **Flame Lamination**

Flame lamination can be used to adherepolyurethanefoam to a textile material. A webof overagasflameataround950^{o}C and combinedwiththetextile material from a second roller in the first nip of a three- bowl system [10]. The foam-laminated textile material is then passed through the secondnip and wounduponathird roller (Figure 3). Three-ply laminates are possible by the addition of a second burner to the machine. The major disadvantage is the high capital cost of equipment-forin-stance, carbon filter absorbers are needed to clean upthegaseous emissions so that they comply with legislativerequirements. Flame lamination has been widely used for auto motive fabrics.
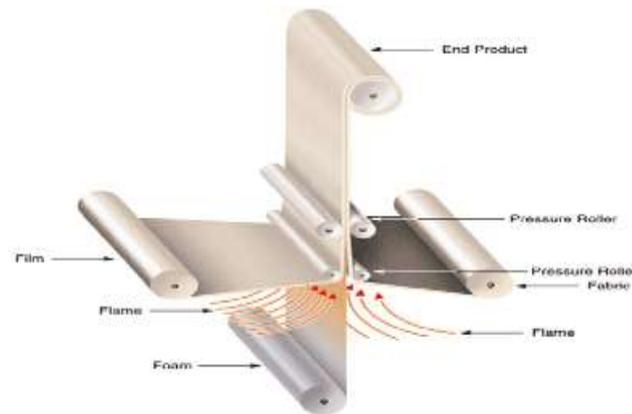
Figure 3.   Process of flamelamination

- **Adhesive Lamination-aqueous Based**

    Adhesive lamination can be used to laminate two fabrics by applying an aqueous-based pressure-sensitive adhesive by knife-over-roller spreading. Alternatively, the pressure-sensitive adhesive can be spread on a release paper and then transfer coated to the textile material, which can then be combined with a second fabric by bringing the seintocontactunder heat and pressure to remove the water[8].
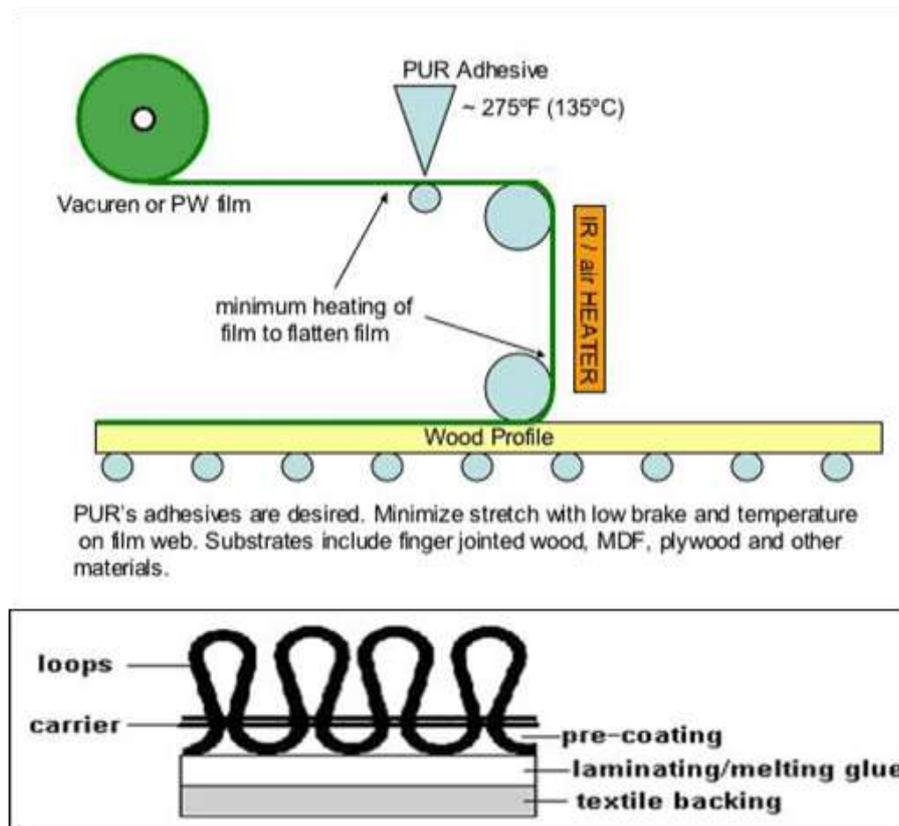
Figure 4.   Process of adhesivelamination

- **AdhesiveLamination-solvent-based**

Solvent-based adhesives can be used to laminate micro porous membranes to textile fabrics to provide abarrieragainstliquids(foruseinhospitaltheatregownsandtoprotect mattresses, for instance)[11]. Solvent-basedpoly-urethane that cures in the presence of moisture is sprayed on the fabric and the membrane is nipped against theadhesivesurface (Figure 5). Then the two are held to gether whilecross-linking takes place to form the necessarybonding
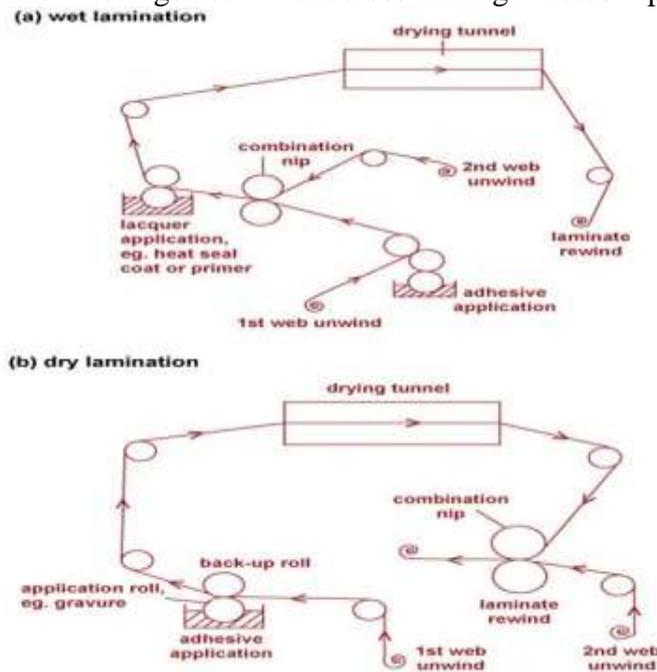
Figure 5.   Process of adhesivelamination-solvent-based

- **Heat Lamination**

Heat lamination using a hot -meltadhesivesupplied as a solid, or slit film net or web can be carriedouton the surface of a heated central drum(180-250[degrees]C)wherethematerialsareheldtogetherasatwo-plycompositeunder a tensioned continuous pressure blanket[5].Flatbedlaminating machines can also be used, but the method is unsuitable for heat-sensitive fabrics (Figure 6). Heatlami-nation has been widely used for heat-sensitive fabrics.
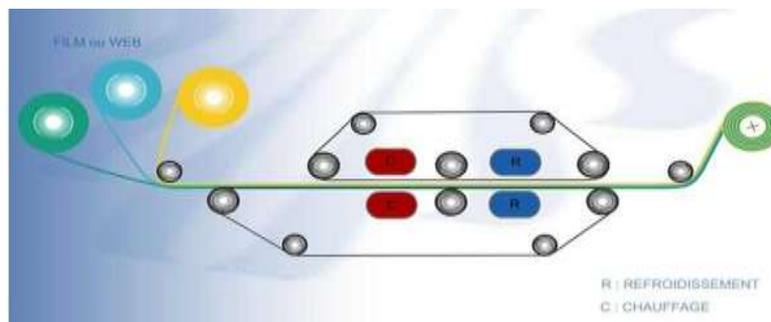
Figure 6.   Process of heatlamination

- **Hot –melt Adhesives**

Hot -melt adhesives are thermoplastic and can be melted or softened by heat. When spread on the fabric in the hotstate, lamination with another fabric can occuronre-solidification as the coating cools down. A variety of methods can be used with hot -melt adhesives. Slot dieextrusion allows high viscosity hot -melt adhesives to beextruded as a continuous film directly on all types of textiles. Mixing the ho-melt adhesive with air inside.Alternatively,roller and calender hot -melt coating and laminating may be used.

- **Manufactureof3DStructuresbyColdLowPressureLamination of Ceramic GreenTapes**

Commercialceramic green tapes were used which were laminated byColdLow Pressure Lamination (CLPL). Whichallowstojoinparticularlyfine,complexstructures with cavities or undercuts, because no massflowoccurs. This technique is based on gluing the adjacenttapesby means of an adhesive film at room temperature underalow pressure[12].

- **Processing of an Aqueous Tape CastingofMesocarbon Microbeads forHigh-performanceCarbonaceousLaminations**

Aqueous tapecastingwas adopted to obtain high-performancecarbonaceouslaminations with homogeneous density and highstrength.For the preparation of a stable and homogeneous slurryofmesocarbon microbeads, the research focuses ontherheological behavior of slurries consisting of a solventandadditives such as a binder, plasticizer and dispersant. Duringsinteringofgreenlaminations,theadditivesarepyrolyzedat 500 °C to form amorphous carbon[13], which reducestheelectricalconductivityandthemechanicalstrengthofthecarbonized laminations.

APPLICATIONS IN SMART TEXTILE

- Tocarryoutthesefunctions,smartorintelligenttextilesmustpossessspecialpropertiesthatth econventional fiber does not have. The clothing must have a sensing function in order for it to perceivesuch variables as biomedical signals and body temperature of its wearer. Furthermore it must alsohavethe actuator function to inform its wearer of the information or services available in the externalworld. It would be an ideal case if the fiber itself becomes the sensor or has a built-in actuatorfunction.

- Smart textiles that are manufactured mainly for the purpose of protection are referred toas protectivetextilessuchastoprovidethermalcomfortandantifreezesafety.Woolfibersstuffe dintocrude footwear was the first nonwoven felts used for the protection of human feet. Wool is thebest natural occurring heat generating fiber that has been used to warm up the body in colderenvironmentssince ancient ages. Heat is released from the wool as it absorbs moisture. If 1 kg of dry wool isallowed to get saturated in humid air, 960 kJ of heat will be generated that is equal to the heat producedby an electric blanket running for eight hours.

- Metallic wires are also used in heated fabrics and personal heating garments. Electrical

wireshavebeenusedinelectricallyheatedwearingapparelandinheatinggloves.Theglovesca nbewornwith   outercape-leatherforprotectiontoskinfromelectricalwires.Thefirstdocumentedevidencefortheuseof metallicwiresintextileclothingisfoundinWorldWarII.

- Now-a-days,moresophisticated conductive yarns are being produced instead of metallic wires that contain thepropertiesof textile yarns. Manufacturing of conductive yarns helped textiles find application in the fieldofelectricalcomponentsandelectronics.Furthertextileactuatorslikeheatingfabricshav ebeenusedinnumerousandvariedfieldssuchassports,leisure,medicalandautomotive.Smar tclothingis being made with conductive yarns where an electrical current is required to pass throughthefabric.

- Heatingtextilesarealsousedintheautomobilesindustry. It is also used in medical fields such as electrotherapy treatment, medical blanketformaintaining patient's body temperature, strain sensors and motion capturing devices.Manyaccidents reported in the past years are due to accumulation of ice on aircrafts. Heatedtextilescanalsobeusedintheaircraftindustryasananti-freezingagenttoavoidtheaccumulationoficeon the wings ofaircraft.

- Conductivematerialssuchasmetalsandconductingpolymersarealreadybeingusedinmany textileapplicationssuchas antistatic materials, electromagnetic interference shielding, heating, transport of electrical signalsandin sensors,*etc.* Thetemperatureofheatingmaterialsdependsonthethermalpowergivenoffthetextile.Cloth ingheated with textiles ensures an appropriate temperature gradient between the body and theenvironment.

CONCLUSION

The coating and lamination gives a powerful tool for the advancement of textile technology. It provides theopportunitiestoproducethespecialfabricslikewater-proofresistantcoverings, large tents and architectural uses, back coating for upholstery including auto seats, Food, Medical applications, parachutes, Woven curtains, forheat-sensitive fabrics, automotive fabrics, disposablehospitalapparel etc. the recent developments also enhancedthelamination and coating technique into state-of-art process of the future in textilefield.

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STUDY OF CORPORATE PRACTICES OF SIGNATORY INDIAN OIL & GAS COMPANIES ADHERING TO UNGC PRINCIPLES ON ENVIRONMENT

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1 Abstract:

Oil and Gas companies are investing in their upstream and downstream operations throughout the sphere of their influence. The importance of hydrocarbon exploration does not require further elaboration for oil and gas companies. Meeting ever growing energy demands is the basic driving force to push ahead full thrust, with exploration and refining programme. With profit on mind, the oil and gas companies are yet doing their best, for sustainable growth and environmental protection. This also form a part of the Company's vision statement and commitment to the principles of United Nations Global Compact. Social development, sustainable development goals and environmental protection are the bedrock of oil and Gas Company, focusing on **UNGC principles**, and are deep rooted in company's culture thus conforming to the **UNGC** principles on environment. Indian Oil and Gas companies aligned to **Global Compact Network India** are committed to environmental protection and are reflecting execution of their commitment through their respective COP. The author having studied these companies and their corporate practice offers his few recommendations.

Biographical notes: Mayank Upadhya is a serving GOI, Officer who holds MBA in Marketing (Symbiosis Institute for Management Studies) and Financial Management (National Institute of Financial Management, Ministry of Finance). He has a flair for learning and this paper is his solo beginning in the field of writing.

1.1 Introduction:

Since the beginning of 21st century, the world of Business has seen a dramatic change in various fields to include positive attitude and expectation towards the society and the overall environment. It is a recognised fact that the sole aim of profit at all cost was causing irreparable loss to the society and the environment. Realizing this, since last 15 years, business has considerably enhanced focus on sustainability criterion. There has been no structured governance organisation to enforce and ensure the business to follow sustainability values. In contrast to market justification, which favours companies to impress upon wealth maximization, today private sector organisations etc bear multi-bottom-line outlook that positively incorporates an approach of society related, sustainability, into company's business models. UN Global Compact (UNGC) plays a major role here, and offers examples and work of government non related actions, may be with widely applicable effects or implications to accelerate the willing taking part of business in sustainability practices.

The primary aim of UNGC has always been to encourage companies to align with and thus promote economic development besides ethical behavior. The 10 UNGC principles formulated, based on four pronged territory of Human Rights, Labour, Environment and Anti-Corruption encourage companies to be sustainable. Therefore, corporate sustainability is a must for companies, and are to implement five actions ie. **"Principled business,strengthening society, leadership commitment, reporting progress and local action".**

All issues related to climate change, water scarcity or ecology in general (Environmental issues), the intricacy and difficulty is on upscale, across globe. Emerging trend on environmental issues indicate that overall ecological problems cannot be resolved by till now followed corporate management methodologies, essentially based on following of passed instructions (compliance) and narrow risk assessment. The subtle aim of UNGC office with participants and partnering with Duke University has been to prepare a next-generation Environmental Stewardship Strategy and to gear up the companies to be able to face the growing difficult environmental scenario, and provide a frontal look to UNGC's three environmental principles. This UNGC initiative has a website and CD-ROM. Environmental Stewardship Strategy is designed to assist the corporate, and ensure a comprehensive corporate strategy is prepared and disseminated at the lowest.

UNGC has mission for implementation of 10 principles, with sustainability and issues on climate & environment being an important agenda. UNGC attempts to demonstrate leadership and offers space to its participants, to express thoughts on **Caring for Climate[i],** being a voluntary and complementary action platform. Such a platform helps in shaping policy and population behaviour towards climate, and guides corporate leadership to work on practical solutions. CEOs are prepared to set standards in sync with UNGC and thus **prepare strategies and practices**, also setting emission/discharge norms and disclosing emissions publicly as part the Communication on Progress. **Caring for Climate** is a remarkable start, and firm commitment to act by companies and invoking a message to governments, incorporating transparency. This is an interactive point for both the government and the corporate at global level, with high capability of assuming responsibility of quickly becoming the leading platform for realistic answers to business – reaching far ahead of national interests and reacting to a challenge at the global level.

In Indian context, oil and gas companies have to perform business activities based on strong intent to protect the environment, harmonising living and workplace with quality of life of all stake holders, yet guaranteeing sustainable development. The refineries have to be necessarily maintaining minimum ISO standards with reference to sustainable development and various other life threatening scenarios related to the work place with strict compliance to laws on environment mandated as part of best practices.

1.2   Research objectives

Owing to aligning to UNGC the corporate insist on and implementing Principles on environment in this case signatory Indian Oil & Gas Companies. Their corporate practice affecting conscious decision to environment conservation and thereby harmonising safe place to live in, work at, with quality of life of all stake holders. With the emphasis on corporate practices to guarantee sustainable development and various approaches in strategic planning of such companies, this paper seeks to achieve the following objectives:

1. To identify Names and number of signatory Indian Oil and Gas companies.

2. To study and evaluate the corporate practices of signatory Indian oil & gas companies observing principles of environment.

2.   LITERATURE REVIEW

UNGC and Duke University jointly worked on **Environmental stewardship strategy[i].** It was framed for 21 century to take leadership to greater standard of stewardship. Better management is required in the realms of issues relating to environment, water issues or bio diversity. To meet the future paradigm of environmental issues, this strategy has been formulated by UNGC with Duke University. It has four pillars, **embed, balance, diffuse and translate**. This strategy has been issued to aligned participants to UNGC and other business communities as well.

Source watch[i] writes that **UNGC** was conceived and put forward as an idea by the then Secretary General Kofi Annan while addressing the World Economic Forum in the year 1999. Operational chapter of UNGC was put forward in the year 2000 at the UN Headquarters in New York. Kofi Annan invited corporate to align with UNGC initiative - which was actually to put such companies, UN agencies, labour and civil society to support ten principles.

UNGC environmental principal training package[i], launched during the China summit in 2005, offers a kit for trainers, managers, and employees on methodologies of implementing the three principle on environment.

The **official website of Global Compact** speaks of the mandate and the companies aligned. It also gives out various UN organisations which spell out various guidelines and values for a better world order and working of UNGC as encouraged by such affiliated UN organisations. The official website also spells out the ten principles under four realms of :

- Human rights
- Labour
- Environment
- Anti-corruption

Global Compact Network India (GCNI) through its official website gives out the mandate and the various initiatives of the organization. The role of GCNI and the SDG has been amply spelt out.

Wikipedia widely describes efforts of United Nations Environmental Programme (UNEP) which has been one of the guiding factors for UNGC environmental principle and **Origin of Environmental** Principle finds place here. The UNEP is the binding and the guiding factor for various environmental issues. This has been guiding force for UNGC to emulate and there by improve upon efforts for environmental sustainability.

Brundtland Report', 'Our Common Future' produced in 1987 by the World Commission on Environment and Development, is a document which did essentially aid in laying the basis for the Principles on Environment. This report projected that it was pertinent for the people to change their living style in terms of their interaction with the environment.

Shale-gas-in-India-Prospects-and-Challenge, this document gives out the Shale Gas environment and its environmental impact. It highlights that Shale gas exploration and production spells out a higher level of footprints as compared to other oil and gas products. It thus leaves negative environmental issues, while utilising a large quantity of water for different processes related to this technology.

Environmental Management in oil and Gas exploration, joint E&P forum,   UNEP technical publication, 1997, mentions numerous causes of atmospheric depletion especially in case of oil and gas industry both during exploration (upstream) and production (downstream). It emerges that, there has never been an instance where in there has been oil exploration or production without adding harm to environment.

3.   Research Methodology:

To achieve the objective of the proposed study a tentative methodology is framed and is appended below:

3.1   Type of Research

The nature of proposed research will be Descriptive in nature. Descriptive Research cannot describe what actually caused the situation, but it addresses 'What' question. Therefore **Descriptive research** is utilised to enunciate the traits of the population or phenomenon under study.

3.2   Universe of Study

The universe of proposed study will cover the companies in Oil & Gas sector who have signed UNGC of India.The study will check the attributes related to UNGC PRINCIPLES ON Environment, includes:-

(a) Carbon Credits
(b) Steps to tap unconventional Energy sources
(c) Shore line protection
(d) Sustaining Himalayan Eco system
(e) Sludge treatment
(f) Carbon neutrality
(g) Waste utilisation
(h) Capturing Fugitive Methane
(i) Reducing gas flaring
(j) Saving fuel

However during the course of study, the other parameters, sub parameters (if any) and relationships will be identified.

4.   Conceptual Frame work

UNGC History.

The **United Nations Global Compact**[i] was first proposed by United nations Secretary-General Kofi Annan in an address to The World Economic Forum on January 31, 1999.

UNGC was conceived and established in the year 2000 by **the then UN Secretary – General Kofi Anan** as a platform of leadership with Global Outlook and a guide, the aim being to take along corporate activities and civil societies with their social actions towards a common cause. The major output being creation of an inclusive corporate sustainability in the global economy. On January 31, 1999 United Nations Secretary-General Kofi Annan[i] spelt out the requirement of then conceived to be a "global compact" during his address at the World Economic Forum in Davos. Annan proposed that "you, the business leaders gathered in Davos, and we, the United Nations, initiate a global compact of shared values and principles, which will give a human face to the global market" (United Nations, 1999, p. 1). The address to the gathering then laid the foundation of global corporate citizenship initiative and officially made effective 26 July2000 at UN headquarters in New York, and earned the support of a number of Global corporations, UN affiliates, Trade unions and NGO's. The UNGC basically works on four basic fields of **Human Rights, Labour, Environment and Anti-Corruption, which are divided into ten universally accepted principles and taken for integration into corporate operations and strategy by a number of signatories from different countries and fields of business and social welfare organizations,** keeping in mind as guidelines for sustainable development. During the past as years passed, it has been functioning successfully with 101[i] local networks across world with its own yet diverse governance framework. It has successfully aligned over 10,700 participants which take in to account more than 7000 businesses in 135 countries, as a network-based initiative. UNGC has become to be one of most spread corporate citizenship and responsibility initiatives in the world With 298 signatories, and inspire various corporate to willingly align with UNGC and to voluntarily channelize their operations and strategies for the development and implementation of responsible business practices through the support of seven UN agencies such as, Office of the High Commissioner for Human Rights (OHCR), ILO, UNODC, UNDP, UNIDO and UNIFEM.

The mission of the global compact is framed and is therefore based on two primary objectives:-

(a)   The compact is a corporate citizenship initiative inviting the private sector to align with, and follow a set of values in the areas of human rights, labour, environment, and anti-corruption within the business arena.

(b)   The GC integrates a platform with an aim is to enhance cooperation among the various economic and social actors in the global world thereby promote UN values.

Corporate sustainability is a must for companies, and are to implement five actions ie. "Principled business, strengthening society, leadership commitment, reporting progress and local action".

The Global Compact has not been mandated as an agency to regulate or an authority to keep a watch and impose sanctions on defaulting corporations. It actually requires generating enough awareness and interest in a non-governmental way. Aligned corporate to UNGC are therefore required to be transparent about their work and report progress on implementation of 10 principles and various sustainability efforts.

The UNGC principles in terms of India have also been adopted, thus partners locally operating within our country, as a Society on behalf of the UNGC, was introduced in year 2000 in the month of December along with various Indian organizations. On 24th Nov 2003 in New Delhi, inscribed with status of full formed legal entity[i] the organization came into being and called as the Global Compact Network India (GCNI) – thus becoming local representative of UNGC. GCNI is an organization meant to engage, various bodies governed privately, related to the occupation of doing trade, and various other non government organizations, public sector and other establishments. In its capacity, the GCNI supports to falling in line of a number of/rather different organizations/people bearing stake and thus their procedures following the Ten Principles of UNGC in the areas of Human Rights, Labour, Environment and Anti – corruption.

4.1   Oil & Gas Companies aligned to UNGC/GCNI

Global Compact Network India (GCNI) Executive Director is Mr Kamal Singh. The participating Oil & Gas Producers   with UN Global Compant (UNGC) India Chapter/GCNI (Global Compact Network) are as under :-

Serial No	Oil & Gas Producers	Country	Participants Since
1.	Indian Oil Corporation Limited	India	21 April 2001
2.	Oil India Limited	India	06 July 2001
3.	Hindustan Petroleum Limited	India	23 August 2001
4.	Chennai Petroleum Corporation Limited	India	23 August 2001
5.	Oil & Natural Gas Commission of India	India	17 September 2003

4.2   UNGC Principles on Environment
The Origin of the Environment Principles[i]

Since establishment in 1973, United Nations Environment Program (UNEP)[i] has been a leader in coordinating and bringing together globally, efforts on the environment. The Program has offered guidance and shown path and thus promoted all types of groupings for care of the environment also through Multilateral Environmental Agreements (MEAs) that directed matters of loss of species and internationally recognized requirement for conservation at all level. Most of the laws in respect of environment which are used world over have been created by UNEP. The **UNEP** being a **UN AGENCY** coordinates all activities related to the environment. The UNEP also helps various countries nations to put in force all types of practices and policies

aiding saving of the environment. UNEP established by Maurice Strong and its founding director, being the outcome of **UN Conference on the Human Environment (Stockholm Conference) in June 1972.**

United Nations Conference on Environment and Development (the Earth Summit) held in Rio de Janerio in 1992, has been the **precursor to the development of UNGC principles on Environment from a Declaration of an action plan (Agenda 21) at international level.** The three principles of UNGC on environment emerged from it. It was also declared in the agenda as an objective of Agenda 2, that there will be a requirement of a large amount of flow of additional financial resources to be offered to the developing countries, so that huge amount of ever increasing   recurring cost can be met for various activities initiated to tackle global environmental problems. **Chapter 30 of Agenda 21[i]** elaborated that various corporate with their operations can contribute in a big way to mitigate the effects on resource use and the environment. It said that business can play a major role by promoting clean production and business practices.

Environmental Issues in Agenda 21[i]
(a)   Protecting the land
(b)   Managing the land suitable
(c)   Combating deforestation
(d)   Combating drought and desertification
(e)   Sustainable agriculture development and rural development
(f)   Sustainable mountain development
(g)   Conservation of biological diversity
(h)   Management of biotechnology
(i)   Protecting and managing the oceans
(j)   Protecting and managing the fresh water
(k)   Safer use of toxic chemicals
(l)   Managing hazardous waste
(m)   Managing solid waste and sewage
(n)   Managing radioactive waste

From the above document it very clearly appreciated that there is a global consensus and government agreement from most of the nations.

.**Signatory companies must know**

Once aligned to UNGC a company is expected to publicly advocate the UN Global Compact and its principles via communications vehicles such as press releases, speeches, etc; and is required to communicate with their stakeholders on an annual basis about progress in:

(a)   Implementing the ten principles and

(b)   Efforts to support societal priorities.

The **Communication on Progress** (COP) is a visible expression of a companies' commitment to sustainability and their stakeholders can view it on   company's profile page. Companies that fail to report or to meet the criteria over time may be removed from the initiative.

4.3   **Oil and Gas Sector and Environment**

Environmental Degradation. Oil & gas sector in addition to being an opportunity for the stake holders (including the country, people and industry etc.) has, to a large extent moderate to high impact on environmental degradation. **Entire process** involving oil **exploration, production, transportation, refining to consumption impacts the environment** in a number of ways; be it affecting the society, contributing to climate change or cause ecological degradation, thus requires necessary attention.

Shale Gas and Environment. Shale gas exploration[i] and production spells out a higher level of footprints as compared to other oil and gas products. It is thoroughly on land. Hydraulic fracturing is a major process in shale gas exploitation. It thus leaves negative environmental issues, while utilising a large quantity of water for different processes related to this technology. This has a bit of impact on protection of water aquifers, disposal of produced water post completion of above mentioned process, and subsequent or concurrent effect on biodiversity, communities, ecosystem & pollution(air & noise).

There are a number of fallouts of oil and gas exploitation on various environmental factors as described below:-

I.Atmospheric Impacts.   There are numerous causes of atmospheric depletion in case of oil and gas industry both during exploration (upstream) and production (downstream[i]).There has never been an instance where in there has been oil exploration or production without adding harm to environment. Be it oil spills or ozone layer depletion and climate change. The primary source of emission to the atmosphere is from under mentioned oil and gas operations:-

    (i)   Flaring and purging gases.
    (ii)   Combustion process in oil and gas engine turbines.
    (iii)   Fugitive Gases from losses caused during various process of tank.
    (iv)   Loading and other processing equipments and machines.
    (v)   Airborne particles from construction sites and vehicles
    (vi)   Particles from other sources such well test.

Emitted Green House gases are:;-

- **Carbon Monoxide.**
- **Carbon Dioxide.**
- **Methane.**
- **Organic Carbon.**
- **Nitrogen Oxide.**
- **Hydrogen Sulphide and Sulphur Dioxide.**

Hydrogen Sulphide and Sulphur Dioxide may occur and this is based on the content of sulphur in the hydrocarbon extracted and diesel used as   fuel.

II.Aquatic Impacts. A large volume of water is produced in oil exploration and the aqueous waste is also a contributor to water degradation. The quantity of water waste produced depends upon the type of process

which is either **exploration** or   **production**. Maximum aqueous waste is produced in drilling process, whilst minimal aqueous waste is produced in seismic operations.

Most of aqueous waste during **exploration** or **production operation is:-**
   (i)   **Cooling Water.**
   (ii) **Spills and Leakage.**
   (iii) **Sewage, sanitary and domestic waste.**
   (iv) **Produced water.**
   (v) **Drilling aqueous waste, and various chemicals.**

(c)   **Terrestrial Impact.**   There are various changes which might occur, such as   soil erosion and soil cutting due to construction work or drilling. There are chances that the vegetation may be depleted as a result of operations which might cause lack of growth and no support to wild life in the area. Hydrology and drainage   pattern may   also be affected in the area. The soil may get contaminated due to   spills and   leakages and construction material.

(d)   **Ecosystem Impact[i]** There may be impact to animals and microbes due to   the   local contamination in the environment and soil. This might change breeding   areas, likely to impact eating habits including sometimes habitat and migration   areas.

(e)   **Emergencies.** E&P activities including seismic, are to be deliberately planned and executed as they have a potential to cause a disaster, hence control measures are also to be in place. Various contingencies are possible such as oil spill, gas/oil well blowout, explosions fires and likely natural disaster like ocean rise, storm, earth quake may be create a situation in oil rigs. Oil and Gas companies with their operations have become a contributor to climate change. Global warming is one such issue which has the potential to melt ice caps and lead to rise in ocean level. The climate change may have huge rise in temperature, hurricanes, cyclones, drought, wild fires and heat waves etc.

5.   Analysis of Sample Cases.

In this paper, four leading Oil & Gas Companies operating in India, have been studied. The aim has been to study their respective corporate practice, and arrive at a exclusives to affirmation in their adherence to UNGC principles on environment. The few recommendation has also emerged, through analysis of various documents as part of secondary data. All cases are based mostly on COP, provided by respective companies, & discussed in detail.

1.   **OIL India Limited(OIL)**

Oil India Ltd is a Navratna company involved in Exploration, production & Transportation of crude oil, Natural Gas & LPG. It is the second Largest National upstream company, which is adhering UNGC Principles. The 10 UNGC Principles form part of company Strategy, and specifically, in addition to other requirements, Environment is duly looked after. The objectives of company spell out care for community, ecology and environment.

1.1   **Environmental Responsibility**

OIL is careful in terms of environment, community and stake holders. The adverse effect of upstream & downstream process, obviously lead to environmental degradation, impacting community. The company is alive to the situation & therefore follows a precautionary approach for environmental conservation. Environmental Impact Assessment (EIA) studies are carried out for all future projects. A special care is taken to assess social issues and Societal impacts & thereafter mitigation methods are implemented. Few Mitigation measures are as under :-

(a)   Use of Forest Stewardship Council (FSC) Chain of Custody certified paper & print products in OIL.

(b)   Economic use of paper.

(c)   Rainwater harvesting.

(d)   Study of impact of flaring on surrounding Paddy crop & preventive measures.

(e)   Development of Green belt around OIL installations.

1.2 **Wind & Solar Energy**

To conserve energy and to capture non conventional energy OIL India Limited as part of sound environmental and Sustainable Development Policy Focuses on wind and solar energy. This not only adds on to reducing carbon footprints but also reduces Green House (Gas (GHG) emission level.

OIL has installed several wind & solar energy projects. The cumulative of all Commercial & Solar Energy projects is approximately 169.2MW, generating Rs. 117.2 crore in FY 2016-17. This revenue has been an outcome of renewable energy sources.

The sustainability has been on the forefront in the company policy. Therefore, focus is maintained on reducing carbon footprint & GHG emission, with a low carbon strategy. This effort is coupled with technology, process improvement & strategic implementation plan. Examples is 50 MW Kumchai power plant, in Changlang district of Arunachal Pradesh. To reduce GHG gases, OIL does Mass tree plantation (with high carbon absorption potential) in degraded forest and around OIL (Oil India Limited) operational areas, Bio diversity protection is also on top agenda of the company.

In addition, OIL have evolved a low carbon strategy to minimize emission of GHG gases. To do this Oil India Limited have utilized technology, process improvement and its implementation as part of strategy. Company utilizes otherwise flared gas of high calorific value to be utilized as a substitute for high carbon content fuels. This leads to saving of fuels. This has been used in 5.0MW KUMACHAI Power Plant, in Changlang District of Arunachal Pradesh.

The company focuses on bio diversity conservation and actively works towards environmental care and sustainability.   To quote a few examples to substantiate such practices, are promoting eco tourism in its operational area by putting in use of pedal boats, eco friendly vehicles, bio-digesters plant etc in far flung areas.

1.3 **OIL Corporate Practice Towards Environmental Responsibility**

OIL is careful in terms of environment, community and stake holders. The adverse effect of upstream & downstream process, obviously lead to environmental degradation, impacting community. The company is alive to the situation & therefore follows a precautionary approach to environmental conservation. It being a part of

corporate practice, Environmental Impact Assessment (EIA) studies are carried out for all future projects. A special care is taken to assess social issues and Societal impacts & thereafter mitigation methods are implemented. Few Mitigation measures are as under :-

(a)   Use of Forest Stewardship Council (FSC) Chain of Custody certified paper & print products in OIL.

(b)   Economic use of paper.

(c)   Rainwater harvesting.

(d)   Study of impact of flaring on surrounding Paddy crop & preventive measures.

(e)   Development of Green belt around OIL installations.

1.4   Exploitation of Environmental Friendly Technology

a)   Use of Bio Diesel fuel in Diesel Engines.
b)   Bio remediation project for treating the hazardous waste, even bio remediation of sludge.

c)   Pilot project on phytoremediation, for restoring contaminated area to normalcy in consultation with Institute of Advanced Studies & Technology, Guwahati.

d)   Carbon footprint mapping & integrated waste Management & E waste Management.

e)   Flare pits with enclosures to reduce effect of heat & light around crops/environment.

f)   Well designed flare pits with enough supply of air for burning.

g)   Water recycling.

h)   Water oil clarification plants.

i)   Sludge treatment & recovery plant.

j)   Gas flaring.

k)   Noise Attenuators.

l)   Personal protective equipment.

m)   Establishment of State of the art research facility.

n)   OIL strictly follows all environmental standards/rules/acts enforceable under mandatory regulations.

A study of Perceptional Factors and their impact on Consumer Buying Decision Making in Selected Cities of Rajasthan

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Abstract:

Consumer Behaviour is the investigation of an individual, people, gatherings, or associations and the procedures use to choose, secure, and rejection of items, administrations, encounters, or thoughts to fulfill needs and the effects that these procedures have on the customer and society. The aim of this paper is to identify the most influence perceptional factors that affects consumer buying decision making about purchasing from the organized retail outlets. The study was conducted in selected cities of Rajasthan.   Hypothesis was formulates and questionnaire was developed in order to conduct research and to prove the hypothesis. The key findings of the study are that consumers perceived that it is good experience to shop with these outlets.

Keywords: *Consumer's Perceptional Factors, Perception Factors, Satisfaction Factors, Consumer's Satisfaction, Buying Decision.*

Introduction:

In the present setting, advertising is articulating the elements of various organizations and separate items. In any case, as the world is creating step by step, the requirements of the market are likewise evolving. In this way, it is similarly critical to concentrate on the indispensable piece of the showcasing, viz: exposure, brand advancement, deals advancement, promoting, verbal exchange and so forth as an instrument and strategy of mass correspondence. Advertising is a social and administrative procedure by which people get what they need and need through making, offering and improving results of significant worth with others. The reason is clear that in the present market, there is assortment of items for a solitary need and shopper basic leadership isn't that simple as it was in before times. Nowadays companies are more concerned on individual consumer behavior. It facilitates them to develop information about how the consumers think, feel, choose and buy their products. Consumer behavior is the study of the processes involved when individual or groups select, purchase, use, or dispose of the product, service, ideas or experiences to satisfy needs and desires **Michael R. Solomon, 1998.**

Objective of the study:

The objective of the research is to study the perceptional factors and their impact on the consumer buying decision making in the selected cities of Rajasthan.

Scope of Study: The scope of study is restricted in India and selected cities of Rajasthan which includes Ajmer, Bharatpur, Bikaner, Jaipur, Jodhpur, Kota and Udaipur.

Sampling and data collection

For collecting data Simple random technique was used. Sample size was 500 respondents and respondents for the study were those customers those who visited the organized retail outlets. For the purpose of study both primary and secondary data was used. Questionnaire was used as tool for collecting Primary data and data available in journals, books, websites, thesis etc. was used as secondary data.

Hypothesis Formulated

For conducting the research following hypothesis was formulated:

H_{20}: $\mu_1 = \mu_2$: There is no significant relationship between customer's satisfaction and the buying decision making in retail outlets.

H_{2a}: $\mu_1 \neq \mu_2$: There is no significant relationship between customer's satisfaction and the buying decision making in retail outlets.

Statistical Analysis:

Chi square test was used for analyzing the data with the help of statistical analysis software like SPSS Ver.23, Systat13.2

Respondent's Perceptional (Satisfaction) Factors Influencing Customer Buying Behaviour

1. For purchasing luxury fashion diffusion lines

Chart 1.1

Analysis & Interpretation

From the above analysis only 17% were strictly denied, 13% were denied, only 03% had no opinion, 30% were accepted and 36% were strictly accepted.

2. For purchasing luxury fashion diffusion lines.
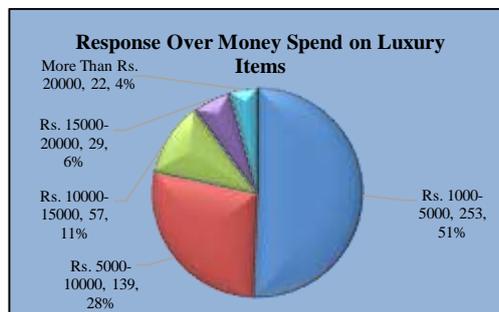
Chart 1.2

Analysis & Interpretation

From the above analysis 51% of respondents spent money between Rs. 1000 to Rs. 5000, 28% of respondents spent money between Rs. 5000 to Rs. 10000, 11% of respondents spent money between Rs. 10000 to Rs. 15000, 06% of respondents spent money between Rs. 15000 to Rs. 20000 and only 04% of respondents spent money more than 20000 on luxury items.

3. Customer's characteristics for luxury shopping.
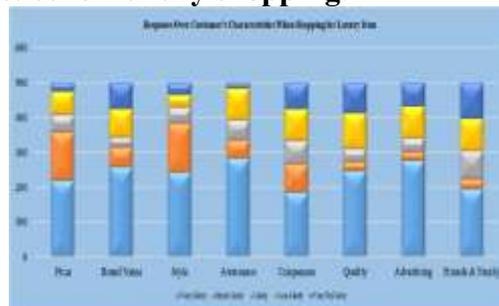
Chart 1.3

Analysis

From the above analysis for Pricing factor 44%, for Brand Name factor 51%, for Style factor 48%, for Awareness factor 56%, for Uniqueness factor 37%, for Quality factor 49%, for Advertising factor 55%, for Friends & Family factor 39% respondents were felt it is very likely.

4. Customer's satisfaction level factors over visiting outlets
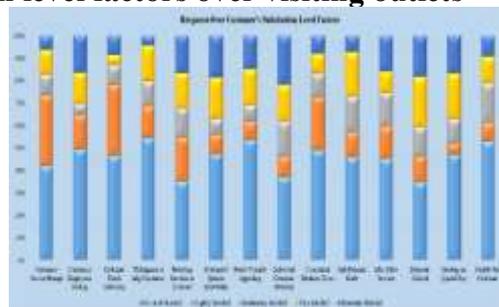
Chart 1.4

Analysis

From the above analysis for Customer Service Prompt 42%, for Customer Employee Dealing 49%, for Customer Need Addressing 46%, for Willing to help Customer 54%, for Providing Service as Promised 35%, for Customer's Queries Knowledge 47%, for Store's Visually Appealing 53%, for Individual Customer Attention 37%, for Convenient Business Hours 49%, for Safe Payment Mode 46%, for After-Sale Service 45%, for Discount Offered 35%, for Greeting on Special Day 47%, for Facility for Customer 53% respondents not at all satisfied.

Table 5.2			
Consumer's Motivation & Buying Decision Making			
Parameters	**Values**		**H$_0$ Hypothesis Test Result**
	Cal	**Tab**	
Visiting Outlet for Purchasing Luxury Fashion Diffusion Lines	176.38	9.488	**Rejected**
Money Spend on Luxury Items	379.04	9.488	**Rejected**
Customer's Characteristics When Shopping for Luxury Item	460.37	41.337	**Rejected**
Customer's Satisfaction Level Factors	704.66	74.468	**Rejected**

From the above test results, it is clear that all the parameters regarding customer's satisfaction and the buying decision making in retail outlets have calculated value greater than the tabulated value. Therefore, the null hypothesis H$_0$ is rejected. It shows that customer's satisfaction plays a vital role over buying decision making in retail outlets.

Conclusion:

In Rajasthan, the idea of sorted out retail outlets has grabbed extraordinary universality and as such there exists much extension for such outlets as it is working less in number. During the examination it was discover that once the purchaser buys from the composed retail outlets then they turns into the standard purchaser of such stores. The examination has adequately achieved results as per focus of the assessment. Respondents lean toward purchasing from sorted out retail outlets. In like manner, an enormous segment of them are content with the idea of organization, cost and thing extent of the items given by dealt with retail outlets.

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Similarity Solution for Cylindrical Shock Waves in a Low Conducting Gas under a Gravitational Field

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Abstract: The propagation of diverging cylindrical shock waves in a low conducting gas, under the influence of a spatially variable axial magnetic induction, and with self- gravitational effects, is investigated. The initial density of the medium is assumed either to be uniform or to obey a power law. Also, the initial magnetic induction is taken to vary as some power of the distance from the axis of symmetry.The total energy of the flow-field behind the shock is not constant, but assumed to be increasing due to time dependent energy input. The effects of variation of initial density on the propagation of the shock in presence of self- gravitational field are investigated.

Keywords: Shock wave, Self-similar flow, Variable initial density, Variable initial magnetic induction, self- gravitational effects, Variable energy input,

Introduction

Lin [1] has extended the Taylor's analysis [2] of the intense spherical explosion to the cylindrical case. The law of variation of the radius of a strong cylindrical shock wave produced by a sudden release of a finite amount of energy was obtained. The study of the propagation of cylindrical shock waves in a conducting gas in presence of an axial or azimuthal magnetic induction is relevant to the experiments on pinch effect, exploding wires, and so forth. This problem both in the uniform or non-uniform ideal gas was undertaken by many investigators, for example Pai [3], Sakurai [4], Deb Ray [5], Vishwakarma and Yadav [6]. One of the basic assumptions of these works is that the shock wave is propagated in a gaseous medium as a result of an instantaneous release of energy along a line.

In the present work, we studied the propagation of diverging cylindrical shock waves in a low conducting gas with gravitational field, as a result of time dependent energy input, under the influence of a spatially variable axial magnetic induction. The medium ahead and behind the shock front are assumed to be an inviscid one and to behave as a thermally perfect gas. The initial density of the gas is assumed to vary as some power of distance. The total energy of the flow-field behind the shock is not constant, but increasing due to time dependent energy input. Effects of viscosity, heat-conduction and radiation and are not taken into account. Distribution of the flow variables between the shock front and the inner expanding surface are obtained, the effects of the variation of initial density and gravitational field are investigated.

2. Fundamental Equations and Boundary Conditions

The basic equations governing the unsteady and cylindrically symmetric motion of a conducting gas are given by

$$\rho_t + u\rho_r + \rho u_r + \frac{\rho u}{r} = 0 \ , \tag{2.1}$$

$$u_t + uu_r + \frac{1}{\rho}p_r + \frac{Gm}{r} = -\frac{\sigma B_0^2 u}{\rho}, \tag{2.2}$$

$$p_t + up_r - a^2(\rho_t + u\rho_r) = (\gamma - 1)\sigma B_0^2 u^2 \ , \tag{2.3}$$

$$m_r - 2\pi\rho\gamma = 0, \tag{2.4}$$

$$B_r = \mu\sigma B_0 u, \tag{2.5}$$

where ρ is the density, p the pressure, u the fluid velocity, B the axial magnetic induction, m the mass of the gas contained in the cylinder and G the gravitational constant, at distance r from the axis of symmetry and time t, B_0 is the initial magnetic induction, γ the ratio of specific heats, μ the magnetic permeability, σ the electrical conductivity and 'a' the speed of sound given by $a^2 = \gamma p/\rho$. In the non-gravitating case, the equation (2.4) and the term Gm/r in the equation (2.2) do not occur.

The internal energy per unit mass of the gas e is given by

$$e = \frac{p}{\rho(\gamma - 1)}. \tag{2.6}$$

It is assumed that, due to explosion along the axis of symmetry, a cylindrical shock is produced and propagates into the low conducting gas of density ρ_0 in presence of the axial magnetic induction B_0.

A shock (cylindrical) is supposed to be propagating in the undisturbed ideal gas with variable density $\rho = Ar^{-\alpha}$ and the magnetic induction $B = Sr^{-m}$ where A, α, S and m are constants.

The flow variable immediately ahead of the shock front are

$u_0 = 0, \ \rho_0 = AR^{-\alpha}, B_0 = SR^{-m},$

$p_0 = \dfrac{\pi A^2 GR^{2-2\alpha}}{(\alpha - 1)(2 - \alpha)}$, in the case when the gas is self-gravitating, $\tag{2.7}$

$p_0 =$ constant, in the non-gravitating case

$m_0 = \dfrac{2\pi AR^{2-\alpha}}{2 - \alpha},$

Where R is the shock radius and the subscript '0' denotes the conditions immediately ahead of the shock.

In order to estimate the effects of a variable axial magnetic induction B_0 on the propagation of the cylindrical shock wave, the azimuthal magnetic induction is assumed to be zero.

Since σ is small, the magnetic induction may be taken continuous across the shock front Sakurai[]. Neglecting the counter pressure, the shock conditions may be written as

$$u_1 = \frac{2}{\gamma+1}V \ , \rho_1 = \frac{\gamma+1}{\gamma-1}\rho_0 \ , p_1 = \frac{2}{\gamma+1}\rho_0 V^2, \ m_1 = \frac{2\pi AR^{2-\alpha}}{2-\alpha}, B_s = B_0 \ . \qquad (2.8)$$

where the subscript "1" denotes conditions immediately behind the shock front and $V = \dfrac{dR}{dt}$ denotes the velocity of the shock.

3. Similarity Transformations

To obtain similar solutions, we write the unknown variables in the following form (Vishwakarma and Yadav [6])

$$u = VU(x) \ , \rho = \rho_0 D(x), \ p = \rho_0 V^2 P(x) \ , m = \rho_0 R^2 N(x) \ , B = \sqrt{\rho_0\mu}\, Vb(x) \ , \qquad (3.1)$$

where U, D, P,N and b are the functions of the non-dimensional variable $x = \dfrac{r}{R(t)}$ only. The shock front is represented by $x = 1$.

The total energy of the flow-field behind the shock is not constant, but assumed to be time dependent and varying as (Rogers [7], Freeman [8], Director and Dabora [9])

$$E = E_0 t^k, \qquad (3.2)$$

where E_0 and k are constants. The positive values of k correspond to the class in which the total energy increases with time. Since the flow is adiabatic and the shock is strong, this increase can only be achieved by the pressure exerted on the fluid by an expanding surface (a contact surface or a piston). The situation very much of the same kind may prevail in the formation of cylindrical spark channel from exploding wires. In addition, in usual cases of spark breakdown, time dependent energy input is a more realistic assumption than instantaneous energy input (Freeman [8])

The total energy of the flow between the shock front and the inner expanding surface (piston) is therefore expressed as

$$E_0 t^k = 2\pi\int_{r_p}^{R}\left(\frac{p}{\gamma-1} + \frac{1}{2}\rho u^2 + \frac{B^2}{2\mu} + \frac{\rho Gm}{r}\right) r\, dr \ , \qquad (3.3)$$

where r_p is the radius of the inner surface.

Applying the similarity transformations (3.1) in the relation (3.3), we find that the motion of the shock front is given by the equation

$$V = \frac{dR}{dt} = \left(\frac{E_0}{2\pi AJ}\right)^{\frac{1}{2}} t^{\frac{k}{2}} R^{\frac{1}{2}(\alpha-2)} \ , \tag{3.4}$$

where $J = \int\limits_{x_p}^{1} \left(\frac{P}{\gamma-1} + \frac{1}{2}DU^2 + \frac{b^2}{2} + \frac{GN}{x}\right) x\, dx$,

x_p being the value of x at the inner expanding surface.

Equation (3.4), on integration, yields

$$R = \left(\frac{4-\alpha}{k+2}\right)^{\frac{2}{4-\alpha}} \left(\frac{E_0}{2\pi AJ}\right)^{\frac{1}{4-\alpha}} t^{\frac{k+2}{4-\alpha}} \ , \tag{3.5}$$

and therefore

$$V = \left(\frac{k+2}{4-\alpha}\right)\frac{R}{t}. \tag{3.6}$$

Using the self-similarity transformations (3.1), the boundary conditions (2.8) can be written as $U(1) = \frac{2}{\gamma+1}$, $D(1) = \frac{\gamma+1}{\gamma-1}$, $P(1) = \frac{2}{\gamma+1}$, $N(1) = \frac{2\pi}{2-\alpha}$, $b(1) = \frac{1}{M_A}$. (3.7)

For the existence of similarity solutions magnetic Reynolds number $R_m = \sigma\mu VR$ and Alfven-Mach number $M_A = (\frac{\mu\rho_0 V^2}{B_0})^{1/2}$. should be constants, therefore

$$k = \frac{-\alpha}{2} \quad \text{and} \quad m = \frac{2+\alpha}{2} \ , \tag{3.8}$$

where $0 \le \alpha \le 2$.

After using the similarity transformation, the equations (2.1) to (2.5) change into the following set of ordinary differential equations and find the values of D', P', U', N', b' and using equation (3.8) we get

$$D' = \frac{D}{x-U}(U' + \frac{U}{x} - \alpha) \tag{3.9}$$

$$P' = -D(U-x)U' + UD - \frac{UR_m}{M_A^2} - \frac{G_0 ND}{x} \tag{3.10}$$

$$U' = \frac{U}{[\gamma P - D(U-x)^2]}\left[(\gamma U - x)\frac{R_m}{M_A^2} - \frac{P}{U}(\frac{\gamma U}{x} - \alpha - 2) - D(U-x) + \frac{G_0 ND(U-x)}{xU}\right] \quad (3.11)$$

$$N' = 2\pi Dx \qquad\qquad (3.12)$$

$$b' = \frac{UR_m}{M_A}, \qquad\qquad (3.13)$$

Where $G_0 = \dfrac{(\alpha-1)(2-\alpha)}{\pi\gamma M^2}$ and prime denotes the differentiation with respect to x.

The condition to be satisfied at the inner expanding surface is that the velocity of the fluid is equal to the velocity of the surface itself. This kinematic condition, can be written as

$$f\left(x_p\right) = x_p \ . \qquad\qquad (3.14)$$

For exhibiting the numerical solutions it is convenient to write the field variables in the following form,

$$\frac{u}{u_1} = \frac{U(x)}{U(1)} \ , \ \frac{\rho}{\rho_1} = \frac{D(x)}{D(1)} \ , \ \frac{p}{p_1} = \frac{P(x)}{P(1)} \ , \frac{m}{m_1} = \frac{N(x)}{N(1)} . \ \frac{B}{B_1} = \frac{b(x)}{b(1)} . \qquad (3.15)$$

The shock-boundary conditions in terms of these variables are

$$\frac{u}{u_1} = 1, \ \frac{\rho}{\rho_1} = 1, \ \frac{p}{p_1} = 1, \frac{m}{m_1} = 1, \frac{B}{B_1} = 1. \qquad\qquad (3.16)$$

Results and Discussion

The flow variables $\dfrac{u}{u_1}, \dfrac{\rho}{\rho_1}, \dfrac{p}{p_1}, \dfrac{m}{m_1}$ and $\dfrac{B}{B_1}$ are obtained by numerical integration of the differential equations (3.9) to (3.13) with the boundary conditions (3.7). For the purpose of numerical integration, the values of the constant parameters are taken as $\gamma = 1.4$, M=5, $M_A^{-2} = 0.01$, $R_m = 0.01$, $\alpha = 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 1.8, 1.9.$

The effects of an increase in the density variation index α are

(i) to decrease the strength of inner expanding surface ;
(ii) to increase the gravitational parameter for lower values of density variation index and decrease the gravitational parameter for higher values of density variation index.
(iii) to decrease the distance $\left(1 - x_p\right)$ of the inner expanding surface from the shock front (see table 1). This means that the ratio of the velocity of inner expanding surface to that of the shock front increases by an increase in α .

Table 1.   Position of the inner expanding surface x_p at different values of α for $\gamma = 1.4$, $M_A^{-2} = 0.01$, M=5 and $R_m = 0.01$.

α	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
G_0	0.00082	0.00146	0.00191	0.00218	.00227	0.00218	0.00191	0.00146	0.00082
x_p	0.9034	0.9101	0.9158	0.9207	0.9250	0.9288	0.9322	0.9352	0.9380

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Insurance and its role in Sustainable Development

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Abstract

In today world the concept of Sustainable Development is essential. Sustainable development means without compromising the need of the future the present need of the society must be fulfilled in competitive business environment. It has gained popularity in present world. Now sustainable development has become the need of an hour. Every country is adopting it and India is one of them. Insurance industry is playing a pivotal role in sustainable development by adopting it as an objective. Now the new concept that emerging in the current scenario is Sustainable Insurance, which is a strategic approach towards sustainability with an objective to reduce risk, develop innovative solutions, improve business performance, and giving contribution to environmental, social and economic sustainability. The purpose of writing this paper is to define the role and contribution of insurance in sustainable development in current scenario, to find out the issues and challenges, and to explore the canvas of the new term sustainable insurance. This paper is based on secondary data source.

Keywords- Insurance; sustainability; sustainable insurance; role of insurance in sustainable development.

Introduction

To attain the goal of sustainability, in this competitive and fast changing business era a comprehensive effort is needed. The term "sustainable development" is defined as development to achieve the needs of the present generation without sacrificing the future generation needs. Sustainable development, at present time is a most concern phenomenon. Globally as we see that every country, including most developing countries like India, show its concern towards sustainable development because they realize that their future generation must not suffer from lack of resources which is obviously most vital for the survival. The concept of sustainable development comes after Second World War; it is not only related to future generation but also with the present generation. The changing expectations of society and growing awareness about sustainability has compelled many organizations to adopt sustainable business practices and insurance is one of them, by adopting sustainability as a goal to survive in the environment. From the past years insurance have been at the forefront of the corporate world in alerting the society to the risk of climate change and, more recently, threats such as the loss of biological diversity and the growing pressures on forests, fresh water and other essential ecosystems. Insurance companies are also increasingly recognizing the need to develop products and services that address the needs of a rapidly changing world.

Insurance and Sustainability

Insurance plays a very important role in developing a sustainable business organization through its products and services. By insuring the society, business organizations etc against the uncertainties of risks, it improves the standard of living of the society and builds confidence to

take challenges and catch the opportunities available in the business society. In the words of Riegel and Miller: "Insurance is a social device whereby uncertain risks of individuals may be combined in a group and thus made more certain; small periodic contributions by the individuals providing a fund out of which those who suffer losses may be reimbursed." It provides financial assistance and security against the risks to the society with an element of saving and investment.

Objectives

A sustainable business operates in the interest of all and ensures a long term health and survival of business and is associated with the social, economic and environmental system. Sustainability for this paper means, to maintain a balance between the insurance industry and the society, doing business activities without wasting the resources of the nature for the development and betterment of the whole society. The objectives of this paper is to define the role and contribution of insurance towards sustainable development in current scenario, to find out the issues and challenges, and to define the sustainable insurance. This paper is an exploratory work which is based on the past literature review that is secondary data, including published research, websites, books, journals etc.

Literature Background

Today much of the discussion are related to environmental, climate, social and   governance issues which emphasizes on the costs that private business concerns play to sustain in the market. A sustainable development approach suggests that for the long term social well being and continued success of the business, private business should plan their business strategies in such a way, which improves their business results and contribute towards community betterment. "Sustainable insurance" adopts this approach but has implications far beyond the insurance business.

Insurance provides an essential underpinning for economic activity by addressing a wide range of risks businesses face. By understanding and developing solutions for sustainable development, the insurance industry has a broad range of expanding growth opportunities. International Insurance Society (2012)   In the current scenario countries are much more likely to experience sustained growth in their line of business, if their insurance markets are well developed. Development of insurance market is closely related to improved financial sector performance and it is true that without the investment of public and private sector in their infrastructure it is impossible for insurance market to develop adequately. Lian Han et. (2010)

According to Ray-Ann Sedres (2007) there is a need for all business to plan strategically around the reality of change, to understand that change and to manage it, becomes important not only for the survival and sustainability of the sector, but also to continue delivering a service to millions of customers who have invested in insurance and rely on the sector for help when things go awry.

The term sustainability is a buzzword and the terms such as sustainable development and corporate sustainability as well as corporate social responsibility are often used interchangeably. Sustainability refers to an organization's activities which are typically considered voluntary and that demonstrate the inclusion of social and environmental concerns in the business operations by Marcel Van Marrewijk, (2003). Inyang (2004) states that the

business owes society an obligation or debt – for taking something from the former and so it must give something in return to the latter, and this would continue to provide the fertile grounds for latter's continuous existence.

Sustainable Insurance

 Due to the need of the time, the concept of Sustainable Insurance evolve in the economy which is a strategic approach where all activities in the insurance value chain, including interaction with stakeholders, are done in a responsible and forwardlooking way by identifying, assessing, managing and monitoring risk and opportunities associated with environmental, social and governance issues. Sustainable insurance aims to reduce risk, develop innovative solutions, improve business performance, and contribute to environmental, social and economical stability.

The principles for sustainable insurance provide a global roadmap to develop and expand the innovative risk management system and insurance solutions that we need to promote renewable energy, clean water, food security, sustainable cities and disaster-resilient communities. With world premium volume of more than $4 trillion and global assets under management of more than $24 trillion, insurers that embed sustainability in their business operations can catalyze the kinds of financial and investment flows and long-term perspectives needed for sustainable development. The principles for sustainable insurance acts as a foundation upon which the insurance industry and society as a whole can build a stronger relationship, one that puts sustainability at the heart of risk management in pursuit of a more forward-looking and better managed world.

Role of Insurance towards Sustainable Development

 Today risk assessment and risk management sit at the centre of many of our sustainability challenges. Understanding and dealing with many different kinds of risks is the particular expertise of the insurance sector. As a result, the connectivity between sustainable issues and the insurance sector is strong and will be increasingly appreciated by broader society. In considering 'what has been achieved by the insurance sector?' in terms of sustainability, it is necessary to explore how risks and sustainability are connected and where insurance sector plays a role in mitigating both traditional and emerging risks such as climate change, natural calamities etc. The involvement and contribution of the insurance sector in environmental sustainability concerns is easily summarized below:

- ➢ Insurance companies are involved in the settlement of all sorts of environmental losses, weather it is man-made or natural.
- ➢ Insurers have considerable know-how in risk management and claim handling.
- ➢ They have given loss prevention advice to business organizations, general public and to the society through professional experts.
- ➢ They act as a guardian, by providing financial assistance to the society in exchange of a nominal amount of premium.
- ➢ Adoption of technology and online insurance market reduces the paper works which automatically save the environment.
- ➢ It improves the standard of living of the society through innovative insurance products.

Issues and Challenges

➢ Misusing the resources in a very vital manner, is not good for the present generation as well as to the future generation, is the major issue in this scenario.

➢ It is very difficult for the insurance company to find solutions for heavily exposed risks and regions such as houses or factories on river banks with flood potential or properties in areas of high earthquake risk.

➢ Development of products that support sustainable development is another challenging task in front of insurance companies.

➢ Awareness towards sustainable insurance is slow in India.

➢ Change of climate, depletion of resources, excessive inequality, and new technological risks are another sustainability challenges that insurance industry is facing today.

Recommendations

➢ Government should organize various campaigns to aware the society on various environmental issues through various means.

➢ Insurance companies should adopt different innovative techniques to sustain in the market. □

➢ Appointment of experts, loss assessor surveyors and use of new technology to maintain sustainability.

➢ Insurance companies should adopt paper less documentation system to save the resources through green marketing.

➢ Comprehensive efforts should be needed from the whole society to make sustainable development possible.

➢ There is a need to establish well-defined and enforceable rights and security of tenure.

➢ Insurance companies should adopt the concept of sustainable insurance for achieving stability in their business.

Conclusion

Today everyone knows about sustainable development. Now several organizations, industries etc are making sustainable development as a goal for success and for the survival in the present and for the future. Insurance industry is also adopting the concept of sustainable development as its goal and making various alterations and innovations in their products and services to sustain in the market. By following green marketing, adopting sustainable insurance and organizing environmental awareness campaigns, insurance industry contributes a major share towards sustainable development. It is the duty to everyone to utilize the present resources in an optimal manner so that our future generation will be benefited by it, and then only sustainable development will be achieved in the world.

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OVERLAPPING FIELDS WITH IMAGE PROCESSING: IMAGE STITCHING

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ABSTRACT

Image stitching or photo stitching is the process of combining multiple photographic images with overlapping fields of view to produce a segmented panorama or high-resolution image. Commonly performed through the use of computer software, most approaches to image stitching require nearly exact overlaps between images and identical exposures to produce seamless results, although some stitching algorithms actually benefit from differently exposed images by doing high-dynamic-range-imaging in regions of overlap. Some digital cameras can stitch their photos internally. nce the illumination in two views cannot be guaranteed to be the same, stitching two images could create a visible seam. Other reasons for the seam appearing could be the background changing between two images for the same continuous foreground. In general, the major issues to deal with are presence of parallax, lens distortion, scene motion, and exposure differences. For panoramic stitching, the ideal set of images will have a reasonable amount of overlap (at least 15–30%) to overcome lens distortion and have enough detectable features. The set of images will have consistent exposure between frames to minimize the probability of seams occurring. In the non-ideal real-life case, the intensity varies across the whole scene and so does the contrast and intensity across the frames. Lens distortion, motion in the scene, and misalignment all cause ghosting. Also, the ratio of width to height of a panorama image needs to be taken into account to create a visually pleasing composite.

KEY WORDS: Image stitching, Overlapping,Image Stitching, Panorama

INTRODUCTION

Feature detection is necessary to automatically find correspondences between images. Robust correspondences are required in order to estimate the necessary transformation to align an image with the image it is being composited on. Corners, blobs, harris corners, and difference of gaussian of harris corners (DoG) are good features since they are repeatable and distinct. One of the first operators for interest point detection was developed by Hans P. Moravec in 1977 for his research involving the automatic navigation of a robot through a clustered environment. Moravec also defined the concept of "points of interest" in an image and concluded these interest points could be used to find matching regions in different images. The Moravec operator is considered to be a corner detector because it defines interest points as

points where there are large intensity variations in all directions. This often is the case at corners. However, Moravec was not specifically interested in finding corners, just distinct regions in an image that could be used to register consecutive image frames. Harris and Stephens improved upon Moravec's corner detector by considering the differential of the corner score with respect to direction directly. They needed it as a processing step to build interpretations of a robot's environment based on image sequences. Like Moravec, they needed a method to match corresponding points in consecutive image frames, but were interested in tracking both corners and edges between frames. SIFT and SURF are recent keypoint or interest point detector algorithms but a point to note is that these are patented and their commercial usage restricted. Once a feature has been detected, a descriptor method like SIFT descriptor can be applied to later match them.

Overview of image stitching algorithms

1. Firstly, algorithms are needed to determine the appropriate mathematical model relating pixel coordinates in one image to pixel coordinates in another. This is for image alignment.
2. Next, we need to estimate the correct alignments relating various pairs (or collections) of images. Algorithms that combine direct pixel-to-pixel comparisons with gradient descent (and other optimization techniques) can be used to estimate these parameters.
3. Distinctive features can be found in each image and then efficiently matched to rapidly establish correspondences between pairs of images. When multiple images exist in a panorama, techniques have been developed to compute a globally consistent set of alignments and to efficiently discover which images overlap one another.
4. *For image stitching, we must first decide on a final compositing surface onto which to warp or projectively transform and place all of the aligned images. We also need to develop algorithms to seamlessly blend the overlapping images, even in the presence of parallax, lens distortion, scene motion, and exposure differences.*

MULTIPLE IMAGE STITCHING

I must say, even I was enjoying while developing this tutorial . Something about image perspective and enlarged images is simply captivating to a computer vision student (LOL) . I think, image stitching is an excellent introduction to the coordinate spaces and perspectives vision. Here I am going to show how to take an ordered set of many images, **(assuming they have been shot from left to right direction)** .So what is image stitching ? In simple terms, for an input group of images, the output is a composite image such that it is a culmination of scenes. At the same time, the logical flow between the images must be preserved.For example, consider the set of images below. (Taken from matlab examples). From a group of an input montage, we are essentially creating a singular stitched image. One that explains the full scene in detail. It is quite an interesting algorithm !

(Taken from matlab examples).

The implementation will be carried out in python programming language.

- Reading multiple images (in order)
- Finding logical consistencies within images (this will be done using homography).
- Stitching Up images.

Let's first understand the concept of mosaicking or image stitching. Basically if you want to capture a big scene. Now your camera can only provide an image of a specific resolution and that resolution , say 640 by 480 , is certainly not enough to capture the big panoramic view. So , what one can do is capture multiple images of the entire scene and then put together all bits and pieces into one big mat of images. Yes, it seems good .. right ! Such photographs , which pose as an ordered collection of a scene are called as mosaics or panoramas. The entire process of acquiring multiple image and converting them into such panoramas is called as image mosaicking. And finally, we have one beautiful big and large photograph of the scenic view.Another method for achieving this, is by using wide angle lens in your camera. What a wide angle lens does, is effectively increase your field of view.

The output, will differ (obviously). But for the purposes of this tutorial, let's get into how to create panoramas using computers and not lens.

SETTING UP THE ENVIRONMENT

Please note that your system is setup with Python 2.7 (Code implementation is in python2.7 if you have other versions, please modify the code accordingly) and OpenCV 3.0 . We will be using OpenCV's helper utilities for reading images, writing images and conversion of color spaces. Once the images are obtained, the entire computation of the panorama will be done using a home brewed function. This blog article is divided into three major parts.

* Input, read and process images : image paths from text files. Each textfile contains the list of paths to each image. **Make sure that the paths are in left_to_right order of orientation.**

* Computation relative orientation of images w.r.t each other : pairwise

* The stitching / mix and match module : which essentially joins the two images at a time

ALGORITHM

The algorithm for performing image stitching is pretty straightforward.

```
1     images [] <-- Input images
2     Assuming, that the center image is no_of_images/2
3     let centerIdx = length(images)/2
4
5     for each images[] at positions 0 -> centerIdx :
6         perform leftward stitching
7
8     for each images[] at positions centerIdx -> length(images):
9         perform rightward stitching
```

The output will be a complete mosaic of the input images.

Some Constraints The algorithm is time consuming, due to the number of iterations involved, it is best that hte input number of images is not too high or not of very high resolution (eg. 4000x3000). My implementation is based on a 2 GB RAM computer having intel i3 processor (Not tested it on my machine yet !). Feel free to upgrade/scale this model using higher specs, or maybe GPU's .It's never too late to try.

PROJECT ARCHITECTURE

```
    |_ code -|
    |        |-- pano.py
    |        |-- txtlists-|
    |                     |--files1.txt ....
    |
    |_ images - |
    |           |- img1.jpg
    |           |- abc.jpg
```

```
|              .... and so on ...
```

To understand either of the leftward stitching or rightward stitching module, first let's get some vision concepts straight. They being:

- *Homography : Oh I love this !
- *Warping : Cause, without warping, homography would feel a bit lonely
- *Blending : Cause intensity differences are a bit too mainstream

HOMOGRAPHY

Okay, so assume you're looking at a scenery. You will be having a field of view and that field of view is of what you want to make a panorama. You can rotate your head and cover a big area. But while you are looking straight, looking directly perpendicularly at a sub-scene, the remaining part of the scenery appears slightly inclined or slightly narrowed out. This is due to simple physics. Since you are facing in one direction, the things to your extreme periphery appears unclear, reduced in dimension and not necessarily straight/normal (a bit inclined). This is exactly what we will be exploiting.

Consider the images shown in the above figure. Every image will contain some common portion with the other images. Due to this commonness we are able to say that $image$ x

will either lie on to the right or left side of $image$ y

. Anyway, now that I've made that clear, let's proceed as to how do we calculate homography. Say you have a pair of images $I1$, $I2$

. You capture the first image. Then you decide to rotate your camera, or maybe perform some translation or maybe a combination of rotation / translation motion. Then having update your new camera position , you capture a second image. The problem now at hand is, How do you solve for a system wherein you're required to create a transformation that efficiently maps a point that is being projected in both the images. Or in simple terms, How do you visualize one image w.r.t another point of view, given there is some information available about both your points of views.
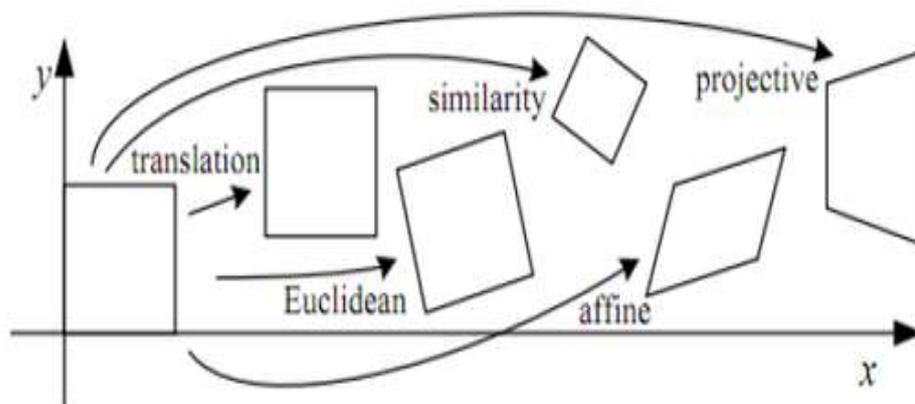
Types of transforms

Each of the above transformations performs some sorts of image transformation. For eg. a projective (well in your case,homography) transform will preserve straight lines, .. etc. Moving on, a homography matrix is such that , if applied to any image, transforms image plane P1 to another image plane P2.

See the pic below, you'll understand what i'm talking about.

Source :This SO Post

What you see above, can be an output of applying homography from $I1 = H \times I2$

. HOW TO use Homography to transform pictures in OpenCV? (Check out this answer too. these pics have been taken from the aforementioned post).

You can use opencv findhomography ( ) method to solve for homography. For finding $I1 = H \times I2$

you will need to pass coordinates of points in original image 1 plane and coordinates of target points in image 2 to the method. Once through, the method will spit out the homography matrix

HOW TO IDENTIFY POINTS TO CALCULATE HOMOGRAPHY !

One of the straight forward methods is as follows

```
    Compute similar features in both images

    Out of them , filter out good features (you'll find plenty of tutorials
on these )

    Make an array sorts of ; featuresofI1 ==> [srcPoints], featuresofI2
==>[dstPoints] (using opencv nomenclature)

    Compute Homography matrix using RANSAC algorithm
```

STEP 1: FEATURE EXTRACTION

We shall be using opencv_contrib's SIFT descriptor. SIFT , as in Scale Invariant Feature Transform, is a very powerful CV algorithm. Please read my Bag of Visual Words for Image classification post to understand more about features. Also, check out OpenCV's docs on SIFT. They are a pretty good resource as well!

```
1    sift_obj = cv2.xfeatures2d.SIFT_create()
2    descriptors, keypoints = sift_obj.detectAndCompute(image_gray, None)
```

If you plot the features, this is how it will look . (Image on left shows actual image. Image on the right is annotated with features detected by SIFT)

Example 1 : using Lunchroom image

Lunchroom image : PASSTA Dataset

STEP 2: MATCHING CORRESPONDENCES BETWEEN IMAGES

Once you have got the descriptors and keypoints of 2 images, i.e. an image pair, we will find correspondences between them. Why do we do this ? Well, in order to join any two images into a bigger images, we must obtain as to what are the overlapping points. These overlapping points will give us an idea of the orientation of the second image w.r.t to the other one. And based on these common points, we get an idea whether the second image has just slid into the bigger image or has it been rotated and then overlapped, or maybe scaled down/up and then fitted. All such information is yielded by establishing correspondences. This process is called **registration** .

For matching, one can use either FLANN or BFMatcher, that is provided by opencv.

```
1    # FLANN parameters
2    FLANN_INDEX_KDTREE = 0
3    index_params = dict(algorithm = FLANN_INDEX_KDTREE, trees = 5)
4    search_params = dict(checks=50)   # or pass empty dictionary
5
6    flann = cv2.FlannBasedMatcher(index_params,search_params)
7
8    matches = flann.knnMatch(des1,des2,k=2)
9
10   img3                                                        =
11 cv2.drawMatchesKnn(img1c,kp1,img2c,kp2,matches,None,**draw_params)
12
13   cv2.imshow("correspondences", img3)
     cv2.waitKey()
```

Having computed the matches, you get a similar output :

With the Lunchroom dataset

Feature matching on lunchroom images

With the Hill example:
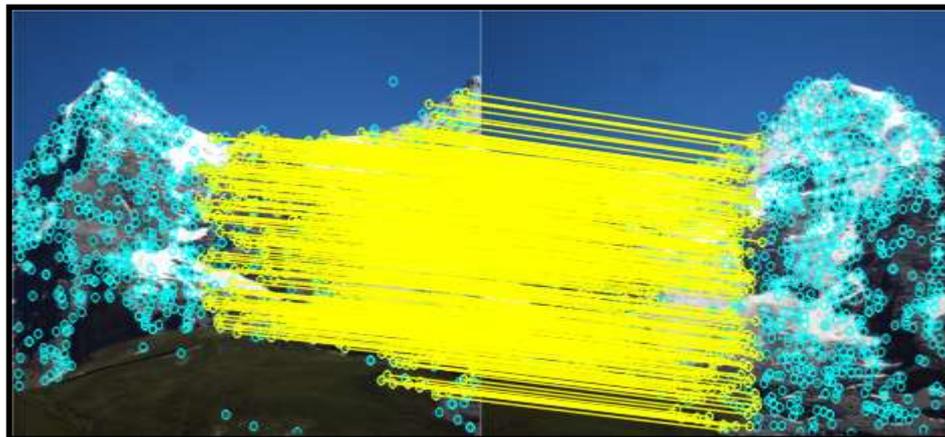
Feature matching on hill example image

STEP 3: COMPUTE HOMOGRAPHY

Yes, once we have obtained matches between the images, our next step is to calculate the homography matrix. As described above, the homography matrix will use these matching points, to estimate a relative orientation transform within the two images. i.e. it'll solve for the equation

$I_x = H \times I_y$

Hence, it solves for the matrix H

Well, to estimate the homography is a simple task. If you are using opencv, it's a two line code. However , I'd recommend that one implements oneself.

```
H, __ = cv2.findHomography(srcPoints, dstPoints, cv2.RANSAC, 4)
```

Viola ! Our homography matrix looks something like this …

$$[||h_{11}h_{21}h_{31}h_{12}h_{22}h_{32}h_{13}h_{23}h_{33}|||$$

Anyway, putting the pretty graphics aside, understand what the homography matrix is . Homography preserves the straight lines in an image. Hence the only possible transformations possible are translations, affines, etc. For example, for an affine transform,

$$[h_{31}h_{32}h_{33}]=[0\ 0\ 1]$$

Also, you can play around with h_{13} and h_{23}

for translation

STEP 4 : WARPING & STITCHING

To understand stitching, I'd like to recommend Adrian Rosebrock's blog post on OpenCV Panorama stitching. His blog provides a wonderful explanation as to how to proceed with image stitching and panorama construction using 2 images.So , once we have established a homography, i.e. we know how the second image (let's say the image to the right) will look from the current image's perspective, we need to transform it into a new space. This transformation mimics the phenomenon that we undergo. That is, the slightly distorted, and altered image that we see from our periphery . This process is called warping. We are converting an image, based on a new transformation. In this case, Im using a planar warping. What I'm doing, is essentially change the plane of my field of view. Whereas, the "panorama apps" use something called as a Cylindrical and spherical warps !

Types of warping :

- *Planar : wherein every image is an element of a plane surface, subject to translation and rotations …
- *Cylindrical : wherein every image is represented as if the coordinate system was cylindrical. and the image was plotted on the curved surface of the cylinder.
- *Spherical : the above appends, instead of a cylinder, the reference model is a sphere.

Each model has its' own application. For the purposes of this tutorial, I'll stick to planar homography and warping.

So , to warp, essentially change the field of view, we apply the homography matrix to the image.

warped_image = cv2.warpPerspective(image, homography_matrix, dimension_of_warped_image)

Here is some visualization …. below are left warped and right warped images Note the orientation and projective-ness of each image.
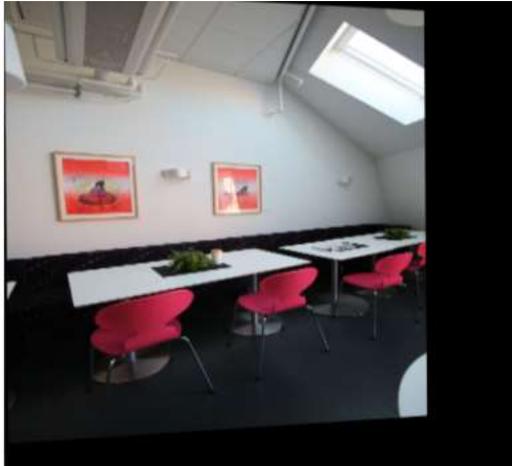
Warping Images of Lunchroom !

Stitching 'em up !

Once, we have obtained a warped image, we simply add the warped image along with the second image. Repeat this over through leftward stitching and rightward stitching, and viola! We have our output.

I'll get a bit deeper as to how to perform the image joining part. Say, we have a homography matrix H

. If the starting coordinate of each image is $(0,0)$ and end point is (re,ce) , we can get the new warped image dimension by $startp=H\times[0,0]$ uptill $endp=H\times[re,ce]$. **Note : If start_pt comes out to be negative** , account for a translational shift. i.e. "perform translation shift to the image by $|startp|$

". Also make sure that the homography matrix normalized such that the last row amounts to a unit vector.

You can checkout the above mentioned explanation below This is the implementation snippet from the actual code. Please look at the full code to understand in accordance with the post.

```
1    def leftstitch(self):
2        # self.left_list = reversed(self.left_list)
3        a = self.left_list[0]
4        for b in self.left_list[1:]:
5            H = self.matcher_obj.match(a, b, 'left')
6            print "Homography is : ", H
7            xh = np.linalg.inv(H)
8            print "Inverse Homography :", xh
9            # start_p is denoted by f1
10           f1 = np.dot(xh, np.array([0,0,1]))
11           f1 = f1/f1[-1]
12           # transforming the matrix
13           xh[0][-1] += abs(f1[0])
14           xh[1][-1] += abs(f1[1])
15           ds = np.dot(xh, np.array([a.shape[1], a.shape[0], 1]))
16           offsety = abs(int(f1[1]))
17           offsetx = abs(int(f1[0]))
18           # dimension of warped image
19           dsize = (int(ds[0])+offsetx, int(ds[1]) + offsety)
20           print "image dsize =>", dsize
21           tmp = cv2.warpPerspective(a, xh, dsize)
22           # cv2.imshow("warped", tmp)
23           # cv2.waitKey()
24           tmp[offsety:b.shape[0]+offsety, offsetx:b.shape[1]+offsetx] = b
25
             a = tmp
```

Another method : There is another method, i.e. using `basic for looping constructs` and overlay the two images. The logic is simple. Input to the method will be the steadyimage and warpedImage. Iterate through both images, and if pixels are equal, put pixel as that value. else give preference to a non black pixel ..

```
     def mix_match(self, leftImage, warpedImage)
         i1y, i1x = leftImage.shape[:2]
         i2y, i2x = warpedImage.shape[:2]


         for i in range(0, i1x):
             for j in range(0, i1y):
                 try:
                     if(np.array_equal(leftImage[j,i],np.array([0,0,0]))
and  \
np.array_equal(warpedImage[j,i],np.array([0,0,0]))):
                         # print "BLACK"
                         # instead of just putting it with black,
                         # take average of all nearby values and avg it.
                         warpedImage[j,i] = [0, 0, 0]
                     else:
                         if(np.array_equal(warpedImage[j,i],[0,0,0])):
                             # print "PIXEL"
                             warpedImage[j,i] = leftImage[j,i]
                         else:
                             if not np.array_equal(leftImage[j,i],
[0,0,0]):
                                 bl,gl,rl = leftImage[j,i]
                                 warpedImage[j, i] = [bl,gl,rl]
                 except:
                     pass
         # cv2.imshow("waRPED mix", warpedImage)
         # cv2.waitKey()
         return warpedImage
```

But this method will iterate over soooo many pixels. .. It's very slow, for two reasons. Firstly , it involves heavy iteration. And, well, I'd personally execute such heavy loops in C++ and not python.

So, basically, this is how my main function looks … the heart and core of all implementations

```
     if __name__ == '__main__':
         try:
             args = sys.argv[1]
         except:
             args =
"txtlists/files1.txt"
         finally:
             print "Parameters : ",
 args
         s = Stitch(args)
         s.leftshift()
         # s.showImage('left')
         s.rightshift()
         print "done"
         cv2.imwrite("test.jpg",
 s.leftImage)
         print "image written"
         cv2.destroyAllWindows()
```

CONCLUSION

Image stitching enables the combination of multiple shots to create a larger picture that is beyond the normal aspect ratio and resolution (super resolution) of the camera's individual shots. The technology enables positioning for dramatically wide shots without duplicated objects or distortion. The most familiar use of image stitching is in the creation of panoramic photographs, often used for landscapes. Wide-angle and super-resolution images created by image stitching are used in artistic photography, medical imaging, high-resolution photo mosaics, satellite photography and more. For best results, image stitching requires that shots have quite precise overlaps and identical exposure settings. Algorithms are required for compositing surface creation, pixel alignment, image alignment and distinctive feature recognition to aid as reference points to software for alignment accuracy. Image stitching is somewhat analogous to the way the human brain performs the task of assimilating the two monocular fields of vision (FOV) from each eye into a single, wider FOV with about 114 degrees of depth perception. The brain's natural image stitching enables humans' enhanced stereoscopic, binocular vision, surrounded by a further 220 degrees of monocular peripheral vision.

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Aye and Nay of Social Media

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ABSTRACT

Before people share their opinions on the internet they should be well aware of the different aspects of social media. According to many scholars' social media is defined as a platform where people, groups and individuals share their views and ideas along with other multimedia like images, videos and much more. This is a platform for virtual communication. In the present age everyone is surrounded with mobile phones and laptops which contain social networking sites like Facebook, twitter, Instagram, etc. there is an effect of social networking sites on the behavior of people. There is an evident change in the way children interact with their peers, parents, and teachers and how they make use of this technology. There are positive as well as negative effects of social media. They can be of great value for the businessmen and young professionals to share their skills and get business opportunities. These sites can be used to network efficiently. While on the other hand there are also many risks related to the use of social media. A type of harassment that is caused due to such online platforms is called as cyber bullying, which is a thing of great concern as well. This paper covers the positive and negative effects of social media. It will throw light upon the influence of social media on our society.

*Keywords:*Social media*,* Cyber bullying*,* Society*,* Facebook*,* Twitter

I.   Introduction

An online platform that acts as a stage which people use to construct social relations and networks with other people with similar interests is called as social media. The social media has an evident influence on the minds of the people living in this society. This also has an impact on the young generation those who use mobile devices and laptops to indulge into activities like sharing tweets, liking Facebook pages, updating status and check the posts of their friends and family. Social media helps the young generation to be more sociable with their surroundings and it somewhat creates a pressure to be in the limelight and not to miss any action. There are billions of people who use different social media sites to share, connect and network with the world. Some of the different forms of social media are blogs, wikis, social networking sites, photo sharing sites, podcasts, virtual worlds etc. all these different kinds of media allows us to communicate with our friends and relatives, gain knowledge about different subjects, develop our interests and gain new interests and most importantly to be entertained at an individual level. While on a professional level social

media can be used to extend our knowledge, and build strong professional relations by connecting with other professionals of our field. At business level social media can be used to have a conversation with our audience, get customer feedback and advertise our brand into the market.

There is a great scope for social media if used properly and for positive purposes. Social media is enabling many businesses to make advancements in their business operations and to better their practices. Social media can be used to advertise and communicate in a more efficient way. People are opting to social media over television news and newspapers as they get same and more information on the prior medium also it is very convenient. The information of all over the world is now available at our fingertips due to social media sites.

II.   Review of literature

Social media has both positive and negative effects on the society. As we know the youth are the building blocks of any nation. These building blocks are now armored with the latest technology which could be used in the most efficient ways. This research paper is based on the secondary data collected from various online sources, research papers and from online search engines. In this paper we study about the various social networking sites and the business areas in which it is extensively used. This paper will throw light upon the positive and negative effects of social media on the society and suggestions for handling the negative effects in the most efficient way.

Various social media sites:

Facebook

Facebook was founded on February 4, 2004. It is a social media and social networking service company. Facebook is based in Menlo Park, California. Mark Zuckerberg, along with fellow Harvard College students and roommates Eduardo Saverin, Andrew McCollum, Dustin Moskovitz and Chris Hughes founded this company. Along with Amazon, Apple and Google, Facebook is considered one of the Big Four technology companies. In terms of number of users and brand name Facebook is the largest social media network on the internet. Facebook is used by millions to connect with people all around the world. Businesses connect with their prospective markets over Facebook. Facebook is acting as an advertising platform for over one million small and medium sized businesses all around the world.

Twitter

Twitter is called as a micro blogging and social networking platform. Twitter users interact with each other over posts called as 'tweets'. Originally one could tweet using only 140 characters, but on November 7, 2017, this limit was doubled to 280 for all languages except Chinese, Japanese, and Korean. Twitter registered users can like, retweet and post tweets, but unregistered users can only read them. Users access Twitter through its website interface, through SMS or its mobile based application. Based in San Francisco, California, Twitter Inc. has more than 25 offices around the world. Due to its characters limitation many people might think that it won't be of much help for the organizations to advertise

their business online but this social media stage has more than 320 million active monthly users who can build use of the 280 character limit to pass on information. Twitter is used by businesses to interact with prospective clients, release news and target ads with specific audience. On March 21, 2006 Jack Dorsey, Noah Glass, Biz Stone, and Evan Williams founded this micro blogging site and called it twitter.

Instagram
With more than 500 million users Instagram is the most popular photo sharing and networking site. Facebook owns Instagram and it is mostly used by the users to post photos of their travel shenanigans and other day to day activities. Huge numbers of media like dynamic and videos and alluring photographs are shared on this platform. It is one of the most useful platforms for many businesses to market and advertise their products/services and to connect with the audience.

YouTube
In February 2005, three former PayPal employees Chad Hurley, Steve Chen, and Jawed Karim founded Youtube, it is a video sharing website and is headquartered in San Bruno, California. Youtube was bought by Google in November 2006 for US$1.65 billion; YouTube now operates as one of Google's subsidiaries. It is the biggest and renowned video based online networking platform. As of May 2019, more than 600 hours of video content are uploaded to YouTube every minute.

Tumblr
Tumblr is also a micro-blogging and social networking website founded by David Karp in 2007. It is pronounced as Tumbler and currently is owned by Automattic. The service allows users to post various kinds of multimedia and other content to a short-form blog. Bloggers can make their blogs private or for public view. The bloggers access the website features through a "dashboard" interface. Tumblr hosts over 475 million blogs as of August 12, 2019. As of January 2016, the website had over 500 million monthly visitors, which dropped to less than 400 million by August 2019.

Pinterest
Pinterest, Inc. is a social media application that can be operated on web and mobile. It is designed to enable saving and discovery of information on the World Wide Web using images, GIFs and videos. Ben Silbermann, Paul Sciarra, and Evan Sharp are the founders of Pinterest. It has reached 300 million monthly active users as of August 2019. It is called as a beginner in the online networking field. Mostly organizations advertise here at the beginning level amongst the intended interest groups.

Snapchat
Evan Spiegel, Bobby Murphy, and Reggie Brown,former students at Stanford University founded a messaging app called as Snapchat, and developed by Snap Inc. a principal feature of Snapchat is that pictures and messages are usually only available for a short time before they become inaccessible to their recipients. The app has evolved from originally focusing on person-to-person photo sharing to presently featuring users' "Stories" of 24

hours of chronological content, along with "Discover", letting brands show ad-supported short-form content.Snapchat also places significant emphasis on users interacting with virtual stickers and augmented reality objects. As of February 2018, Snapchat has 190 million daily active users.

WhatsApp

WhatsApp Messenger is a messaging VoIP service owned by Facebook. It is used to send text messages and voice messages, make voice and video calls, and share images, documents, user locations, and other media. WhatsApp needs Internet connection to send images, texts, documents, audio and video messages to other users that have the app installed on their devices. Launched in January 2010, WhatsApp Inc. was purchased by Facebook on February 19, 2004, for about $19.3 billion.

The following image represents the statistics of social media usage around the world in 2019.
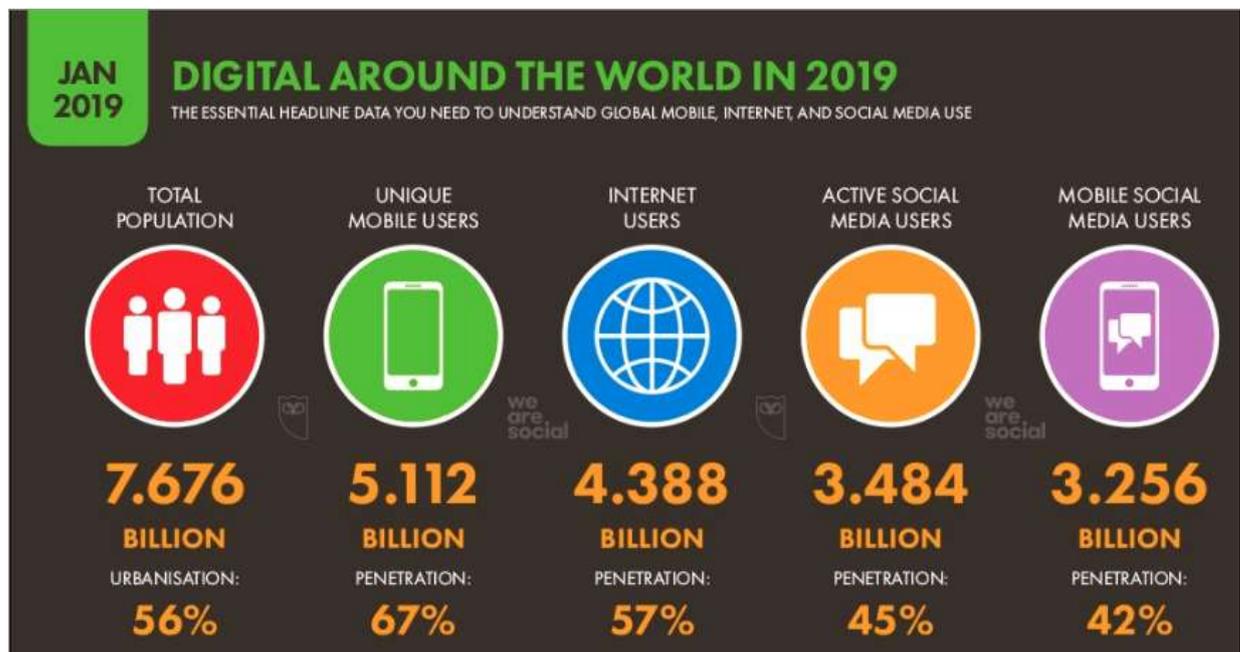
Source: smart insights 2019 social media stats update.

IMPACT OF SOCIAL MEDIA ON BUSINESS

Many businesses are using social media to promote their brand online, to associate with other brands that are influential, and to build proper business relations. Social media platforms can be used by organizations for various purposes like to achieve business targets, creating brand awareness, building brand loyalty, keeping in touch with present and prospective customers etc. Online media generates a two way communication between the company and its stock holders. Now a day's many organizations use the social media to expand their business and to draw in clients. Social media sites are primarily used by businesses for the purpose of networking and creating an image in the minds of their

prospective customers. Many social media strategies are used by organizations to promote their business online.

A. Positive Effect of Social Media on Business

- Business can promote themselves all around the world with the help of social media.
- Social media helps the organisations in better understanding of their customer demands and requirements.
- Social media can be used to provide a rich customer experience.
- Businesses can share their content effectively and reach a large number of audiences with the help of social media.
- Businesses can build client relations and deals through social media.
- Business can share the content regarding to it faster and easier due to such social media websites and applications.
- Social media can be used by organisations to spread information of its products and increase customer awareness.
- Social media can be used by organisations to gain market insight and other research purposes.
- Social media is a useful platform for the process of competitor analysis.

B. Negative Effect of Social Media on Business

- Social media can lead to bad word of mouth, as it allows significant number of people to post their opinions. The negative remarks can hamper the brand image of an organization.
- Such negative reviews from customers can prove harmful to the business.
- Social media requires experts and it can be time consuming sometimes.
- At present the web is crawling with content. New content is posted every micro second.
- Some of the organisations find it extensive to measure the consequences of social media promotions.
- Some social media strategies can cause huge blunders as people having different opinions are exposed to it and not everyone will take it from a certain perspective.
- Online reputation management is must for an organisation to survive in social media game.
- The following are the various goals of an organisation that can be fulfilled with the help of social media and the chart gives us an overview on the statistics.
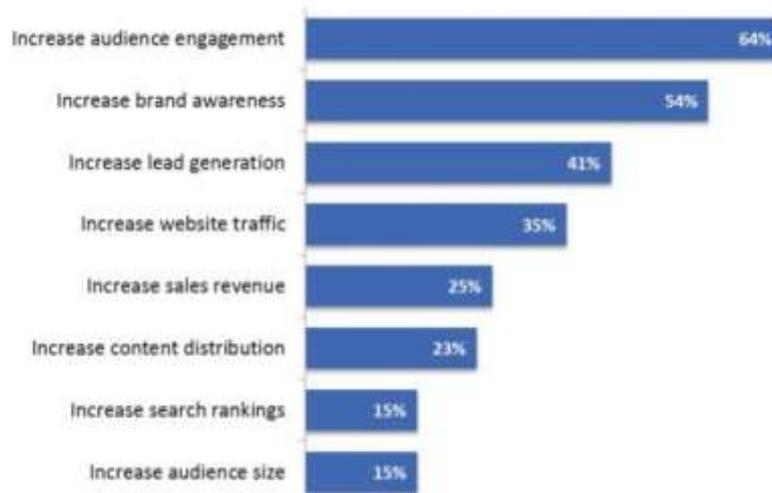
Social media marketing strategies survey by Ascend2 research partners 2019

IMPACT OF SOCIAL MEDIA ON SOCIETY

Social media and web based networking can cause a change in the life style of our society. As everyone has a free will to post their opinions, share content like images, videos, sounds on the internet it has become very difficult to segregate what is good for the society and what is harmful to the society. There are certain positive and negative effects of social media on the society.

A. Positive Effect of Social Media on Society

    Networking – social media connects the world in the most efficient way. Now distance doesn't matter anymore. People across the globe can connect with anyone at any time with total convenience. Location won't be a hindrance in the process of connectivity all thanks to social media. Social media has enabled everyone to share their thoughts and learn new things of different cultures.

    Information sharing – Now everyone can be updated with the latest developments around the world with the help of social media. It has been noticed that paid media not always puts the genuine message out there for the world to see, but social media sites can be used by people to be responsible and share the facts around the world and make everyone enlightened.

    Education- Students as well as teachers can learn a lot through social networking. One can enhance their knowledge by following an intellectual from their field of interest and connect with them in a single click. Regardless of location everyone can now educate themselves that also free of cost.

    Advertising and promotion- Along with organisation, individuals can advertise their talents, craftsmanship and ideas over the social media and get acknowledged in least possible time. Everyone can promote their small, medium or large size business over

internet with the help of such networking sites and gain popularity overnight. The whole world is open as a prospective market.

NGO's and other noble causes- Social media can be used by people to carry out noble causes like animal aid, and helping those who are in need. The public is making Use of social media for contribution for needy people and it can be a quick way to help such people.

Building communities- Likeminded people having similar interest can build their own communities and shared their thoughts over internet. This can be used for the betterment of society.

With the proper use of social media, businesses can connect with their prospective customers without any cost and in less time. Social media networking sites like Facebook, twitter, LinkedIn have gained immense popularity over time, and thus it has become the most preferred communication choice for many article writers, influencers, bloggers and other content creators. Social media also facilitates the people to meet others, share and exchange information with likeminded people, ask for opinions on certain topics and further enhance their network. With the help of social media ideas can be shared beyond geographical boundaries. The social media has enabled millions to unite on a huge platform; this definitely brings about a positive change in the society.

B. Negative Effect of Social Media on Society

Hacking- being one social media is a great responsibility as well. One needs to be very secure with their personal information that they share on social media. Many hackers can hack your personal information that is shared online.

Cyber bullying- many youngsters are found to be the victims of cyber bullying and that is a great concern. Social media if used negatively can lead to bullying and harassment as anyone has access to this platform and can make any comments by faking their identity. Dangers, terrorizing messages and gossips can lead to casualties of cyber bullying and may cause uproar in the society.

Scams and frauds- many scammers commit frauds and scams over social networking sites and naive people have been victims of such scams. Many such cases have been registered, people need to be very alert of who they have been sharing information and interacting with to avoid such incidents.

It can become addictive – the amount one spends on social media sites should be monitored and controlled by them. One should know when it has become an addiction and put a stop to it before it exasperates individual's life. Social media should be used for productive purposes instead of wasting precious time.

Reputation- if not used properly social media has the power to destroy one's reputation by spreading gossips and false stories about them.

One should not spend endless hours on social media as doing so may hamper a person's concentration and may also prompt unnecessary fixation. Sharing excessive personal data may also endanger one's safety and pose them towards danger. It is our responsibility to make most out of the technology and to guard ourselves from its demerits. Indeed social media also has influence over the minds of youth.

How to handle the influence of social media on the youth:

- Parents should monitor the kind of videos their teenage kids watch on Youtube and should try to set some limits and rules.
- Parents should discuss things like life choices, friendships, self esteem, sexuality with their teenage kids so that they can navigate the influence of social media on them.
- One should make the kids aware of the negative influences of social media, banning them from using these platforms is not a solution, instead the parents should make the kids aware of the pros and cons of this medium.
- If there is a necessity of banning some applications or games then the parents must explain the kids why they are doing so.
- The parents should encourage their kids to talk about their role models- it can be any celebrity or a famous person. Kids tend to follow their role models so the parents should know what values the role models are inculcating into your kids.

The following image points out the positive and negative factors of using social media platforms.
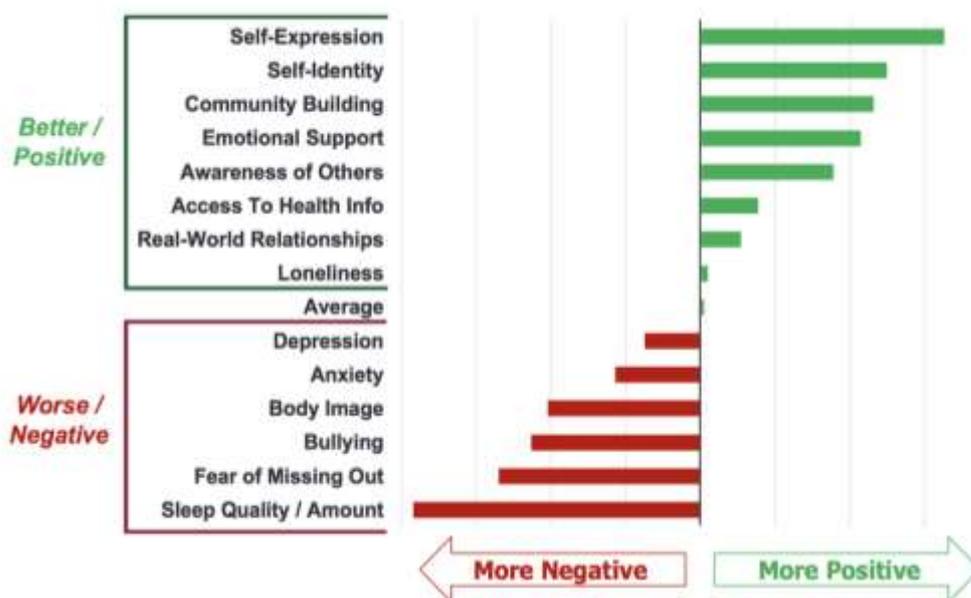
CONCLUSION

With the ever growing technology social media has become a vital part of everyone's life without doubt. According to one source there are 3.499 billion active social media users. On an average the daily time spent on social media is 142 minutes a day. About 91% of retail brands use more than 2 social media channels. More than 80% of small and medium businesses use social media platform to market their products and services. A study stated that 80% of teenagers felt that social media has a positive effect on their lives. Social media networking has a positive as well as negative impact on the minds of people. Many businesses use social media to fulfill their business goals. The youth is found to be in contact with these media every day. Social media has various merits but it also has a few faults which can influence the individuals greatly. False data and gossips can lead to

decline in productivity and can lower a person's self esteem; it can also hamper one's mind with a huge impact. In conclusion social media if used properly and responsibly; can yield great advantages. The citizens should adopt the positive aspects of social media websites and shield themselves from its cons. People should avail the benefits of this technology.

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A STUDY ON DEVELOPING WINE TOURISM WITH SPECIAL REFERENCE TO WINERY OF NASHIK

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Abstract

This study identifies the wine tourism product and the experience as well as factors that contribute to wine preferences and consumption. This is a case study of wine tourists' visiting the Nashik. The research results reveal that most of the visitors came to the wineries because they were on vacation, wine tasting and wine purchasing. The study further revealed that quality of wines, wine taste tour and value for money influenced their decision to purchase the wines. Overall, there were significant relationships found in demographic characteristics and wine references and these findings, have an implication for wine tourism promotion in the district in future.

Keywords: *Wine Tourism, Wine Preference, Branding*

Introduction:

Wine is increasingly seen as a life style beverage and a more acceptable and desired product. Nowadays, many wineries are recognizing the need to launch new products or brands to target existing and new markets more specifically, by addressing the preferences of wine buyers. Hall and Macionis (1998: 197) define wine tourism as "visitation to vineyards, wineries, wine festivals and wine shows" whereas grape wine tasting and/or experiencing the attributes of a grape and wine region are the primary motivations of the visitors. A wider definition offers that "experiential tourism occurring within wine regions provides unique experiences which include wine, gastronomy, culture, the arts, education and travel" (Dowling 1998: 78; Saayman & van der Merwe, 2014). In another definition VanWestering (1999) focuses mainly on the attractions of the wine regions such as heritage, landscape and the wine made (Carmichael, 2005). The winery tourism product is complex, and like other tourism products, it is "a bundle of activities, services and benefits that constitute experiences" (Medlick & Middleton, 1973). The wine tourism experience is based on agricultural land use and the production of wine that appeals to the senses of taste, smell and sight. As more wine regions develop and the wine sector further improves production concepts and strategies, or increases volume, quality, and recognition; the links between the wine and tourism products are becoming stronger (Alonso, Bressan, O'Shea & Krajsic, 2014).

The boom that wine tourism is experiencing means that more research on wine tourists is needed (Hall, Sharples, Cambourne, & Macionis, 2000), which are aiming to understand tourists' characteristics, motives, and preferences (Charters & Ali-Knight, 2002). In addition to exploration of the wine tourists, another element of interest is an analysis of the

correspondence existing between wine consumption and participation in wine tourism. The existence of a link between the preferences for the wines of a certain region and the trips made to that region will result in a series of important implications for wine tourism marketing (Navarro & Iglesias, 2009). Wine tourism demonstrates a symbiosis between tourism and agriculture that provides potential for their mutual benefit (Carmichael, 2005). According to Batra (2008), gastronomic tourism focuses mainly on the food and drink of a certain area that is interesting for tourists to go and visit because of the varieties of food or drink can be found there. Wine tourism research in Canada and specifically in Newfoundland is rather limited. Little research has been conducted on Newfoundland wines and wine tourism in general. The importance of wine tourism is very relevant for all stakeholders, since wine is often seen as a social lifestyle beverage. The aim of this article is to identify and provide a general profile of winery visitors with specific references to wine preferences in relation to key demographic variables such as age and gender. Further, the article examines the visitors' assessment of the wine tourism experience and service quality.

Wine Tourism Product & Experience

Mitchell and Hall (2006) give a comprehensive overview of the state-ofthe-art of wine tourism research. They identify seven themes from the literature: wine tourism product; size of the winery visitation market; winery visitor segments; behavior of the winery visitor; nature of the visitor experience; wine tourism and regional development; and biosecurity risks posed by visitors. None of these, however, is explicitly linked to creating a tourism strategy based on terroir. For the purposes of developing the conceptual framework for this paper, two of these themes will be further explored: wine tourism product, and wine tourism and regional development (Holland, Smit, & Jones, 2014). Batra (2008) notes that previous studies have identified numerous factors that have been found to have an impact on the wine selection process (Batt & Dean, 2000; Jenster & Jenster, 1993; Koewn & Casey, 1995). When a product has a high proportion of attributes that can only be assessed during consumption (experience attributes) like wine (Chaney, 2000), then the ability of consumers to assess quality prior to purchase is severely impaired. As wine tourism research continues to grow, it is important especially for the small and medium sized wineries to have a better understanding and outlook of the consumer. This will eventually aid in developing strategic planning for their market not only in the Province but also countrywide and globally. It is argued that the demand for wine tourism is driven by desire to purchase wine, interest in learning more about wine, opportunity of social interactions, and health reasons (Batra, 2008., Hall et al., 2000; Mitchell, Hall, & McIntosh, 2000). Therefore, the overall product experience in winery visitation would include various enticements such as scenery and cost of the wines. Wine tourism is considered as a form of agri-tourism and by being seen as a distinct niche market that is gaining popularity in wine producing regions. Carmichael (2005) points these wine producing regions are generally aesthetically pleasing with congenial climates. However, despite recent interest in wine tourism

among the academics, little is known about the characteristics of the winery visitors (Charters & Ali-Knight, 2002; Dodd & Bigotte, 1997; Getz, 1999), the complexity of wine tourism product, and the manners of marketing or management (Hall et al., 2000). Wine tourism does not only involve visiting wineries and purchasing wine but also a broader range of experiences. Williams (2001: 9) conceptualizes wine tourism as "the culmination of a number of unique experiences, such as the ambience, atmosphere, surrounding environment, regional culture and cuisine, local wine styles and varieties". One challenge for managers that requires much more attention is to create memorable experiences in order to obtain loyal winery visitors (Cole & Chancellor, 2009, Saayman & van der Merwe, 2014). Table 1 shows the theory developed by Pine and Gilmore (1999) describes four stages of economic progression that starts from commodities to goods and services and eventually turns into memorable experiences. Their application of the 4Es revealed that esthetic had the greatest influence on establishing a memorable wine-tasting experience. Some other studies (Saayman & van der Merwe, 2014) also targeted to identify the factors that affect memorable experiences (Axelsen & Swan, 2009; Cole & Chancellor, 2009; Taylor & Shanka, 2007; Yaun, Cai, Morrison, & Linton, 2005; Yaun & Jang, 2007).

Research Methodology:

The study consisted of the wineries in Nashik. The survey was conducted through the use of a questionnaire and by the participation of the visitors after their winery tour of the facility. This methodology allowed that the visitors had vital information to respond regarding their overall experience of the winery. After a brief explanation of the purpose of the research, the respondents were asked if they were willing to participate. Only those who responded in affirmative answered the questionnaire. No form of compensation was provided. A total of 200 useable surveys were collected. Data analysis was done using SPSS 20.

Objectives:

1. To study the differences of wine usage by age group.
2. To study the differences of wine usage by gender.
3. To understand the gender wise wine preference of consumers.
4. To analyse the Factors Influencing Decision to Purchase Wines.

Hypothesis:

1. There is no significant association between ages and wine consumption
2. There is no significant difference between wine preferences based on gender

Data Analysis

This section presents the research results to provide an overview of the winery visitors, their preferences, motivations and wine tourism experiences.

Demographic Analysis

The majority of the winery visitors (26%) were at the age group of 56-65 with the females at 54%. Sixty-eight percent of the visitors were married. Taking a vacation is vital for all participants, without related to education, level of income or occupation. Half of the visitors had university education and 36% were retired. Expenditure estimates are usually characterized by a high degree of error but are still useful in providing an approximation of consumer behaviour and economic impact in a destination. Twenty-nine percent had an income above than Rs. 12,00,000 per annum, and 24% were in between Rs.4,00,000-Rs. 8,00,000 per annum. Eighty-one percent of the visitors were India followed by American (11%), Australians and Norwegians (1%) each. Other visitors were from Scotland, Czech Republic, The Netherlands, Italy, Portugal, Ukraine, Africa, the U.K. and Germany.

These results however, are a good indicator that domestic tourism is significant for the growth of the region. Many visitors prefer the convenience and comfort of travel, thus they would prefer to use their own vehicles rather than using hired vehicles, drivers or guides. It should also be noted that 45% of the respondents were travelling with their family members, 15% with spouse, and 15% with family members/friends. The examination of the impact of tourist destination image and reputation on visitor loyalty likelihood reveals that even a potential visitor who has not had experience with the destination may form perceptions from sources of information like advertising or word-of-mouth. Hence, the amount and type of information visitors receive before their trip or onsite influences visitor interest in traveling to a particular destination. To determine important sources of information, visitors were asked how they got the information regarding the wineries. Word of mouth (38%), family and friends (38%) were followed by brochures (27%), and travel guides (17%).

Table 1. Difference of Wine Usage by Age Groups

Variables	Age						P
	<26 %	26 – 35 %	36 – 45 %	46 – 55 %	55 – 65 %	> 65 %	
Special occasions	72.3	63.2	61.2	41.6	52.9	24.1	.646
During meals	41.5	51.2	51.6	41.6	52.9	61.9	.023*
Wine tours	41.5	36.1	55.9	23.6	40.2	17.6	.038*
When offered as a gift	32.9	30.4	50.6	24.1	38.3	16.2	.047*
Social gatherings	88.8	71.9	46.4	57.0	59.8	46.7	.339

* $p < 0.05$

Table 1 presents the results of wine usage across different age groups. Significant differences were recorded in cases where wine was taken during meals where the age group above 65 years had more cases of consumption than other age groups. Also, during wine tours, the age group 36 – 45 years had more cases than other ages whereas the age group above 65 years had the least cases. Similarly, a significant difference with the highest consumption was found in the

cases where wine was given as a gift in the age group of 36 – 45 years. In all the other occasions, the results indicated a significant value of >0.05 indicating no association between ages and wine consumption during the special occasions, and social gatherings.

Table 2. Differences of Wine Usage by Gender

Variables	Male		Female		p
	f	%	f	%	
Special occasions	44	47.8	57	53.3	.447
During meals	49	53.3	55	51.4	.613
Wine tours	38	41.3	32	29.9	.016*
When offered as a gift	29	31.5	32	29.9	.766
Social gatherings	61	66.3	58	54.2	.006**

* $p < 0.05$; ** $p < 0.01$

The results in Table 2 shows significant differences in locations where wine was taken during tours. The male had more cases than the female who had consume wine during wine tours. Statistical difference between wine consumption during social gatherings was also found between the genders where males had more cases of consumption during social gatherings than females. This may be due to the fact that most females may be cautious in responding to the survey and do not drink as much alcoholic beverages as men do.

Table 3. Wine Preferences by Gender

	Male		Female		p
Wine preferences	f	%	f	%	
Red wine	21	21.0	21	21.0	.469
White wine	17	17.0	9	9.0	.728
Sparkling	8	8.0	13	13.0	.037*
Rose wine	8	8.0	8	8.0	.926
Fortified wine	6	6.0	6	6.0	.738
Dessert wine	7	7.0	10	10.0	.805
Fruit wine	12	12.0	11	11.0	.416
Imported	21	21.0	22	22.0	.447

*$p<0.05$

Table 3 shows wine preference in relation to gender where only sparkling wine indicated a significance difference. The female respondents had more preference compared to the males

(p< 0.05). Other wine types indicated no significant difference between preferences based on gender.

Since the wineries rely heavily on word of mouth as a source of generating visitor traffic, it is paramount that the quality of experience offered to the tourists is high in order to attract new or repeat visits. The survey respondents (88%) felt that the service they received were excellent in terms of knowledge of staff, variety of wine tasting and adequate information material. Future research may look into the service level they perceived vis-à-vis the service level expected by the visitors. The results of this study show that Newfoundlanders offer good hospitality, friendliness and kindness to the wine tourists.

Table 4: Factors Influencing Decision to Purchase Wines

Factors	Very Important (%)	Important (%)	Not Important (%)
Wine taste tour	54.0	23.0	23.0
Tour guide recommended	39.5	26.5	34.0
Quality of wine	71.0	22.0	7.0
Souvenir	28.0	30.0	42.0
Aroma	37.5	38.5	24.0
Value for money	51.0	33.0	16.0
Service received	55.0	33.0	12.0
Brand label/loyal	30.0	24.0	44.0
Gift	39.0	27.5	33.5
Support local economy	48.0	39.0	13.0

The visitors rated (Table 4) good quality wines (71%), wine tasting tour (54%), value for money (51%), the service received (55%) and supporting local economy (48%) as very important factors that positively affected to their winery visits. Therefore, good quality of wines would evidently increase sales, visitor spending, and support local economy. However, brand label/loyalty (44%) and purchase as a souvenir (42%) were not considered important by the respondents.

CONCLUSION:

There has been no study on wine tourism in Nashik, hence this study sets the stage for future research in this area. The results of this study reveal an interest in wine tourism in Nashik based on the findings. The study both attempt to broaden the scope of wine tourism in Nashik, and to add knowledge of wine tourism in India. There's limited number of wineries in Nashik and less competition in the area. However, this research can help the wineries to ensure and to maintain quality experience for the visitors in competitive markets both in India and around the world. Additionally, the aspect of word of mouth is a key in marketing of wine tourism in

Nashik as evident in the results. Findings reveal that good quality of wines influences purchase and consumers should be involved in the production process.

Management should maintain the quality of experience, as wine tourism in the province develops. There will be a need soon for additional infrastructure as well with the increase of the visitor numbers. As identified in the literature, education is a key motivation of visit to wineries. The wineries in this study will do well in adding a comprehensive component in their product. For example, focusing on the wine experience through various educational opportunities should further pull tourists to the province. Towards this direction, Mitchell and Hall (2006) suggest that greater attention should be paid to the educational function of winery visits to enhance consumers' wine knowledge. Special introductory wine tasting and educational events could be designed for homogeneous groups of wine tourists. Newsletters and invitations to wine related events can be used as tools to retain contact with visitors.

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An Analytical Study of Manpower Requirements in Housing Sector

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1. Construction Industry in India

Construction industry has two primary segments – 1) real estate which includes residential buildings, industrial construction like factories, IT parks, commercial construction like shopping malls, hotels etc. and, 2) infrastructure which includes roads and highways, bridges, flyovers, airports, urban infrastructure etc.

The Real Estate segment contributes around 24% to the Construction GDP of India while Infrastructure segment contributes around 76%.

Figure 1: Share of Real Estate and Infrastructure by GDP contribution
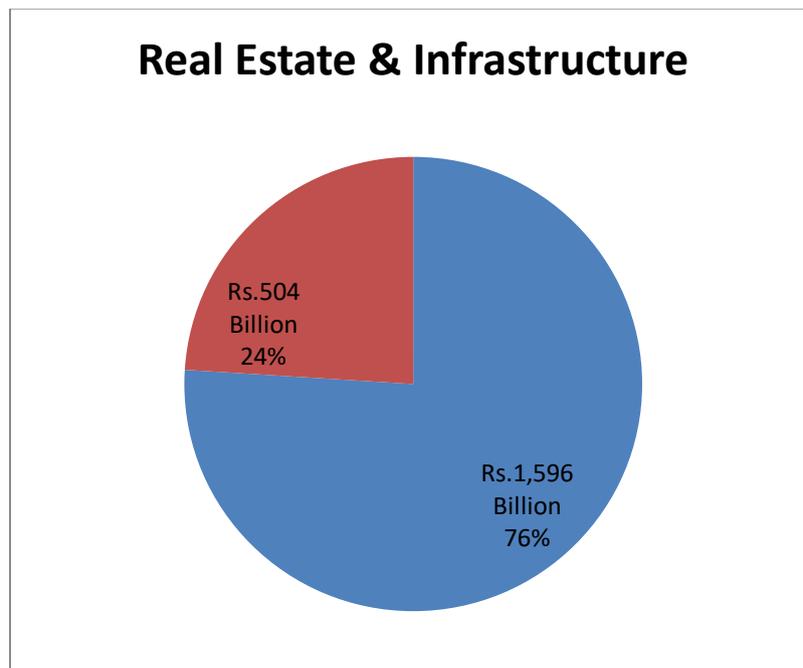
Source: Economic Survey 2007-08, IMaCS analysis

2. Real Estate Sector

In terms of GDP contribution, Real Estate sector is estimated at around Rs. 504 billion in 2007-08.

The market size of the Indian real estate sector is estimated to be around Rs. 2,643 billion in 2007-08.

The sector has been growing at a CAGR of 12%. It is constituted of the Residential, Commercial and real estate activities of Special Economic Zones.

Figure 2: Real Estate Segments
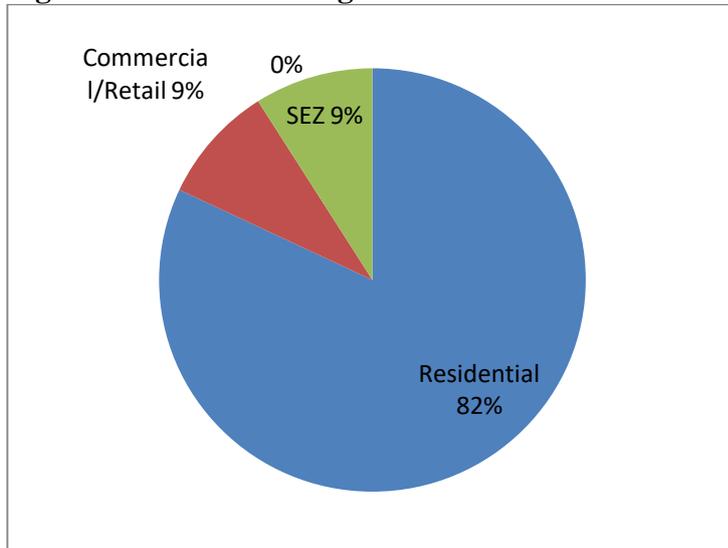
Source: Research Ministry of Commerce and Industry, IMaCS analysis

3. Housing

At around Rs. 2,171 billion, the housing sector is estimated to grow at 12% in the long team. Demand for housing is estimated to be around 4.8 million houses per year over the Eleventh Five Year Plan period. In addition to the need for new housing tenements, the demand is also likely to be fuelled by the housing shortages already prevalent in several states. The shortage of housing across several states, as illustrated in the graph below, amounts to about 25 million houses in the period of the Eleventh Five Year Plan.

Figure 3: Housing Shortage by State over of the Eleventh Five Year Plan (million houses (% of Share of Various states)
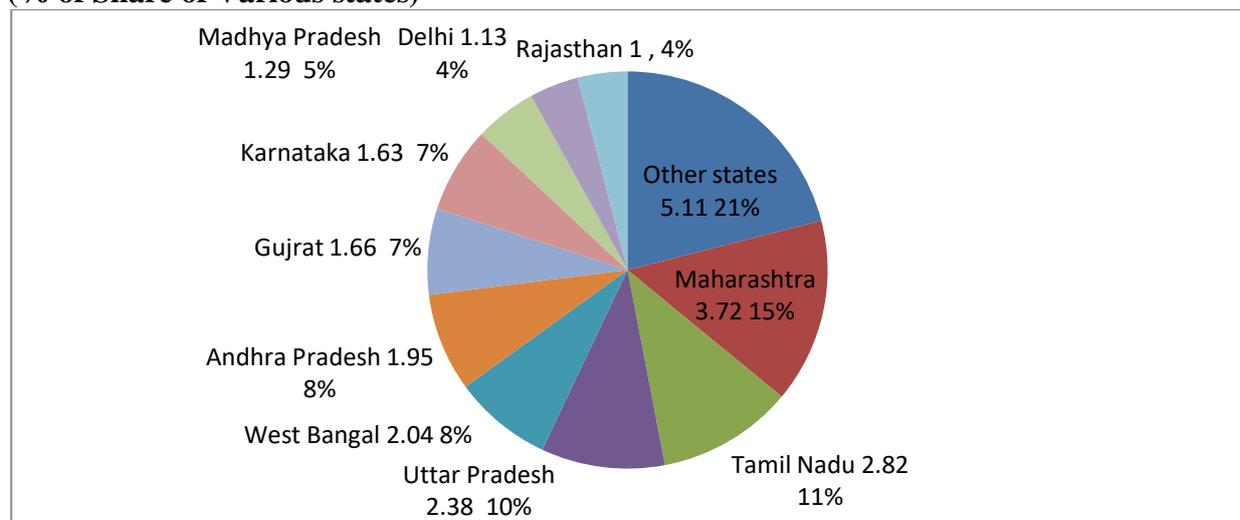
Source: Planning Commission Working Group on Urban Housing, 2007

4. Demand drivers for Housing Sector

<u>Favorable demographics-</u> The demographics work strongly in favor of the Indian Construction Industry. India is the second highest populated country in the world after China. India's estimated population as of March 2008 is 1.14 billion, while the average age of Indianans in 26 years. The demographic profile indicates that India's working population forms around 61% of the total population. India is and will remain one of the youngest countries in the world led to rise in middle class segment. This segment's rising purchasing power and propensity to consume is expected to drive and support a robust growth rate of the economy in the coming years. The middle class along with robust macro-economic scenario and changing demographic profiles has a major role to play in the growth and emergence of the Construction Industry in India.

<u>Urbanization and Migration-</u> The decadal growth rate of urban population (20% between 1991-2001) in India is higher than the rural population (18% during the same period). Average annual rate of change (AARC) of the total population in Indi during 2000-2005 is estimated at 1.41% with 2.81% for urban and 0.82% for rural sectors. AARC for Urban areas by 2025 will increase to 2.25% whereas the AARC for rural population will decline to -0.4% showing a clear shift of population from rural to urban areas.[3] the average household size has been estimated by the National Sample Survey Organization as being around 4.47 in urban areas and only 67% of the houses are pucca units.

Though there is a slump in the real estate activity in the last one year, investment over the long term will be primary led by housing, which is expected to account for nearly 90% of the total real estate sector.

5. Human Resource and Skill Requirements in the Building Construction and Real Estate Sector

The Building, Construction and Real Estate sector in India currently employs around 33 million persons. Around 30% of these are employed in the Real Estate segment, while the remaining 70% is employed in Infrastructure segment.

Figure 6: Breakup of employment in Building, construction and Real Estate sector in India
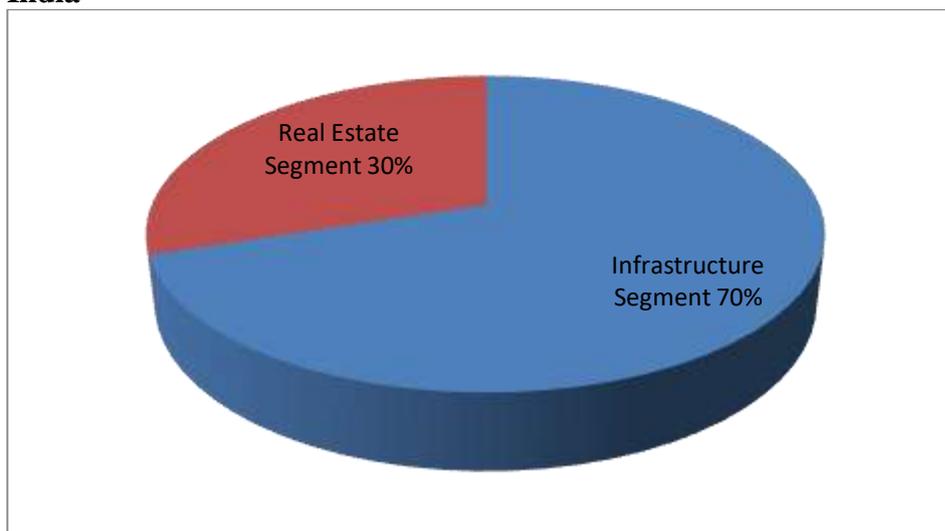
Source: Economic Survey 2007-08, CREDAI, Primary Research and IMaCS analysis

It was estimated by the Planning Commission that the Construction industry employed 31.46 million personnel in 2005

Table 1: Employment in Indian Construction Industry

Occupation	Numbers employed in 1995(in 000's)	Numbers employed in 2005(in 000's)
Engineers	687	822
Technicians and Foremen	359	573
Clerical	646	738
Skilled Workers	2241	3267
Unskilled Workers	10,670	25,600
Total	14,600	31,000

Source: Report of the Working Group on Construction for the 11th Five Year Plan, Planning Commission, Government of India

The bulk of the work force at around 82.5% constitutes unskilled workers, 10% constitutes the skilled workers and the rest is constituted by engineers, technicians, foremen and clerical staff.

Figure 7: Breakup of employment in Building, Construction and Real Estate sector India education wise
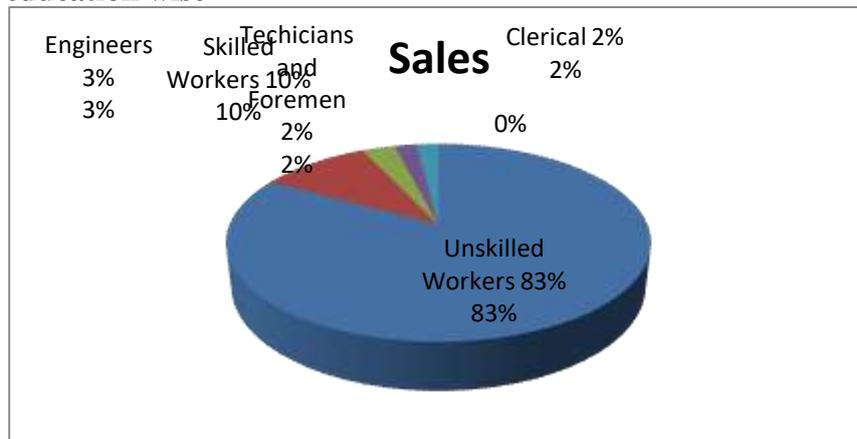
Source: Report of the Working Group on Construction for the 11th Five Year Plan, Planning Commission Government of India and IMaCS analysis

6. Functional distribution of human resource

As seen in the table below, a significant proportion of the workforce is involved in the core operations (i.e. at the construction site). Further, this proportion is similar across the Real Estate and Infrastructure segments.

The following table presents the functional distribution of personnel employed by the project developer (it does not include construction workers, who form the largest portion of the workforce as shown later), as these persons are typically employed on a contract basis.

Table 2: Functional distribution of human resources in Building, Construction and Real Estate sector in India (persons employed directly by builder/developer)

	Function	Distribution
Operations	Project managers	2-3%
	Engineers/Supervisors	23-25%
	Foreman(shuttering, steel, concrete, finishing, etc)	8-10
	Account/Billing/Stores	7-8%
	Planning	1-2%
	Surveying	1-2%
	Quality/Lab	3-4%
	Safety	5-6%
	Support functions (mechanics, electrician, security, etc.)	9-10%
Projects (design, overall planning & scheduling, procurement, etc.)		15%
HR, Admin, Finance, Communications, IT		15%

Source: Primary Research and IMaCS analysis

The personnel employed in these functions and the amount of labour personnel required, will depend on the type of construction (high-rise/ low-rise building, industrial plant/ residential building, property footprint, etc).

7. Distribution of human resources by education level

The following table represents the education-wise composition of Construction personnel across various segments of the building, construction and real estate sector in India. As seen, most of the persons employed in this sector are those with minimal education.

Table 3: Distribution of human resource by education level across the industry

Education Qualification	Distribution
Ph.D./ Research/ CA/ MBA/ etc.	1%
Engineers	2%
Diploma or equivalent certificate by other agencies	2%
ITI and other vocational Courses	13%-14%
10th Standard or below	81%

Source: Primary Research and IMaCS analysis

8. Profile of people employed

The profile of the people employed in the Real Estate segment and Infrastructure segment at the field level, i.e. on the construction site is similar and the following table illustrates this profile:

Table 4: Profile of people employed in the Housing Sector and Real Estate Sector

Qualification	Post in Housing Sector	Post in Real Estate Sector
Graduate engineers/ post graduate engineers (relevant field experience important)	Project Manager	Project Manager
Mainly graduate Civil engineers, some graduate mechanical engineers	Engineers	Engineers
Diploma engineers/ it is with experience	Supervisors	Supervisors
Mainly it is (can be own/ contractual employees)	Skilled Workmen	Skilled Workmen
Minimally educated (mainly contractual employees)	Unskilled Workmen	Unskilled Workmen

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E-COMMERCE AND IMPACT ON THE BRICK AND MORTAR STORES-AN ANALYTICAL STUDY (2010-2015)

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Abstract
Development in India as an application of the internet, e-commerce is a booming new business model in India, as an adjunct to the growth of internet usage. India is termed as one of the most attractive e-commerce markets in the world in terms of market size, internet user numbers, and potential B2C users; but in reality, India's e-commerce is lagging far behind in other countries in terms of market size and scope.
The low speed and high cost of online access were major barriers to access e-retailing in India. The average internet speed in the world was 1.5 Mbps while the average speed of the internet in India is only 772 kbps.

Many technologies and service plans for Internet access allow customers to connect to the Internet. In the 20th century, the dial-up connection was the means for Indian consumers to access the internet. But in the 21st-century broadband became popular as a means of Internet access. So India has limited Internet access compared to the world. Though it has shown signs of improvement as in 2011, the internet access increase as common methods of access is Dial-up, ADSL, Internet over cable television lines, Wi-Fi hotspots, wireless internet service provider, mobile broadband and internet satellite.

Keyword: Internet, E-Retailing, Technologies, Service Plans.

Introduction The Electronic Commerce, or e-commerce, the industry is termed as one of the most progressive sectors in the economy. Electronic commerce and is commonly known as E-commerce or e-Commerce, is also defined as trading in products, or services that are using computer networks, such as the Internet.

Electronic commerce which also draws on various technologies such as mobile commerce electronic, supply chain management, electronic data interchange (EDI), online transaction processing, internet marketing, inventory management systems, and even the automated data collection systems. An e-commerce transaction can also be defined which is carried between various enterprises, households, individuals, governments, and even other public as well as private organizations. Included in these electronic transactions are those orders which are also made over the web, extranet or even electronic data interchange. This type of transaction is made and is defined by the various method of placing the actual order. Normally it is excluded where there are orders that are made via telephone, fax calls or even manually typed e-mails. The term retail is also used about transactional processes that are made around online retail.

"E-Commerce is a concept which is covering any of the form of business transactions or the information exchange which is executed by using the information and communication

technology and is between companies and the public administration." E-commerce is the actual buying and selling done of goods and services, or say even transmitting of funds or data done which is over an electronic network, which is primarily done via the Internet. These business transactions are:

1. Business-to-Business-B2B.
2. Business-to-Consumer-B2C.
3. Consumer-to Consumer-C2C.
4. Consumer-to-Business-C2B.

Review of literature

According to Arvind Panagariya (2000), he has reported that access made to e-commerce, which in the WTO parlance often means actual access to e-exports, that has two components and that must be distinguished sharply. Access made to Internet services and access to their services that can also be traded electronically.

According to Elizabeth Goldsmith and Sue L.T. McGregor (2000), it was analyzed the impact made on e-commerce on consumers, public policy, business, and education. A discussion was made on the public policy initiatives, research questions and various ideas made for future research are to be given in detail.

Company Profile

Amazon was started and was began with its founder's savings, with a loan from the bank and family. It has began as a destination to buy books, and eventually combining with the other media. It was then offered in different marketplace services for varied online retailers and/or individuals, while simultaneously it is selling other physical goods for homes, offices, cars, and even beyond. The company is a giant in the online retails with a tremendous set of product range and they will make every possible attempt made to customize the buyer's experience.

Since 2000, customers can also find the actual set of goods which are listed by third-party sellers to individuals or small companies and even retailers like Target and Toys 'R Us, used goods, refurnished goods, and even auctions. The embedded marketing techniques that even Amazon also employs to personalize shopper's experience that is probably the best example of the company's which is an overall approach to sales by knowing its consumers very well. Customer experience goods also deal when they visit Amazon.com, from the special offers and even the featured products to some customized recommendations and to attract personal shoppers. Amazon is also able to lead the industry as it has been sensitive to the macro environment changes throughout the world, by trending consumer buying behavior and keeping track of the fast development of technology in every business aspect.

Research Methodology

Research Methodology includes the type of primary and secondary research used for this project i.e. the way in which the data are collected for the research project. The methodology will also include the plan for sampling, the relevant field work and the analysis tools to be used to interpret the data so collected. Methodology refers to more than a simple set of methods; rather it refers to the rationale and the philosophical assumptions that underlie a particular study. A Research Design provides the framework to be used as a guide in collecting and analyzing data. Research can be Exploratory, Descriptive or of Casual type. Amongst this

Descriptive Research Design has been chosen to carry out this project. Descriptive Research is carried out with definite objective(s) and hence it results in definite conclusion. This research tries to describe the opinion of the respondents on the selected topic of the project.

Objectives of Study

•   To compare the latest reckoned market force - E-Commerce with the traditional type of business – the Brick & Mortar stores.

•   To understand the trend of E-Commerce & its origins.

•   To study how E-Commerce is gaining popularity and whether it has a potential to overshadow conventional business practices.

Hypothesis

The study aims at testing the following hypothesis

▪   E-Commerce is emerging as a significant threat to the Brick & Mortar stores.

▪   E-Commerce is the future as consumers gain price benefits and it saves a lot of resources.

Data analysis
Hypothesis

To test the hypothesis "E-Commerce is emerging as a significant threat to the Brick & Mortar stores" one way ANOVA is applied using SPSS ver. 20, taking mode of purchasing as fixed factor and advantages of e-commerce as dependent factors.

ANOVA		Sum of Squares	df	Mean Square	F	Sig.
Wide variety of products	Between Groups	145.629	1	145.629	114.830	.000
	Within Groups	631.571	498	1.268		
	Total	777.200	499			
Possibility for comparisons of price & terms	Between Groups	173.450	1	173.450	147.465	.000
	Within Groups	585.750	498	1.176		
	Total	759.200	499			
Time Saving	Between Groups	127.012	1	127.012	105.783	.000
	Within Groups	597.938	498	1.201		
	Total	724.950	499			
Easy buying procedure	Between Groups	162.178	1	162.178	152.956	.000
	Within Groups	528.022	498	1.060		
	Total	690.200	499			
Various modes of payment	Between Groups	177.420	1	177.420	150.692	.000

	Within Groups	586.330	498	1.177		
	Total	763.750	499			
Joy in shopping experience	Between Groups	187.741	1	187.741	182.444	.000
	Within Groups	512.459	498	1.029		
	Total	700.200	499			
Quality	Between Groups	150.928	1	150.928	132.322	.000
	Within Groups	568.022	498	1.141		
	Total	718.950	499			
Price	Between Groups	175.621	1	175.621	160.970	.000
	Within Groups	543.329	498	1.091		
	Total	718.950	499			
Discount	Between Groups	124.734	1	124.734	110.871	.000
	Within Groups	560.266	498	1.125		
	Total	685.000	499			
Reliability of Websites	Between Groups	158.018	1	158.018	113.721	.000
	Within Groups	691.982	498	1.390		
	Total	850.000	499			
Mode of payment	Between Groups	154.272	1	154.272	114.552	.000
	Within Groups	670.678	498	1.347		
	Total	824.950	499			
User review about product	Between Groups	129.971	1	129.971	112.796	.000
	Within Groups	573.829	498	1.152		
	Total	703.800	499			

The above table gives the F value and p-value of the factors representing advantages of online purchases i.e. e-commerce compared to brick and mortar system. It is found that in case of all the factors the p value obtained in 0.00 which is less than the alpha value of 0.05 (P<0.05) which states that respondents find significant advantage in purchasing products online as compared to brick and mortar system, this can be treated as threat to brick and mortar system. Hence the hypothesis i.e. "E-Commerce is emerging as a significant threat to the Brick & Mortar stores" is **accepted**.

Conclusion

- The study concludes that majority of respondents shop online are in the age group of 25 to 35 years. And the least respondents are in the age group of below 25 years and from 45 to 55 years. This is because the age group between 25 to 35 years is employed and earns income. So their purchasing power is more. Being young they are more active on internet and in shopping. Hence they tend to shop online on higher scale. Whereas, below 25 years group is student group who are not earning income hence their purchasing power is weak.

And on the other hand the age group between 45 to 55 years is matured and responsible group which tends to be less attractive to shop online.

- The study concludes that, the graduates are more shopping online as compare to other categories of education. This is because the large number of consumers comes in the category of graduation who shops online because of various reasons like time, age, money, decision making and trend.

- The study concludes that, nuclear family tends to do more shopping on online. This is because in nuclear family there is more of independency for each member in family in terms saving and spending habits as compare to joint family. Lesser the number of members in family results into more tends to shop online.

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Returns and Volatility linkages of Nifty 50 with Major World Indices

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ABSTRACT

The present study examines the linkages between equity indices of India, US, UK, China, Hong Kong, Korea and japan. Cointegration analysis of Johansen-Juselius with daily data from January 2008 to December 2018 suggests that there is one cointegrating vector as per the Trace statistic. Also, results of pairwise cointegration test indicate that India is cointegrated with US and China. Results of granger causality reveal that past returns of stock index in one country influence future returns in other countries, except for India-US, India-UK, Hong Kong-India and Japan-India. Results of granger causality on conditional variance series show there is two-way volatility spillovers between the markets of India-US and India-Japan. Also, there is unidirectional volatility spillover from India to Hong Kong. The findings of the present study have useful implications for economist, money managers and investors.

Keywords: Cointegration, Volatility spillover, Granger Causality

Introduction

In the last few decades, the world economies have become more integrated due to expanded trade, and increased co-operation among national governments. Economic and financial integration leads to removal of barriers and free flow of physical, financial and human capital, goods and services beyond the national boundaries (Gerrits&Yuse, 1999). In India, the process of Globalisation was started in the year 1991 by various economic reforms which opened the doors of Indian markets for foreign investment. Moreover, the Indian financial market regulators encouraged the domestic firms to get listed on the international stock exchanges (Raj & Marcus, 1999).

Although integration offers several advantages, the consequences of integration may become severe when global markets face economic or financial crisis. This is because, at the time of recession or crisis, markets become more correlated with each other and the possibility of crisis spreading to integrated markets, called contagion goes up (Raj & Marcus, 1999). Due to increased mechanisation and digitisation leading to increased information flow, the equity market of India is expected to be more integrated with the global stock markets. In this backdrop, it becomes important to examine the linkages of India with major stock markets of the world. In spite of the fact that several studies are available which have explored the interrelationships between the equity markets of various economies, there is scope for more research in this area owing to the importance of the topic and mixed findings of the previous studies.

The primary aim of this article is to investigate returns and volatility linkages of Indian stock market (Nifty 50) with world's major equity markets, i.e. U.S. (S&P500), U.K. (FTSE), Hong

Kong (Hang Seng), Korea (Kospi), Japan (Nikkei 225) and China (SSE Composite). For examining the long-run relationship among the markets, we use Johansen cointegration analysis and find that there is one cointegrating vector. Also, results of pairwise cointegration test indicate that India is cointegrated with US and China. Test results of Granger causality based on bivariate VAR reveal that past returns of stock index in one country influence future returns in other countries, except for India-US, India-UK, Hong Kong-India and Japan-India. In addition, the results of granger causality on conditional variance series show there is two-way volatility spillovers between the markets of India-US and India-Japan. We also find unidirectional volatility spillover from India to Hong Kong. The findings of the present study have useful implications for economist, money managers and investors.

The remainder of the article is arranged as follows. Section 2 demonstrate review of literature; section 3 details data and methodology, section 4 discusses empirical results and section 5 concludes.

2. Review of Literature

Eun and Shim (1989) investigate long run interdependence between daily times series returns of nine equity indices using vector autoregression (VAR) technique to understand the mechanism of transmission of innovations among these indices. This study exhibit that there is substantial interdependence existing between selected stock markets. Also, they find that all nine stock markets are influenced by US market. So, this study supports that markets are informationally efficient in long run.

Chan et al. (1992) explore the linkages between Singapore, United States, South Korea, Taiwan, Japan, and Hong Kong by using Unit root and pair wise cointegration tests. Prices of all the stocks are analyzed to test for global market efficiency individually and collectively. The authors find no long run relationship between equity prices using higher-order and pairwise cointegration tests. The findings indicate that the stock prices in United States and major Asian markets are weak-form efficient in the long run which also implies that there is possibility of international diversification between the markets.

Arshanapalli and Doukas (1993) provide new methods of dynamic linkage and interdependence between stock market movements. Their findings are like previous research that revealed strong integration between equity markets prior to October 1987, but after period of october1987, they find that degree of cointegration between stock market indices has increased significantly apart from Nikkei index. For the post-crash period, they find that German, UK and French markets are impacted by US market. Also, their findings show that innovation of US stock market has received consistent response by German, UK and French markets, which shows cross-border efficiency of stock markets. Finally, they conclude that, during above specify crash period, the performance of Japanese equity market has no link with Germany, UK and French stock markets.

Chowdhury (1994) investigates the interrelationship between National asset markets. He examines the interrelationship between the equity markets of four emerging Asian countries-Korea, Hong Kong, Singapore, and Taiwan. He also studies the equity markets of US and

Japan and their relationship with Asian countries. The results suggest that strong interdependence exists among the equity indices of Singapore and Hong Kong and those of Japan and the US. On the other hand, Taiwan and Korea showed no response to innovations in international markets due to severe restrictions on cross-country investments. Finally, he reports that stock markets of four Asian countries are influenced by the US equity exchange, but US exchange is not influenced by the four Asian equity exchange.

Elyasiani et al. (1998) explore the long run dynamic interdependence among the Sri Lankan equity market and the markets of its major trading partners (US, India, Taiwan, Singapore, South Korea, Japan and Hong Kong,) by applying the vector autoregression (VAR) model. The empirical results suggest that there is no considerable interlinkage is found among the stock market of Sri Lanka and the capital markets of the selected US and the Asian markets. So, finally they conclude that stock market of Sri Lanka is provide international diversification benefits for foreign investors in long run if liquidity problem is eased.

Gerritsand Yuse (1999) examine links among stock indices in different countries i.e. UK, Germany, US and Netherlands by using daily closing prices of stock over period from March 1990 to October 1994. They use Unit root test and vector error correction model on prices of select equity indices. Results of the tests show that European markets are significantly impacted by US market. Further, the three European markets are found to influence each other in the short and long run. Therefore, the portfolio risk can't be completely reduced diversification between these national stock markets without sacrificing the expected return.

Ng (2002) investigates the interrelationships among the South-East Asian stock markets in the 1990s. However, there is no sign of cointegration among the selected equity markets for the period 1988 to 1997 were found. Their results explain that there is close integration of the Filipino, Indonesian and Thai equity markets with the Singapore equity markets. Also, the Malaysian stock market is closely integrated with Singapore stock markets.

Click and Plummer (2005) investigate the correlation between five major stock markets of Association of Southeast Asian Nations countries (ASEAN-5) to find out the integration among these countries i.e. (Indonesia, Philippines, Malaysia, Singapore and Thailand) which is useful for portfolio Investors. They examine long-run relationship by using cointegration technique to find whether selected stock markets are integrated or segmented over weekly or daily data period from July 1, 1998 through December 31, 2002. They find only one cointegrating vector between these 5 stock markets and concluded that these markets are integrated in economic sense but not completely integrated.

Srikanth and Aparna (2012) measure the degree of stock market co-movement by using monthly average prices of NASDAQ, Hang Seng, NYSE, S&P 500, Nikkei 225, FTSE 100, SSE composite Index and BSE-Sensex. They use co-relation t-test on selected stock market indices & computed multiple correlations. BSE-Sensex has high coefficient of variation when compared to other indices. SSE composite index has revealed strong correlation with BSE Sensex and Hang Seng. Nikkei 225 has shown strong correlation with all the stock indices

except Hang Seng, Sensex and SSE composite index. FTSE 100 has shown strong association with all the stock market of US and Nikkei 225.

Gupta et al. (2019) examine the relationship between the international equity markets. Their study is based on five emerging stock markets of Asia, namely, China, Japan, Taiwan, Indonesia and India. Cointegration and stationarity tests are conducted to examine the dynamic interlinkages between selected markets. The results of ADF test conclude that there is integration of order one, I(1) between the prices of all stocks. For Cointegration test, Gregory Hansen test and Johansen cointegration test has conducted. They find that there are no long run relationships among the selected Asian equity market. To examine causality among two stock market prices, The VAR Granger Causality test is conducted. The results of Granger Causality test suggest that, there is bi-directional causality between Nikkei 225 stock price and JKSE stock price.

Raj and Marcus (2019) analyse market integration and volatility estimation between Indian stock market and other global stock markets, for the period April 2000 to March 2018. They use various econometric models and find that correlation between Hong Kong stock markets and Indian stock market is high. The data was non-stationary, but it was stationary when ADF test was checked at first difference level. The results of Granger causality test reveal that causality between Indian stock market with Shanghai and Hong Kong markets is bidirectional. The Johansen Cointegration test suggests that Indian market has no long run relationships with any other markets. They also find clustering effect and volatility effect between market indices. Thus, select stock markets have negative influence on Indian stock market reveals that the information of integrated markets is useful for average investors to diversify their investment portfolio in different securities between different countries.

3. Data and Methodology

The data of present study consists of daily value of stock indices of India, U.S., U.K., Hong Kong, Korea, China and Japan over the period from January 07, 2008 to December 31, 2018. Table 1 lists the markets under study and Table 2 presents the summary statistics of market returns from each country. The daily returns are computed as $Rt= (Pt) – (Pt\text{-}1) / (Pt\text{-}1)$ where Rt is return of stock index of each country at time period t, Pt and $Pt−1$ are values of market index of selected country at time period t and t−1 respectively. For analysis of the data "EViews 10" statistical software package has been used to perform econometric analysis such as Augmented Dickey- Fuller (ADF) test for Stationarity, Pearson's correlation test for short-term relationship, Granger causality for cause and effect relationship, Johansen cointegration test for long-run relationship and GARCH model for estimation of individual index volatility.

Table 1. Stock Market, Countries, Their Index Code and Index Detail

Stock Market	Country	Index Code	Index Detail
National Stock Exchange	India	NSEI	Nifty 50
London stock exchange	United Kingdom	FTSE	The Financial Times Stock Exchange
Hong Kong Stock market	Hong Kong	HSI	Hang Seng Index
American Stock market	United States	GSPC	Standard & Poor 500
Shanghai Stock Exchange	China	SSE	SSE composite
Tokyo Stock Exchange	Japan	N 225	Nikkei 225
Taiwan Stock Exchange	Taiwan	KOSPI	The Korea Composite

Source: Yahoo finance.

4. Empirical Results

Descriptive Statistics

From Table 2 it can be seen that daily percentage returns for UK, Hong Kong, and Korea are close to zero but positive. Mean return for US is the largest among all countries i.e. 0.0319%, and for India second largest i.e. 0.0274% and third largest for Japan i.e. 0.0161% while for China mean return is negative i.e. -0.0255%. The std. dev. of stock index returns ranges from the lowest 1.3374% for UK to the highest 1.8148% for China. All the return series except Hong Kong are negatively skewed.

Table 2. Summary Statistics of daily log Returns of Stock Indices

	India	UK	US	Hong Kong	Korea	Japan	China
Mean	0.0274	0.0068	0.0319	0.0016	0.0058	0.0161	-0.0255
Median	0.0502	0.0459	0.0735	0.0433	0.0417	0.0584	0.0331
Maximum	16.3343	11.1112	10.4236	16.8007	13.8635	13.6670	9.0345
Minimum	-15.2303	-10.4834	-13.7989	-14.6954	-11.1720	-12.9245	-12.7636
Std. Dev.	1.5531	1.3374	1.3880	1.7268	1.3702	1.7424	1.8148
Skewness	-0.2911	-0.0026	-0.5897	0.2520	-0.3683	-0.5883	-0.4516
Kurtosis	18.6667	13.9500	15.9610	17.3619	16.3545	13.0253	7.8795
Jarque-Bera	23605.66	11515.60	16267.26	19834.33	17180.35	9785.82	2365.07
Probability	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Observations	2180	2180	2180	2180	2180	2180	2180

Source: Authors' Calculation.

Analysis of Correlation

Correlation has been used to measure the degree of association between the daily returns of the indices. The estimates of Karl Pearson's correlation are shown in the table 3.

Table 3: Karl Pearson's correlation

	UK	US	HONG KONG	KOREA	INDIA	JAPAN	CHINA
UK	1.0000	0.6862	0.5299	0.4571	0.4718	0.4627	0.2281
US	0.6862	1.0000	0.3778	0.3334	0.3629	0.3148	0.1331
HONG KONG	0.5299	0.3778	1.0000	0.6882	0.6322	0.6421	0.5346
KOREA	0.4571	0.3334	0.6882	1.0000	0.5184	0.6531	0.3396
INDIA	0.4718	0.3629	0.6322	0.5184	1.0000	0.4489	0.2997
JAPAN	0.4627	0.3148	0.6421	0.6531	0.4489	1.0000	0.3144
CHINA	0.2281	0.1331	0.5346	0.3396	0.2997	0.3144	1.0000

Source: Author's Calculation

From Table 3, Karl Pearson's correlation coefficient between the India's Nifty and other indices suggest that all the equity indices are positively correlated that means all the stock markets have a short-run relationship. Among all indices, the Hong Kong stock market has highly correlated with the Indian equity exchange almost 63%, whereas China equity market is least correlated i.e. 30%. So, the Indian stock index has relationship with every stock exchange.

Augmented Dickey-Fuller test

Before examining the various relationships between the time series of selected stock indices, it is mandatory to check that times series are non-stationary or not, i.e. I(1). For this, Augmented Dickey-Fuller (ADF) test has been conducted for unit root test.

Table 4. Results of Unit Root tests

Country	At level		At 1st Difference	
	t-Statistic	Prob	t-Statistic	Prob
India	-0.4278	0.9021	-47.7421	0.0001
UK	-1.8588	0.3522	-36.5599	0.0000
US	-0.2040	0.9356	-51.6377	0.0001
Hong Kong	-2.3618	0.1529	-48.1232	0.0001
Korea	-1.7679	0.3969	-30.4776	0.0000
Japan	-0.9108	0.7853	-49.3161	0.0001
China	-3.3840	0.0116	-48.0624	0.0001

Source: Authors' Calculation.

The null hypothesis of ADF test is that the series has a unit root. The results of unit root test at level and at first difference are shown in table 4.

At significance level of 5%, the outcome of ADF tests suggest that series of all stock indices have a unit root, i.e. I(1). Looking at the ADF test results on first difference, it is concluded that the returns (first difference) of all the series are stationary and none of the series is I(2).

Analysis of Granger Causality test

To examine the short-run relationship, we have used granger causality test based on the below written VAR model:

$$\Delta Y_t = \alpha_0 + \sum_{i=1}^{p} \alpha_i \Delta Y_{t-i} + \sum_{i=1}^{p} \beta_i \Delta X_{t-i} + \epsilon_t \dots (2)$$

Table 5: Results of Granger Causality Test

Null Hypothesis	Obs.	F-Statistic	Prob.
India =>UK	2180	1.331	0.2480
UK =>India		10.4996	0.0000*
India =>US	2180	1.23246	0.2911
US =>India		27.2344	0.0000*
India =>Hong Kong	2180	8.10591	0.0000*
Hong Kong =>India		2.05182	0.0686
India =>Korea	2180	12.528	0.0000*
Korea =>India		4.43695	0.0005*
India =>Japan	2180	13.0994	0.0000*
Japan =>India		1.14786	0.3328
China =>India	2180	2.48696	0.0296*
India =>China		4.38292	0.0006*

Source: Authors' Calculation.

[Note: => implies "does not granger cause". * denotes significance at 5% level.]

From Table5, it can be seen that at 5% significance level, there is bi-directional causality between India-Korea and India- China. Also, there is unidirectional causality from UK to India, US to India, India to Hong Kong and India to japan.

Results of Cointegration Test

(Johansen, 1990) test for Cointegration is employed to examine long-run linkages between different selected market indices. Following table 6 shows the cointegration results among all selected stock indices. Trace statistic shows that there is one cointegrating vector at 5% level of significance. However, max-eigen test finds no cointegration vector.

Table 6: Johansen Cointegration Test

Hypothesised No. of CE(s)	Trace Statistic	prob	Max-Eigen Statistic	prob
None	134.9625	0.0119*	46.0824	0.0519
At most 1	88.8801	0.1353	30.1967	0.4111
At most 2	58.6834	0.278	26.3165	0.3018
At most 3	32.3669	0.5919	13.3539	0.8645

At most 4	19.0130	0.492	10.5294	0.6939
At most 5	8.4836	0.4152	8.4787	0.3321
At most 6	0.0050	0.9428	0.0050	0.9428

Source: Authors' Calculation.

Note: * indicates significance at 5% level.

Results of pairwise cointegration test is presented in table 7 which implies that there is long run relationship among India and US because Max-eigenvalue analysis test indicates 1 cointegrating vector at the 5% significance level. Also, there is long run relationship among India and China because both Trace and Max-eigen analysis test indicate 1 cointegrating vector. Other statistics in the table show that there is no long run relationship between other pair of countries. So, by combining all results we can conclude that India is cointegrated with China and US and not with any other country.

Table 7: Pairwise Cointegration Test

	Hypothesised No. of CE(s)	Trace Statistic	prob	Max-Eigen Statistic	prob
UK	None	13.5381	0.0965	13.4165	0.0677
	At most 1	0.1216	0.7273	0.1216	0.7273
US	None	14.7581	0.0643	14.6537	0.0434*
	At most 1	0.1044	0.7466	0.1044	0.7466
Hong Kong	None	14.3368	0.0741	14.1861	0.0514
	At most 1	0.1507	0.6979	0.1507	0.6979
Korea	None	6.8109	0.5997	6.7907	0.5142
	At most 1	0.0202	0.8869	0.0202	0.8869
Japan	None	8.1097	0.4538	7.7107	0.4089
	At most 1	0.3990	0.5276	0.3990	0.5276
China	None	17.0144	0.0293*	16.7423	0.0199*
	At most 1	0.2722	0.6019	0.2722	0.6019

Source: Authors' Calculation.

Note: * indicates significance at 5% level.

Volatility Spillovers

For studying volatility linkages, the present study estimated univariate GARCH models for each index and generated variance series for the respective indices. Then granger causality is performed between pair of countries. The results are presented in Table 8. The results in Table 8 demonstrate that there is bidirectional volatility spillovers between the markets of India and US and between the markets of India and Japan. Also, there is unidirectional causality from volatility of India to Hong Kong.

Table 8. Granger Causality Test between volatility of indices.

Null Hypothesis	Obs.	F-Statistic	Prob.
INDIAGARCH =>UKGARCH	2180	0.3549	0.8793
UKGARCH =>INDIAGARCH		0.98736	0.4239
INDIAGARCH =>USGARCH	2180	7.68223	0.0000*
USGARCH =>INDIAGARCH		24.5152	0.0000*
INDIAGARCH =>HONGKONGGARCH	2180	4.01504	0.0012*
HONGKONGGARCH =>INDIAGARCH		2.09904	0.0628
INDIAGARCH =>KOREAGARCH	2180	1.71164	0.1285
KOREAGARCH =>INDIAGARCH		1.07192	0.3739
INDIAGARCH =>JAPANGARCH	2180	7.80813	0.0000*
JAPANGARCH =>INDIAGARCH		5.94693	0.0000*
CHINAGARCH =>INDIAGARCH	2180	0.82365	0.5327
INDIAGARCH =>CHINAGARCH		0.31126	0.9064

Source: Authors' Calculation.

[Note: => implies "does not granger cause". * denotes significance at 5% level.]

5. Conclusions

The present study examines the linkages between equity indices of India, US, UK, China, Hong Kong, Korea and japan. Cointegration analysis of Johansen-Juselius with daily data from January 2008 to December 2018 suggests that there is one cointegrating vector as per the Trace statistic. Also, results of pairwise cointegration test indicate that India is cointegrated with US and China. Results of granger causality reveal that past returns of stock index in one country influence future returns in other countries, except for India-US, India-UK, Hong Kong-India and Japan-India. Results of granger causality on conditional variance series show there is two-way volatility spillovers between the markets of India-US and India-Japan. Also, there is unidirectional volatility spillover from India to Hong Kong. The findings of the present study have useful implications for economist, money managers and investors.

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Study Of Corporate Practices Of Signatory Indian Oil & Gas Companies Adhering To Ungc Principles On Environment

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Abstract: Oil and Gas companies are investing in their upstream and downstream operations throughout the sphere of their influence. The importance of hydrocarbon exploration does not require further elaboration for oil and gas companies. Meeting ever growing energy demands is the basic driving force to push ahead full thrust, with exploration and refining programme. With profit on mind, the oil and gas companies are yet doing their best, for sustainable growth and environmental protection. This also form a part of the Company's vision statement and commitment to the principles of United Nations Global Compact. Social development, sustainable development goals and environmental protection are the bedrock of oil and Gas Company, focusing on **UNGC principles**, and are deep rooted in company's culture thus conforming to the **UNGC** principles on environment. Indian Oil and Gas companies aligned to **Global Compact Network India** are committed to environmental protection and are reflecting execution of their commitment through their respective COP. The author having studied these companies and their corporate practice offers his few recommendations.

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1.1 Introduction:

Since the beginning of 21st century, the world of Business has seen a dramatic change in various fields to include positive attitude and expectation towards the society and the overall environment. It is a recognised fact that the sole aim of profit at all cost was causing irreparable loss to the society and the environment. Realizing this, since last 15 years, business has considerably enhanced focus on sustainability criterion. There has been no structured governance organisation to enforce and ensure the business to follow sustainability values. In contrast to market justification, which favours companies to impress upon wealth maximization, today private sector organisations etc bear multi-bottom-line outlook that positively incorporates an approach of society related, sustainability, into company's business models. UN Global Compact (UNGC) plays a major role here, and offers examples and work of government non related actions, may be with widely applicable effects or implications to accelerate the willing taking part of business in sustainability practices.

The primary aim of UNGC has always been to encourage companies to align with and thus promote economic development besides ethical behavior. The 10 UNGC principles formulated, based on four pronged territory of Human Rights, Labour, Environment and Anti-Corruption encourage companies to be sustainable. Therefore, corporate sustainability is a must for companies, and are to implement five actions ie. **"Principled business, strengthening society, leadership commitment, reporting progress and local action".**

All issues related to climate change, water scarcity or ecology in general (Environmental issues), the intricacy and difficulty is on upscale, across globe. Emerging trend on environmental issues indicate that overall ecological problems cannot be resolved by till now followed corporate management methodologies, essentially based on following of passed instructions (compliance) and narrow risk assessment. The subtle aim of UNGC office with participants and partnering with Duke University has been to prepare a next-generation Environmental Stewardship Strategy and to gear up the companies to be able to face the growing difficult environmental scenario, and provide a frontal look to UNGC's three environmental principles. This UNGC initiative has a website and CD-ROM. Environmental Stewardship Strategy is designed to assist the corporate, and ensure a comprehensive corporate strategy is prepared and disseminated at the lowest.

UNGC has mission for implementation of 10 principles, with sustainability and issues on climate & environment being an important agenda. UNGC attempts to demonstrate leadership and offers space to its participants, to express thoughts on **Caring for Climate[i],** being a voluntary and complementary action platform. Such a platform helps in shaping policy and population behaviour towards climate, and guides corporate leadership to work on practical solutions. CEOs are prepared to set standards in sync with UNGC and thus **prepare strategies and practices**, also setting emission/discharge norms and disclosing emissions publicly as part the Communication on Progress. **Caring for Climate** is a remarkable start, and firm commitment to act by companies and invoking a message to governments, incorporating transparency. This is an interactive point for both the government and the corporate at global level, with high capability of assuming responsibility of quickly becoming the leading platform for realistic answers to business – reaching far ahead of national interests and reacting to a challenge at the global level.

In Indian context, oil and gas companies have to perform business activities based on strong intent to protect the environment, harmonising living and workplace with quality of life of all stake holders, yet guaranteeing sustainable development. The refineries have to be necessarily maintaining minimum ISO standards with reference to sustainable development and various other life threatening scenarios related to the work place with strict compliance to laws on environment mandated as part of best practices.

1.2 **Research objectives**

Owing to aligning to UNGC the corporate insist on and implementing Principles on environment in this case signatory Indian Oil & Gas Companies. Their corporate practice affecting conscious decision to environment conservation and thereby harmonising safe place to live in, work at, with quality of life of all stake holders. With the emphasis on corporate

practices to guarantee sustainable development and various approaches in strategic planning of such companies, this paper seeks to achieve the following objectives:

1. To identify Names and number of signatory Indian Oil and Gas companies.
2. To study and evaluate the corporate practices of signatory Indian oil & gas companies observing principles of environment.

2.   LITERATURE REVIEW

UNGC and Duke University jointly worked on **Environmental stewardship strategy**[i]**.** It was framed for 21 century to take leadership to greater standard of stewardship. Better management is required in the realms of issues relating to environment, water issues or bio diversity. To meet the future paradigm of environmental issues, this strategy has been formulated by UNGC with Duke University. It has four pillars, **embed, balance, diffuse and translate**. This strategy has been issued to aligned participants to UNGC and other business communities as well.

Source watch[i] writes that **UNGC** was conceived and put forward as an idea by the then Secretary General Kofi Annan while addressing the World Economic Forum in the year 1999. Operational chapter of UNGC was put forward in the year 2000 at the UN Headquarters in New York. Kofi Annan invited corporate to align with UNGC initiative - which was actually to put such companies, UN agencies, labour and civil society to support ten principles.

UNGC environmental principal training package[i]**,** launched during the China summit in 2005, offers a kit for trainers, managers, and employees on methodologies of implementing the three principles on environment.

The **official website of Global Compact** speaks of the mandate and the companies aligned. It also gives out various UN organisations which spell out various guidelines and values for a better world order and working of UNGC as encouraged by such affiliated UN organisations. The official website also spells out the ten principles under four realms of :

- Human rights
- Labour
- Environment
- Anti-corruption

Global Compact Network India (GCNI) through its official website gives out the mandate and the various initiatives of the organization. The role of GCNI and the SDG has been amply spelt out.

Wikipedia widely describes efforts of United Nations Environmental Programme (UNEP) which has been one of the guiding factors for UNGC environmental principle and **Origin of Environmental** Principle finds place here. The UNEP is the binding and the guiding factor for various environmental issues. This has been guiding force for UNGC to emulate and there by improve upon efforts for environmental sustainability.

Brundtland Report', 'Our Common Future' produced in 1987 by the World Commission on Environment and Development, is a document which did essentially aid in laying the basis for the Principles on Environment. This report projected that it was pertinent for the people to change their living style in terms of their interaction with the environment.

Shale-gas-in-India-Prospects-and-Challenge, this document gives out the Shale Gas environment and its environmental impact. It highlights that Shale gas exploration and production spells out a higher level of footprints as compared to other oil and gas products. It

thus leaves negative environmental issues, while utilising a large quantity of water for different processes related to this technology.

Environmental Management in oil and Gas exploration, joint E&P forum,   UNEP technical publication, 1997, mentions numerous causes of atmospheric depletion especially in case of oil and gas industry both during exploration (upstream) and production (downstream). It emerges that, there has never been an instance where in there has been oil exploration or production without adding harm to environment.

3.   Research Methodology:

To achieve the objective of the proposed study a tentative methodology is framed and is appended below:

3.1   Type of Research

The nature of proposed research will be Descriptive in nature. Descriptive Research cannot describe what actually caused the situation, but it addresses 'What' question. Therefore **Descriptive research** is utilised to enunciate the traits of the population or phenomenon under study.

3.2   Universe of Study

The universe of proposed study will cover the companies in Oil & Gas sector who have signed UNGC of India.The study will check the attributes related to UNGC PRINCIPLES ON Environment, includes:-

(k) Carbon Credits
(l) Steps to tap unconventional Energy sources
(m)Shore line protection
(n) Sustaining Himalayan Eco system
(o) Sludge treatment
(p) Carbon neutrality
(q) Waste utilisation
(r) Capturing Fugitive Methane
(s) Reducing gas flaring
(t) Saving fuel

However during the course of study, the other parameters, sub parameters (if any) and relationships will be identified.

4.   Conceptual Frame work (UNGC History.)

The **United Nations Global Compact** [i] was first proposed by United nations Secretary-General Kofi Annan in an address to The World Economic Forum on January 31, 1999.

UNGC was conceived and established in the year 2000 by **the then UN Secretary – General Kofi Anan** as a platform of leadership with Global Outlook and a guide, the aim being to take along corporate activities and civil societies with their social actions towards a common cause. The major output being creation of an inclusive corporate sustainability in the global economy. On January 31, 1999 United Nations Secretary-General Kofi Annan[i] spelt out the requirement of then conceived to be a "global compact" during his address at the World Economic Forum in Davos. Annan proposed that "you, the business leaders gathered in Davos, and we, the United Nations, initiate a global compact of shared values and principles, which will give a human face to the global market" (United Nations, 1999, p. 1). The address to the gathering then laid the foundation of global corporate citizenship initiative and officially made

effective 26 July2000 at UN headquarters in New York, and earned the support of a number of Global corporations, UN affiliates, Trade unions and NGO's. The UNGC basically works on four basic fields of **Human Rights, Labour, Environment and Anti-Corruption, which are divided into ten universally accepted principles and taken for integration into corporate operations and strategy by a number of signatories from different countries and fields of business and social welfare organizations,** keeping in mind as guidelines for sustainable development. During the past as years passed, it has been functioning successfully with 101[i] local networks across world with its own yet diverse governance framework. It has successfully aligned over 10,700 participants which take in to account more than 7000 businesses in 135 countries, as a network-based initiative. UNGC has become to be one of most spread corporate citizenship and responsibility initiatives in the world With 298 signatories, and inspire various corporate to willingly align with UNGC and to voluntarily channelize their operations and strategies for the development and implementation of responsible business practices through the support of seven UN agencies such as, Office of the High Commissioner for Human Rights (OHCR), ILO, UNODC, UNDP, UNIDO and UNIFEM.

The mission of the global compact is framed and is therefore based on two primary objectives:-

(a)   The compact is a corporate citizenship initiative inviting the private sector to align with, and follow a set of values in the areas of human rights, labour, environment, and anti-corruption within the business arena.

(b)   The GC integrates a platform with an aim is to enhance cooperation among the various economic and social actors in the global world thereby promote UN values.

Corporate sustainability is a must for companies, and are to implement five actions ie. "Principled business, strengthening society, leadership commitment, reporting progress and local action".

The Global Compact has not been mandated as an agency to regulate or an authority to keep a watch and impose sanctions on defaulting corporations. It actually requires generating enough awareness and interest in a non-governmental way. Aligned corporate to UNGC are therefore required to be transparent about their work and report progress on implementation of 10 principles and various sustainability efforts.

The UNGC principles in terms of India have also been adopted, thus partners locally operating within our country, as a Society on behalf of the UNGC, was introduced in year 2000 in the month of December
along with various Indian organizations. On 24th Nov 2003 in New Delhi, inscribed with status of full formed legal entity[i] the organization came into being and called as **the Global Compact Network India (GCNI) – thus becoming local representative of UNGC**. GCNI is **an organization meant to engage, various bodies governed privately, related to the occupation of doing trade, and various other non government organizations, public sector**

and other establishments. In its capacity, the GCNI supports to falling in line of a number of/rather different organizations/people bearing stake and thus their procedures following the **Ten Principles of UNGC in the areas of Human Rights, Labour, Environment and Anti – corruption.**

4.1   **Oil & Gas Companies aligned to UNGC/GCNI**

Global Compact Network India (GCNI) Executive Director is Mr Kamal Singh. The participating Oil & Gas Producers   with UN Global Compant (UNGC) India Chapter/GCNI (Global Compact Network) are as under :-

Serial No	Oil & Gas Producers	Country	Participants Since
1.	Indian Oil Corporation Limited	India	21 April 2001
2.	Oil India Limited	India	06 July 2001
3.	Hindustan Petroleum Limited	India	23 August 2001
4.	Chennai Petroleum Corporation Limited	India	23 August 2001
5.	Oil & Natural Gas Commission of India	India	17 September 2003

4.2   **UNGC Principles on Environment**

The Origin of the Environment Principles[i]

        Since establishment in 1973, United Nations Environment Program (UNEP)[i] has been a leader in coordinating and bringing together globally, efforts on the environment. The Program has offered guidance and shown path and thus promoted all types of groupings for care of the environment also through Multilateral Environmental Agreements (MEAs) that directed matters of loss of species and internationally recognized requirement for conservation at all level. Most of the laws in respect of environment which are used world over have been created by UNEP. The **UNEP** being a **UN AGENCY** coordinates all activities related to the environment. The UNEP also helps various countries nations to put in force all types of practices and policies aiding saving of the environment. UNEP established by Maurice Strong and its founding director, being the outcome of **UN Conference on the Human Environment (Stockholm Conference) in June 1972.**

        United Nations Conference on Environment and Development (the Earth Summit) held in Rio de Janerio in 1992, has been the **precursor to the development of UNGC principles on Environment from a Declaration of an action plan (Agenda 21) at international level.** The three principles of UNGC on environment emerged from it. It was also declared in the agenda as an objective of Agenda 2, that there will be a requirement of a large amount of flow of additional financial resources to be offered to the developing countries, so that huge amount of ever increasing   recurring cost can be met for various activities initiated to tackle global environmental problems. **Chapter 30 of Agenda 21[i]** elaborated that various corporate with their operations can contribute in a big way to mitigate the effects on resource use and the environment. It said that business can play a major role by promoting clean production and business practices..**Environmental Issues in Agenda 21[i]**

   (a)   Protecting the land
   (b)   Managing the land suitable
   (c)   Combating deforestation
   (d)   Combating drought and desertification
   (e)   Sustainable agriculture development and rural development
   (f)   Sustainable mountain development

(g)   Conservation of biological diversity

(h)   Management of biotechnology

(i)   Protecting and managing the oceans

(j)   Protecting and managing the fresh water

(k)   Safer use of toxic chemicals

(l)   Managing hazardous waste

(m) Managing solid waste and sewage

(n)   Managing radioactive waste

From the above document it very clearly appreciated that there is a global consensus and government agreement from most of the nations.

.**Signatory companies must know**

Once aligned to UNGC a company is expected to publicly advocate the UN Global Compact and its principles via communications vehicles such as press releases, speeches, etc; and is required to communicate with their stakeholders on   an annual basis about progress in:

(a)   Implementing the ten principles and

(b)   Efforts to support societal priorities.

The **Communication on Progress** (COP) is a visible expression of a companies' commitment to sustainability and their stakeholders can view it on company's   profile   page. Companies that fail to report or to meet the criteria over time may be removed from the initiative.

4.3   **Oil and Gas Sector and Environment**

a)**Environmental Degradation.** Oil & gas sector in addition to being an opportunity for the stake holders (including the country, people and industry etc.) has, to a large extent moderate to high impact on environmental degradation. **Entire process** involving oil **exploration, production, transportation, refining to consumption impacts the environment** in a number of ways; be it affecting the society, contributing to climate change or cause ecological degradation, thus requires necessary attention.

b)**Shale Gas and Environment.** Shale gas exploration[i] and production spells out a higher level of footprints as compared to other oil and gas products. It is thoroughly on land. Hydraulic fracturing is a major process in shale gas exploitation. It thus leaves negative environmental issues, while utilising a large quantity of water for different processes related to this technology. This has a bit of impact on protection of water aquifers, disposal of produced water post completion of above mentioned process, and subsequent or concurrent effect on biodiversity, communities, ecosystem & pollution(air & noise).

There are a number of fallouts of oil and gas exploitation on various environmental factors as described below:-

I.**Atmospheric Impacts.**   There are numerous causes of atmospheric depletion in case of oil and gas industry both during exploration (upstream) and production (downstream[i]).There has never been an instance where in there has been oil exploration or production without adding harm to environment. Be it oil spills or ozone layer depletion and climate change. The primary source of emission to the atmosphere is from under mentioned oil and gas operations:-

o Flaring and purging gases.
o Combustion process in oil and gas engine turbines.
o Fugitive Gases from losses caused during various process of tank.
o Loading and other processing equipments and machines.
o Airborne particles from construction sites and vehicles
o Particles from other sources such well test.

II.Emitted Green House gases are:;-
- **Carbon Monoxide.**
- **Carbon Dioxide.**
- **Methane.**
- **Organic Carbon.**
- **Nitrogen Oxide.**
- **Hydrogen Sulphide and Sulphur Dioxide.**

Hydrogen Sulphide and Sulphur Dioxide may occur and this is based on the content of sulphur in the hydrocarbon extracted and diesel used as   fuel.

III.Aquatic Impacts. A large volume of water is produced in oil exploration and the aqueous waste is also a contributor to water degradation. The quantity of water waste produced depends upon the type of process which is either **exploration** or **production**. Maximum aqueous waste is produced in drilling process, whilst minimal aqueous waste is produced in seismic operations.

Most of aqueous waste during **exploration** or **production operation is:-**
- o **Cooling Water.**
- o **Spills and Leakage.**
- o **Sewage, sanitary and domestic waste.**
- o **Produced water.**
- o **Drilling aqueous waste, and various chemicals.**

(IV)   Terrestrial Impact. There are various changes which might occur, such as soil erosion and soil cutting due to construction work or drilling. There are chances that the vegetation may be depleted as a result of operations which might cause   lack of growth and no support to wild life in the area. Hydrology and drainage pattern may   also be affected in the area. The soil may get contaminated due to   spills and   leakages and construction material.

(V)   Ecosystem Impact[i] There may be impact to animals and microbes due to   the local contamination in the environment and soil. This might change breeding   areas,   likely to impact eating habits including sometimes habitat and migration areas.

(VI)   Emergencies. E&P activities including seismic, are to be deliberately planned and executed as they have a potential to cause a disaster, hence control measures are also to be in place. Various contingencies are possible such as oil spill,   gas/oil   well blowout, explosions fires and likely natural disaster like ocean rise, storm, earth quake may be create a situation in oil rigs. Oil and Gas companies with their operations have become a

contributor to climate change. Global warming is one such issue which has the potential to melt ice caps and lead to rise in ocean level. The climate change may have huge rise in temperature, hurricanes, cyclones, drought, wild fires and heat waves etc.

5.   Analysis of Sample Cases.

In this paper, four leading Oil & Gas Companies operating in India, have been studied. The aim has been to study their respective corporate practice, and arrive at a exclusives to affirmation in their adherence to UNGC principles on environment. The few recommendation has also emerged, through analysis of various documents as part of secondary data. All cases are based mostly on COP, provided by respective companies, & discussed in detail.

5.1.   OIL India Limited(OIL)

Oil India Ltd is a Navratna company involved in Exploration, production & Transportation of crude oil, Natural Gas & LPG. It is the second Largest National upstream company, which is adhering UNGC Principles. The 10 UNGC Principles form part of company Strategy, and specifically, in addition to other requirements, Environment is duly looked after. The objectives of company spell out care for community, ecology and environment.

5.1.1 Environmental Responsibility

OIL is careful in terms of environment, community and stake holders. The adverse effect of upstream & downstream process, obviously lead to environmental degradation, impacting community. The company is alive to the situation & therefore follows a precautionary approach for environmental conservation. Environmental Impact Assessment (EIA) studies are carried out for all future projects. A special care is taken to assess social issues and societal impacts & thereafter mitigation methods are implemented. Few Mitigation measures are as under :-

(a)   Use of Forest Stewardship Council (FSC) Chain of Custody certified paper & print products in OIL.
(b)   Economic use of paper.
(c)   Rainwater harvesting.
(d)   Study of impact of flaring on surrounding Paddy crop & preventive measures.
(e)   Development of Green belt around OIL installations.

5.1.2 Wind & Solar Energy

To conserve energy and to capture non conventional energy OIL India Limited as part of sound environmental and Sustainable Development Policy Focuses on wind and solar energy. This not only adds on to reducing carbon footprints but also reduces Green House (Gas (GHG) emission level.

OIL has installed several wind & solar energy projects. The cumulative of all Commercial & Solar Energy projects is approximately 169.2MW, generating Rs. 117.2 crore in FY 2016-17. This revenue has been an outcome of renewable energy sources.

The sustainability has been on the forefront in the company policy. Therefore, focus is maintained on reducing carbon footprint & GHG emission, with a low carbon strategy. This effort is coupled with technology, process improvement & strategic implementation plan. An

example is 50 MW Kumchai power plant, in Changlang district of Arunachal Pradesh. To reduce GHG gases, OIL does Mass tree plantation (with high carbon absorption potential) in degraded forest and around OIL (Oil India Limited) operational areas, Bio diversity protection is also on top agenda of the company.

In addition, OIL has evolved a low carbon strategy to minimize emission of GHG gases. To do this Oil India Limited have utilized technology, process improvement and its implementation as part of strategy. Company utilizes otherwise flared gas of high calorific value to be utilized as a substitute for high carbon content fuels. This leads to saving of fuels. This has been used in 5.0MW KUMACHAI Power Plant, in Changlang District of Arunachal Pradesh.

The company focuses on bio diversity conservation and actively works towards environmental care and sustainability. To quote a few examples to substantiate such practices, are promoting eco tourism in its operational area by putting in use of pedal boats, eco friendly vehicles, bio-digesters plant etc in far flung areas.

5.1.3 OIL Corporate Practice Towards Environmental Responsibility

OIL is careful in terms of environment, community and stake holders. The adverse effect of upstream & downstream process, obviously lead to environmental degradation, impacting community. The company is alive to the situation & therefore follows a precautionary approach to environmental conservation. It being a part of corporate practice, Environmental Impact Assessment (EIA) studies are carried out for all future projects. A special care is taken to assess social issues and Societal impacts & thereafter mitigation methods are implemented. Few Mitigation measures are as under :-

(a)   Use of Forest Stewardship Council (FSC) Chain of Custody certified paper & print products in OIL.

(b)   Economic use of paper.

(c)   Rainwater harvesting.

(d)   Study of impact of flaring on surrounding Paddy crop & preventive measures.

(e)   Development of Green belt around OIL installations.

5.1.4 Exploitation of Environmental Friendly Technology

a)   Use of Bio Diesel fuel in Diesel Engines.
b)   Bio remediation project for treating the hazardous waste, even bio remediation of sludge.
c)   Pilot project on phytoremediation, for restoring contaminated area to normalcy in consultation with Institute of Advanced Studies & Technology, Guwahati.

d)   Carbon footprint mapping & integrated waste Management & E waste Management.

e)   Flare pits with enclosures to reduce effect of heat & light around crops/environment.

f)   Well designed flare pits with enough supply of air for burning.

g)   Water recycling.

h)   Water oil clarification plants.

i)   Sludge treatment & recovery plant.

j)   Gas flaring.

k)   Noise Attenuators.

l)   Personal protective equipment.

m)   Establishment of State of the art research facility.

n)   OIL strictly follows all environmental standards/rules/acts enforceable under mandatory regulations.

5.2   Indian Oil Corporation Ltd(IOCL)

IOCL have been striving hard to minimize the impact of climate change. Towards this company is contributing, through various mitigation methods and initiatives. The progress & growth of the company is linked to continuous sustainability activities which are understood to be a direct route to success & fulfilment of a commitment to the stake holders. A number of initiatives of IOCL are listed, like renewable energy generation, waste water management, rainwater harvesting, energy conservation, tree plantation, bio diversity protection etc. IOCL has achieved a number of sustainability accomplishments in 2016 & 17 like emission reduction through pipe line transportation, reduction in specific energy consumption since 2014-15 by 4.2%, reduction in fuel loss by 3.2% since 2014-15, estimated fuel saving through energy conservation projects in refineries, cumulative from 2012-13 is 3,96,651 SRFT (Standard Refinery Fuel Tons), renewable Energy Capacity added 112MW & 2.96 billion litres of Rain Water harvested and much more.

Indian Oil have set a target for the company to **reduce** their **specific carbon** and **water foot print by 18% to 20% respectively by 2020**, with 2012-13 as the base year data.

5.2.1   Energy

The Energy demand in India is growing & it therefore requires optimization of energy resources. More so when conventional energy source are depleting faster growth in alternative or renewal Energy. The company is putting in continuous effort to save electricity & direct fuel consumption across their operational areas. The conservation of energy at all levels is basically focused at reducing Carbon foot prints.

Energy Conservation (ENCON) measures adopted by IOCL & thereby reducing its specific energy consumption are due to best practices adopted by the company & operational efficiency.
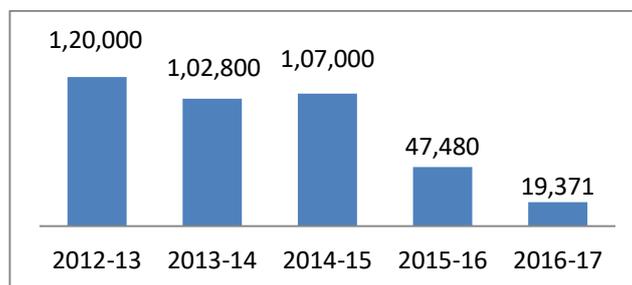
ESTIMATED ENERGY SAVINGS BY ENCON PROJECTS (SRFT)

The petroleum refineries of IOCL contribute 9% of total energy consumption. These refineries are put under PAT cycle (Performance Achiever Trade), PAT systems, which mandate best use of saving of energy. IOCL have energy auditors by Bureau of Energy efficiency.

5.2.2 Emissions

IOCL has specific push to preservation of energy at its operational units by all time observation & employment of updated technology & best practices. The above measures have resulted in achievement of 10.09% reduction in specific Carbon foot print till 2016-17 from 2012-13 level. The ENCON[i] steps implemented during 2016-17 resulted in fuel saving of 19,371 SRFT, corresponding to GHG emission reduction of 62731 to tco_2 e. The cumulative emission from refineries in 2016-17 has been 13.38 MMT[i] (Million Metric Tonnes =179,000 passenger cars & light trucks not driven for one year)
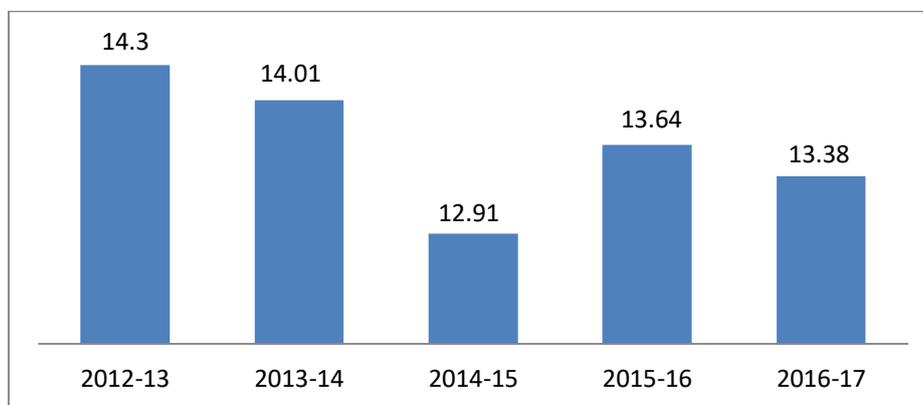
Year on year Scope 1 & Scope 2
Emission (Million Metric Tonnes of CO2e)[i]

Emission & particulate matter into the air are monitored especially SOx & NOx using monitoring stations of refineries.The level of emission is monitored & it is ensured that guidelines & instruction from Central & State pollution Control board are taken cognisance of.

5.2.3 Water

India will have 40% Global water deficit by 2030 under Business as Usual (BAU) climate scenario. While we have 4% of world water resources, with worlds 18% population.

Water deficit is affecting every continent & approx 1.2 billion people across globe are suffering with water scarcity.   There is an urgent requirement to preserve, conserve & use water judiciously & achieve water security.

Indian oil is striving hard to reduces & optimize water consumption in various oil production processes. IOCL have set a voluntary target to reduce their specific water consumption by 20% by 2020, in comparison to 2012-13 levels. By now IOCL have set up 500 rain water harvesting systems through out in various refineries as on 31 March 2016. This has resulted is an increase of harvested rain water consumption by 42.5% in 2015-16. IOCL maximizes the process of water recycling & exercises restraint to as for as possible avoid use of fresh water in refineries. The details of water usage & recycling in depicted below (COP 2016-17).
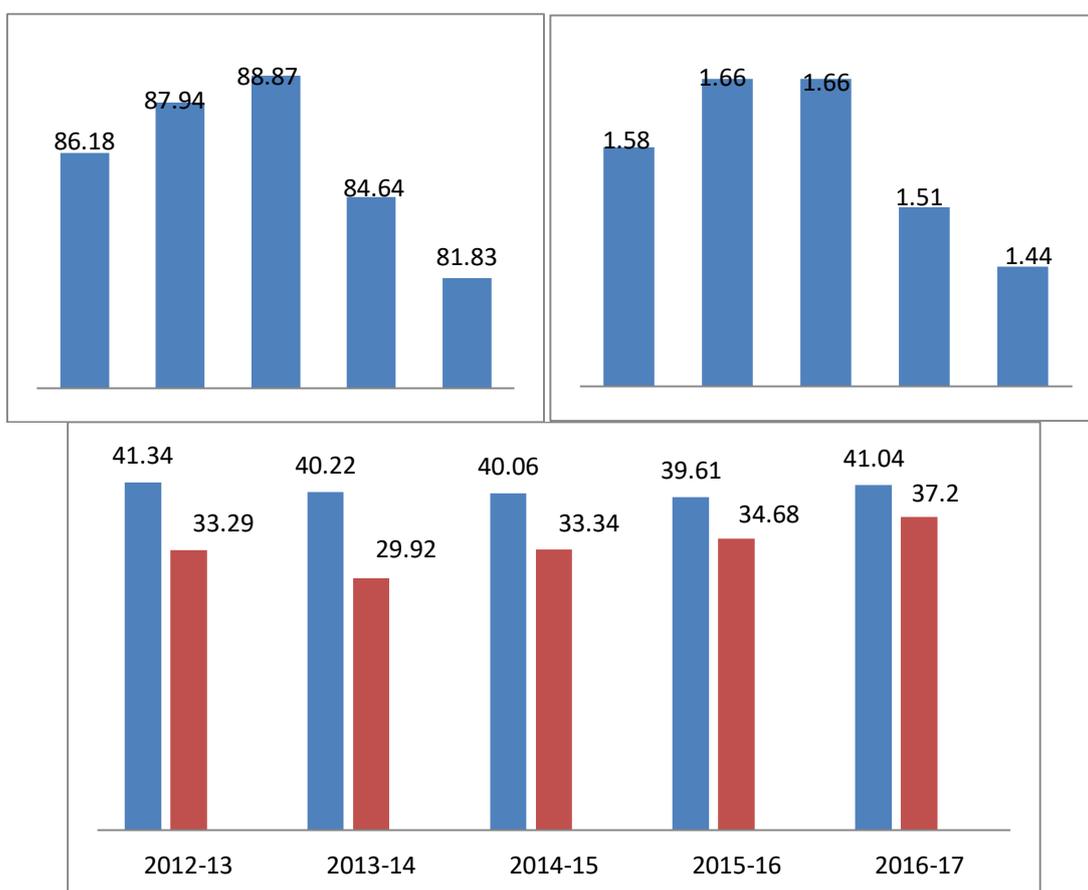
Volume of waste water generated (Million M^3)
Volume of waste water recycled (Million M^3)

Water Recycled (%)
         All information pertains refineries, excluding Paradip Refinery
         Waste disposal practices are appended below :-
5.2.4   Types of Waste
Oily Sludge

Slop

Spent Catalyst & ETP sludge

Waste water with effluents

Waste water Management[i]

     Use of water & effluents discarded are curiously monitored. All refineries are equipped with network of underground sewers for segregated collection of various waste water. This water is subjected to processing in Effluent Treatment System(ETP) by all chemical, biological & physical means. Equipment provided are Tiled Plate Interceptor (TPI), Dissolved Air Floatation (DAF), Bio Tower, activated sludge basins, duel media filters for processing oily waste water & hydrogen peroxide/ waste air oxidation treatment for spent caustic streams.

5.2.5 Solid Waste Management

- ➢ Principle is prevent, Reduce, Reuse & Recover.
- ➢ Waste/ Oily/ Chemical/ biological & sludge are mechanically handled.
- ➢ Melting pits with skimming pumps sophisticated hydro cyclones are used to de-oil sludge.
- ➢ Recycled sludge is treated in Coker unit or bioremidiated in **bioreactor, which is latest innovation of IOCL[i].** 2.6   **E waste Management**   Disposed   through government approved trading agency, M/s Metal scrap Trading Corporation.

5.2.6 Bio-diversity.

     IOCL is careful about biodiversity and understands about sustainability Environment & correlation with biodiversity. Therefore various action are initiated which also includes two approaches :-

- • Development of Green Belts & Ecoparks.
- • Climate Neutral events.

     Two million Trees have been planted at various IOCL installations & 500,000 saplings in 2015-16. This has developed a green belt.

	62,724	55,754	51,817	51,542
	2012-13	2013-14	2014-15	2015-16
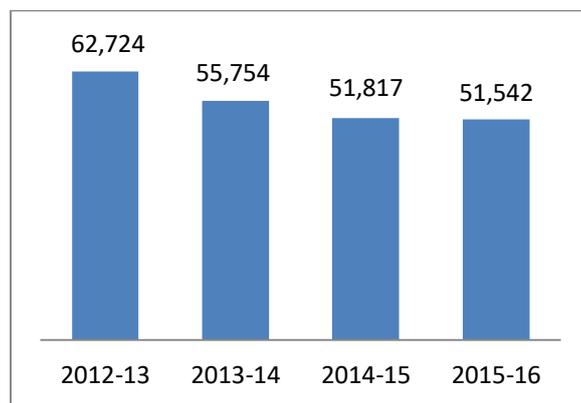
Trees Planted (2013-14) (cop 2015-16)

5.2.7 R&D (Fuel From CO_2 (*))

     IOC feels a large of amount **CO_2** (a green house gas produced**) from oil production** if not eliminated **can be converted to transportation fuels and highly valuable Omega 3 fatty**

acid from carbon dioxide[i], as per company's Director (R&D) Dr SSV Rama Kumarthe. IOC presently has one kg pilot plant, first of its kind in the world. IOC have developed a strain of algae that can produce lipids & Omega 3 fatty acids from CO_2.

5.2.8   Attributes Related to Environment Principles

IOCL complies to various attributes which are included in UNGC three Environmental Principles.   The compliance to UNGC principles while confirming to various attributes/ practice are given as under.

S. No	Attributes	Observed / Not Observed by OIL	Action / Remarks
(a)	Carbon Credits		-
(b)	Tap unconventional Energy	Observed	Gas Plants, Solar Power Plants & Wind Energy Plants installed, (investment in Renewable Energy).
(c)	Shore Line Protection	Observed	(a) Mass Tree plantation in Operational Area. (b) Development of Green Belts & Eco parks.
(d)	Sustaining Eco System	Observed	Flora & fauna protection & sustainability best practices are observed.
(e)	Sludge Treatment	Observed	Oily sludge in recycled & IOCL also has sludge treatment & recovery plant. Bio remediation project undertaken with TERI.
(f)	Carbon Neutrality *		(a) Strives to reduce CO2 Emissions and work toward Carbon neutrality. (b) It follows sustainable development through Carbon Management. (c) Joined carbon disclosure project since 2012.
(g)	Waste Utilisation	Observed	Best practices from oil industry are adopted to manage waste. Hazardous Waste & E Waste is channelized to only such units which possess Environmentally Sound Management facilities (ESM) including E Waste.
(h)	Capturing Fugitive Methane	Observed	Fugitive Methane & Methane Emission Detection monitoring, in order to undertake fugitive emission Detection.

(i)	Reducing Gas Flaring[i]	Observed	(a) Flare gas recovery systems and KHDS recompression started since May 2014 to reduce flaring. (b) Replacement of Supplementary Naphtha firing with fuel gas since April 2014, resulting in saving of Naphtha and thereby reduction of flare loss. (c) Provision of Fuel Gas burning for reduction of flare loss since Jun 2014.
(j)	Saving Fuel	Observed	(a) Reduction in Energy consumption. (b) Energy conversation projects in refineries have lead to Estimated fuel saving of 3,96,651 SRFT cumulative from 2012-13.
(k)	Noise Attenuator	Observed	(a) Provided at source. (b) Suitably designed enclosures for both source & receivers & use of low saved machines.
(l)	Energy Saving	Observed	(a) Through Regular Energy audit, & applying best practices of the industry, ENCON measures applied. (b) Refineries put under PAT system, which mandate best use of Saving Energy

5.3.   ONGC

ONGC is one of the oil majors in the World and a Navratna company. Environment is on the top agenda of the company and therefore company follows a precautionary approach. The company strives to secure the nation against the deficit of energy source, while keeping alive agenda of sustainability & environmental protection. ONGC follows all guidelines with reference to discharge & waste disposal, and while doing so, **adopts best practices** to keep a check on ambient Sox & NOx, Benzene & Sulphur within prescribed limits. Various CDM (Clean Development Mechanism) measures have been instituted to reduce GHG emissions.

5.3.1   ONGC Environment

There have been periodic Energy audits & investments in renewable energy. Paperless offices are evolving as a practice, while Water foot printing, setting up of Rain Water Harvesting, desalinization plants for sea water & sewage treatment plants within & entire organization is on cards. In fy 16 water foot print studies for oil & Gas sector in concert with World Business Council for Sustainable Development (WBCSD) has been carried out at Silchar & Jodhpur. Improvement projects have been indentified, and are under different stages of implementation. Energy audits are a regular feature at ONGC, while the corporate energy cell at Dehradun keeps an eye on the compliance to report on energy audits. In 2013-14, ONGC carried out 210 energy audits[i] and achieved a saving of Rs. 4,532/p million, through energy conservation measures. Year to year energy savings are depicted through figure below.

Monitory Saving from Energy Consumption[24]
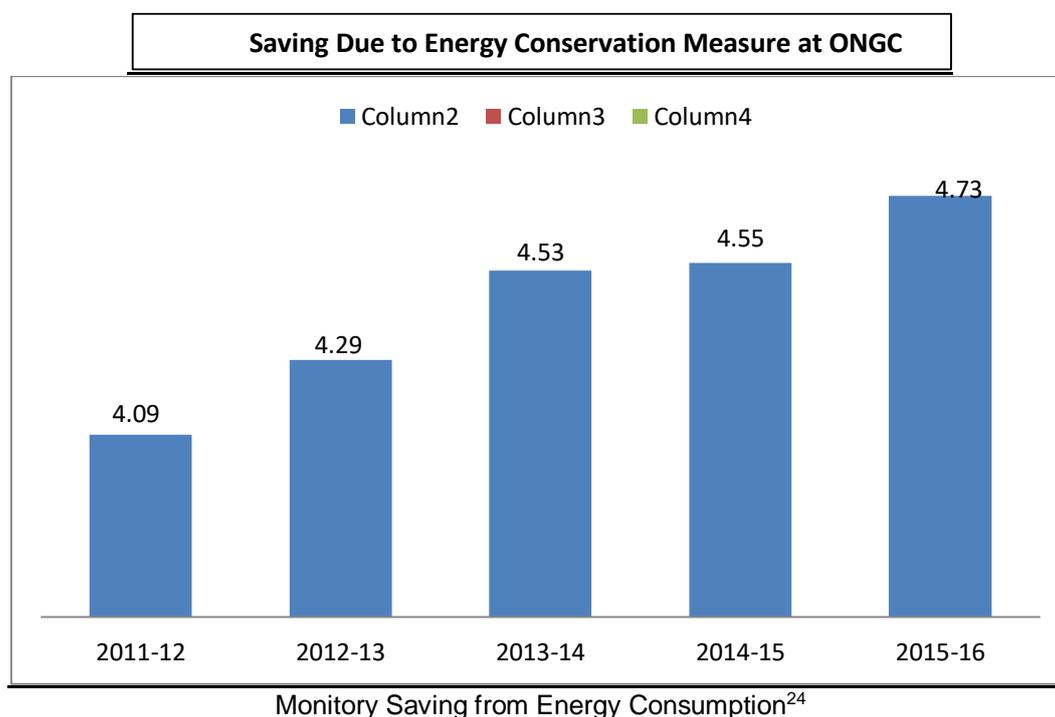
DIRECT & INDIRECT CONSIUMPTION AT ONGC GUROUP

	Fy-14	Fy-15	Fy – 16
Direct Energy	1,87,750	1,93,245	1,78,671
Indirect Energy	3,756	3,795	2,422

(Direct & Indirect Energy Consumption at IN ONGC)

It is observed, that employees at ONGC are continuously trained on sustainability best practices. The environmental protection is also engrained in the corporate practice, through capacity building workshops at regular intervals.

5.3.2 Renewable Energy

A large amount of investment has been made by the ONGC in renewable energy projects. The first 51 MW Gird power project was installed in Bhuj District of Gujrat in 2008 & the second 102 MW project was installed at Jaisalmer in Rajasthan, in 2014-15. The strategic vision of ONGC is 6.5 GW of renewable energy be 2030.

RENEWABLE ENERGY TARGET BY 2030

S. No	Type of Energy	Target Capacity	By year
1.	Wind Power	2 GW Off shore & one on shore	2030
2.	Solar Power	1.5 GW (Plan to acquire equity stake in promising solar photo voltaic technology).	2030
3.	Nuclear Power	3 GW, (In collaboration with Nuclear Power Corporation Ltd of India).	2030

During Fy 2016, COP 2016 ONGC generated 123.53 million units of energy through renewable energy sources with an investment of INR 5.63 billion.

5.3.3 ONGC ON CLIMATE CHANGE

ONGC very well understands the risks & opportunities arising out of measures of Carbon mitigation initiatives. Therefore the commitment of ONGC towards reduction of GHG emission & pursuance of renewable energy projects are seriously focused to prevention of climate change.

As on date (until 2016) ONGC have established 13 projects of Clean Development Mechanism which are registered till march 2016 with **United Nations Frame Work Convention on Climate Change**. One registered in 2016 is **Gas Flare Recovery** at **GGS; chairali** also in 2014, 726.6 MW gas power plant of ONGC was inaugurated by PM Narendra Modi at Tripura power plant. This is the largest gas power plant in India & biggest CDM (Clean Development Mechanism) projects of the World.

5.3.4 Sustainability Seminars

There are Seminars on energy and sustainability organized at regular intervals. Such exchange of thoughts, offer Mutual Idea Sharing platforms, which provide a fillip to sustainability efforts. One such seminar was organized in November 15 by ONGC & Petrotech society.

5.3.5 Biodiversity

ONGC is environmentally sensitive, and is aware of sensitivity of surrounding, therefore no upstream or down stream activity is carried out in areas declared as environmentally fragile. Commencement of any project is preceded by Environment Impact Studies (EIA). In Fy 16, 74 Environmental clearances were therefore obtained. As company is aligned to UNGC observing its 10 principles, ONGC has **adopted an approach with two heads, which consider biodiversity factors** :-

(a)   Study of risk & Impacts of ONGC operations.
(b)   Management of Biodiversity and integrating it into Environmental Management System (EMS).

ONGC regularly plants trees to restore environment & flora including protection of fragiles Himalyan Ecosystem with Ringel plantation. Various biodiversity projects undertaken are as under :-

(a)   Ringel plantation in Upper Himalyans.
(b)   Mangrove plantation.
(c)   Swamp & Deer Conservation project.
(d)   Whorkshop on bench **M**arking **E**nvironmental protection and **N**atural resource conservation in E&P Industry.
(e)   Skill development for Biodiversity conservation & protection.

5.3.6 Global Methane Initiative

This Initiative facilitates cooperative mitigation activities that result in bringing more gas to markets through the Identification, Quantification and Reduction (IQR) (COP 2016). ONGC entered into MOU with US Environment protection Agency (USEPA) in Aug 2007.

ONGC have procured methane emission detection measurement equipment to undertake fugitive Emission Detection and quantification at its facilities. ONGC has plan to map its sites for fugitive hydrocarbon emission & make installation leak free.

Year	2009-10	2010-11	2011-12	2012-13	2013-14
Methane Reduction	4.72	0.62	1.99	2.44	0.783

5.3.7   ONGC & Corporate SustainabilityONGC stringently follows triple bottom line approach to deliver sustainable development. ONGC have realized that Carbon Management efforts are the correct & most effective route to business specific sustainable development. Various CDM projects of ONGC are registered, which add to the portfolio of ONGC Carbon credits. Therefore, company is continuously working to reduce carbon footprint, by reducing direct & indirect energy consumption.

5.3.8   Attributes Related to Environment Principles
ONGC complies to various attributes which are included in UNGC three Environmental Principles. The compliance to UNGC principles while confirming to various attributes, does practice are given as under.

S. No	Attributes	Observed / Not Observed by OIL	Action / Remarks
(a)	Carbon Credits		(a) MOU with USEPA for knowledge & capacity and also reduce Methane Emission. (b) Reducing direct & indirect Energy consumption. (c) Registering of various CDM Projects.
(b)	Tap unconventional Energy	Observed	Gas Plants, Solar Power Plants & Wind Energy Plants installed, (investment in Renewable Energy).
(c)	Shore Line Protection	Observed	Mass Tree plantation in Operational Area.
(d)	Sustaining Eco System	Observed	Wetland conservation, fauna protection & sustainability best practices.
(e)	Sludge Treatment	Observed	Oily sludge in recycled & OIL also has sludge treatment & recovery plant. Bio remediation project undertaken with TERI, using bacteria oil zappers.
(f)	Carbon Neutrality *		(a) ONGC strives to reduce CO2 Emissions and work toward of Carbon neutrality. (b) It follows sustainable development through Carbon Management. (c) Joined carbon disclosure project in UK.

(g)	Waste Utilisation	Observed	Best practices from oil industry are adopted to manage waste. Hazardous Waste & E Waste is channelized to only such units which possess Environmentally Sound Management facilities (ESM) including E Waste.
(h)	Capturing Fugitive Methane	Observed	ONGC has Formed Internal Teams to work on fugitive Methane & Procured Fugitive Methane Emission Detection & Measurement Equipment in order to undertake fugitive emission Detection. ONGC plans to map all its production installations for fugitive emission & make them leak free.
(i)	Reducing Gas Flaring	Observed	Properly designed flare pits.
(j)	Saving Fuel	Observed	Reduction in Energy consumption (Conversion and retrofitting of Equipment)
(k)	Noise Attenuator	Observed	Provided at source.
(l)	Energy Saving	Observed	Through Regular Energy audit, & applying best practices of the industry.

* Global Methane Org. ONGC approach to GHG Management System – Global Methane Initiative.

5.4.   **HINDUSTAN PETROLIUM CORPORATION LIMITED(HPCL)**

HPCL is working towards quality product & sustainability practice, to create & preserve **Green Environment**. The company enriches the economy, provides strength & at the same time ensures safe, healthy, green & sustainable tomorrow, by applying best practices available. HPCL understands the dynamics of doing business in present scenario where in there is a necessity to transition from hydrocarbon based energy system to low carbon renewable energy fuel or mechanism,

5.4.1   **Sustainability Approach**

To grow better HPCL have formulated a T-20 approach strategy, which is a five year strategic plan till the year the year 2020-21. It values customers and through T-20 aims to arrive at a faster growth and profit maximization. Sustainability & materiality at HPCL are aligned, with ethos of interdependent stakeholders & business. Importance & greater value accorded to community symbolizes more sustainable & holistic growth. T-20 is a strategic plan till 2020-21. HPCL ensure healthy & pollution free environment in and around its area of operation. Process Safety Management (PSM) is embedded in safety and Environmental policies of HPCL. Well established provisions are made for averting & reducing to bare minimum, the outcome of loss of during containment (Catastrophic releases of toxic, flammable or explosive chemicals) involving all stake holders.

5.4.2   **Environment & HPCL**

HPCL is working with an aim of all round development & impacting business through triple bottom line. Keeping Environmental agenda on priority for doing business, HPCL have been improving systems & procedures & connecting to latest system available. Therefore all major   installations of company are equipped with certificates of Industry Standard Environment Management System. HPCL have Institutionalized Environmental Management System (IEMS) & refineries are ISO 14001 certified to Energy efficiency & water conservation is on focus, therefore, regular Energy audits, LEDs installed, & water efficient system have been   implemented. The ETP (Effluent Treatment Plants), Air Emission Control, waste disposal are part of best practices of the company. T-20 strategy therefore concentrates on renewable Energy, & reduction of Carbon footprints. Regular training & seminars are organized for better understanding of the environment management.

To preserve & conserve environment focus is on recycle & reuse. This ensures lesser exploitation & misuse of already depleting natural resources.

5.4.3   Energy Efficiency & Conservation
Oil & Gas sector in energy intensive for production & processing of fossil fuels. HPCL takes it seriously & then carefully monitors its energy requirement & consumption, thereby reducing overall usage. The aim being energy conservation.

Direct Energy Consumption (in Million GJ)
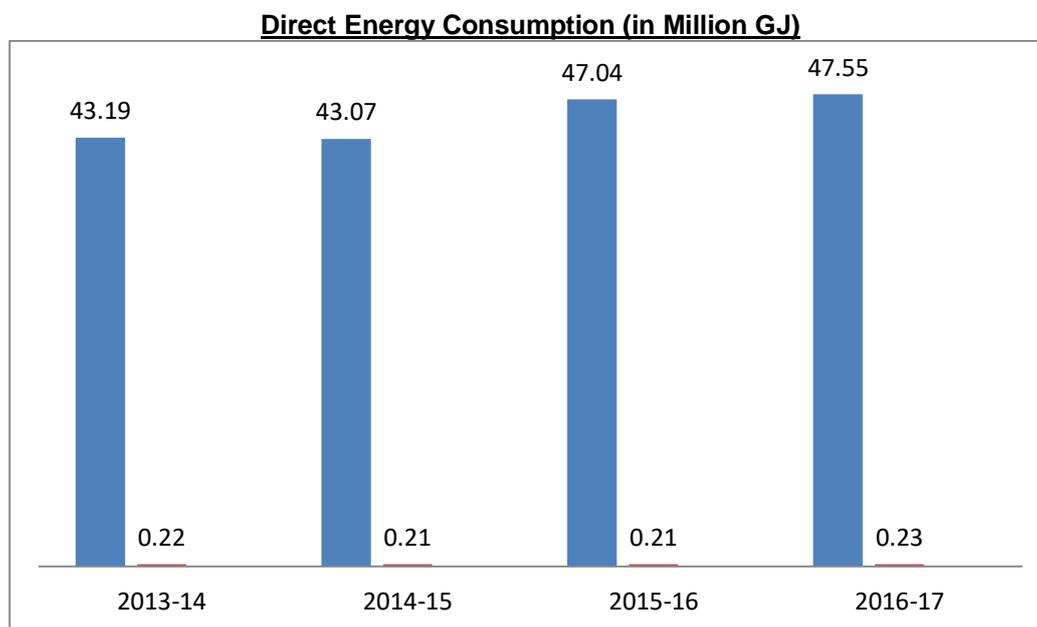
Legend:
- ■ Refineries
- ■ Marketing locations

Indirect Energy Consumption (in Million GJ)
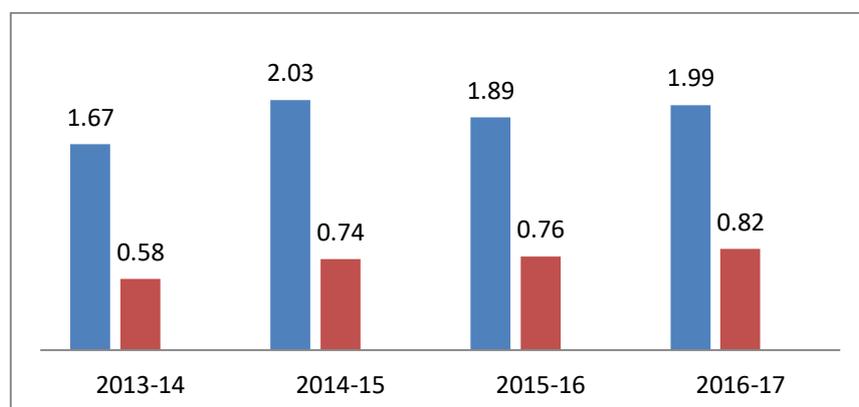
At a glance it appears that there has been some increase in energy consumption. It is quite evident that as compared to the input & out ie both in terms of down stream & upstream operation, there has been a rise, however energy consumption increase is fairly marginal, During this period, increase in energy consumption, has been mainly due to consuming of facilities[i] as under & many more.

- Diesel Hydro Treater (DHT)
- Diesel Hydro Treater – Hydrogen Generation Unit (DHT – HGU)
- DHT-SRU (Sulphur Recovery Unit)
- Continuous   catalytic   Regeneration   (CCR)   &   pressure   saving Adsorption(PSA)

    All above & increase in production mandate higher energy consumption. Under mentioned purpose are served by above[i].

- DHT: Production of Euro-IV HSD Fuel.
- DHT SRU: Increase in Sulphur Recovery Unit, to reduce SO_2 emission by 0.5 Tons/day.
- CCRPSA- Recovery of hydrogen –from CCR & Save hydrogen fuel.

5.4.4   Energy Conservation Initiations
        Above is the basis of carbon emission Management, not only does it saves currency as it involves major operating cost, but helps preserving environment too. Clean technology employed by HPCL allows minimum carbon footprint. Due to large capital investment in both Mumbai & Visakh Refinery in 2016-17 on Encon, resulted in HPCL recording lowest ever energy consumption with respect to **Energy Intensity Index** (ETI) (COP 2016-17) & saving of 35,500 SRFT/year (Standard Refinery Fuel Tonnage per year).

5.4.5   Emission Reduction
        HPCL is aware of their carbon footprints & therefore carefully move ahead to reducing its harmful effect & attempt to preserve environment. All methodologies adopted obtained from IPCC (Intergovernmental Metal Panel on Climate Changes) guidelines for National

Green house gas Inventories – 2006, IPCC ARU fourth Assessment Report, Central Electricity Authority (CEA) –CO_2 & India GHG programs 2015.

5.4.6 Scope 1 Emission
(GHG Emission due to burning of fuels for generating Energy within the premises)
Direct GHG Emission (in Million Metric t CO_2 e)
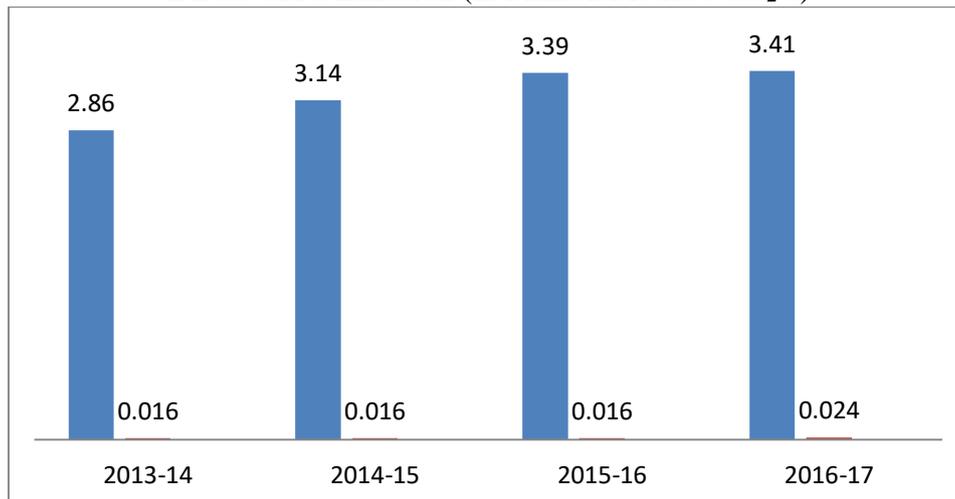
5.4.7 Scope 2 Emission GHG Emission (from Generation of Purchased Electricity)
Indirect Greenhouse Gas Emission (in Million Metric t CO_2 e)
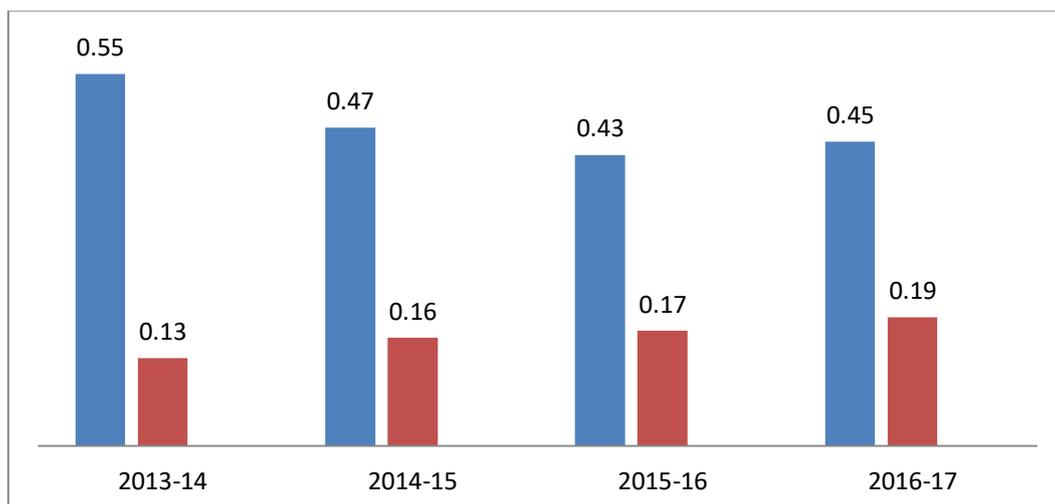
Emission Intensity (in t CO_2 3/MT)
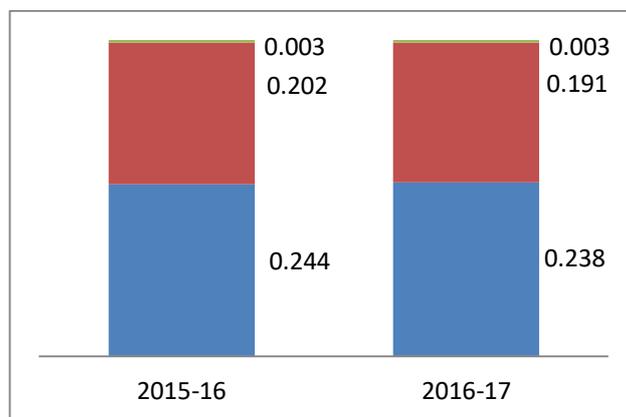
(Courtesy COP 2016-17)

- Mumbai Refinery
- Vikash Refinery
- Marketing locations

5.4.8 Scope 3 Emission

In 2015-16 scope 3 emission, includes emission from carriage of products of HPCL by various transport, (rail, road & shipping) & commuting of employees. In 2016-17, scope & emission was 0.802 MT CO_2 e & for employee commute it was 0.001/MMT CO_2 e. Therefore there is a regular monitoring mechanism.

5.4.9 Initiatives for Emission Reduction

- Evacuation of 75% of products through pipelines
- Switching to BSIV regulation from Jan 2017.
- Fuel gas is treated in fuel gas desulphurization unit to bring down sulphur Content before firing in furnaces & boilers & reducing Sox.
- Low NOx burners installed to monitor flare.
- Flare gas recovery installed & reducing air emission self.

5.4.10 Biodiversity

- Planting of saplings up to 2 lakhs in 2016-17 by Vikash Refinery.
- Development of Agro climatic green belts.

5.4.11 Renewable Energy.

In view of adverse impact of climate, **HPCL is working towards renewable energy**. In 2015-16 the company has achieved their first grid connected captive solar plant of 258 KWp capacities at Ennor Terminal, Chennai with a total cost of 279 lacs. Estimated annual generation would be 4.13 lacs KWh, to be used in Terminal, resulting in a saving of 29 lacs. HPCL have in the reporting year, installed 1,016 KWp of solar Energy plant & generated solar energy of 335,610 KWh. By the year 2016-17, the total capacity of HPCL reached 1500 KWp[i]. Total 445 retail outlets have been solarised during the year 2016-17 & cumulative 1247 outlets.

5.4.12 **Water Management & Conservation**

Conservation of water has been on top priority for HPCL. Monitoring & initiatives to reduce consumption & recycling is practiced. Various measures to conserve water are :-

- Phytoremediation.
- Zero water Discharge.
- Effluent Treatment Plant (ETP).
- Sewage Treatment Plant (STP).
- Rainwater Harvesting.

5.4.13 **Water Consumption**

Water withdrawal by source (in 000 KL) in Refineries.

Source	Year	
	2015-16	2016-17
Municipal	10,658	9,886
Sea Water	93,652	1,02,088
Rainwater Harvested for reuse	173	82
Total	104,483	1,12,057

Water withdrawal by source at Marketing Location.

Ser No	Source of Water	Units	Year		
			2013-14	2015-16	2016-17
1.	Ground Water	000 KL	6,62,857	10,658	810
2.	Municipal	000 KL	2,69,194	344	379
3.	Tanker	000 KL	1,04,296	193	210
4.	Fresh Water from other organization	000 KL	-	36	73
5	Through borewell	000 KL			
6.	River Kanal water	000 KL	60,462	53	45
7.	Reservoir/Lakes	000 KL	4,78,978	35	9
8.	Rain Water Harvested and collected for reuse	000 KL	-	38	4
	Total		15,75,760	11,358	1,530

The Total water recycled & reused.

Units (KL)	2015-16	2016-17
Refinery Location	18666	52140
Marketing Location	475	507
Percentage recycled	18%	18%

There has been an attempt to recycle & reuse water. Considering Production & Expansion use of water in this ratio is minimal. Effluents present in water to achieve zero liquid discharge at operational location are practiced to conserve water thus presenting damage to environment. Sustainable practice are a norms in HPCL.

5.4.14 Waste Management

HPCL follows statutory norms and regulations stated by MOEF & CC, CPCB & SPCP. Disposal is through CPCB approved Common Hazardous Waste Treatment, Storage & Disposal Facility (CHWTSDF). Oil Zapper technology in used, as bioremediation where microbes are used to remove hazardous oily sludge from water.

Attributes Related to Environment Principles

HPCL complies to various attributes which are included in UNGC three Environmental Principles. The compliance to UNGC principles while confirming to various attributes/ practice are given as under.

Ser No	Attributes	Observed / Not Observed by OIL	Action / Remarks
(a)	Carbon Credits	Observed	-
(b)	Tap unconventional Energy	Observed	A large amount of Investment has been made towards solar energy plants installation/ commissioning of 50.5 MW wind project in Jaiselmer & 96.2MKwh wind farm in Maharashtra (COP 16-17)
(c)	Shore Line Protection	Observed	Two lakh saplings planted by Vikash refinery, Vishakhapatnam in 2016-17, & 1,50,000 saplings planted in 2015-16.
(d)	Sustaining Eco System	Observed	Developing Agro climatic green belts to planting saplings.
(e)	Sludge Treatment	Observed	Bioremediation, using Oil Zapper Technology
(f)	Carbon Neutrality *		___ network established for distribution of product 17.91 Million MT though put, achieved in (2015-16 COP sustainability report). This helps in carbon foot print.
(g)	Waste Utilisation	Observed	HPCL follows norms & Regulations stated by MOEF & CC, CCPB & SPCP
(h)	Capturing Fugitive Methane	-	-
(i)	Reducing Gas Flaring*	Observed	New Flare Gas Recovery Compressors were commissioned were Vikash Refinery of flare gas & reuse as refinery fuel Gas. (COP 2016-17) This has reduced emission.
(j)	Saving Fuel	Observed	Provided at various operation system & equipment.

(k)	Noise Attenuator	Observed	Improvement in Diesel Hydro Desulphurization (DHDS) & put 180 ___ Technology, first in India, It has lead to energy efficiency (COP2015-16).
(l)	Energy Saving	Observed	(a) HPCL, carefully monitors energy requirement & consumption. (b) Use of Renewable Energy of LED Fixtures for high masts reducing energy use by 77% compressor optimization by modification and arresting leakage reducing 4% energy consumption.

6.   Suggestion/Conclusion

Clearly, it thus emerges that Oil & Gas companies are a contributor to environmental pollution/damage to some extent and therefore have major role to play in mitigation. In addition the role may not be limited to environmental care and protection but contribution to society and its stake holders in a major way. It cannot be deduced that Oil and Gas Companies are not playing up their role; in fact a lot is being done by number of oil and gas companies eg. **Indian Oil Corporation Ltd. (IOCL).**

The **oil and gas industry** is a **major contributor to the society** in terms of necessities of **energy requirement** besides **revenue generation** and **job creation**, and **it has, thus, a major role to play in our lives**. Therefore it is safe to say that it is **much more than source of energy to the society**. Not only does it **provide energy** but also does much more for various other industries in respect of **different consumer related items and product as feed stock**. Therefore, contribution of this industry has a far reaching effect, though it certainly has various negative environmental impacts to be countered by mankind.

The **positive role** of this industry as played is quite significant, even at the cost in terms of reiteration, in generation of jobs and **large volume of tax creation from revenue generation and monetisation in terms of royalties to the government**. If proactive strategies are adopted for environmental protection then even oil companies may profit more in different ways. Oil and Gas sector is real global as its operations are under process across the globe. The **global community relies on it for various requirements**. Thus **the global role of this industry is to provide energy to approximately above 60 percent of the humanity** for various purposes.

The add on and **most important role** of Oil and Gas companies is **to practice Corporate sustainability** which is essential in present scenario of doing business– a must for ensuring to deliver value across society. Therefore they are **required to do five things** which include **operating responsibly in alignment with universal principles and taking actions that support the society around them**. **Push sustainability deep into the corporate DNA**, companies must **commit at the highest level**, **report annually** on their efforts, and **engage locally** where they have a presence.

One major emphatic point to be understood in terms of protection of environment during different phases of oil & gas exploitation would be to organize for assessment, the mitigation techniques. The **environment has to be protected against the fallout of oil and gas exploitation**, be it oil & gas or shale gas. **This is a major environmental role.**

What Oil and Gas Companies should focus on? It is understood that world requirement of up to 50% is met with oil and gas[i], and a huge quantum, in terms of energy is required and released during its exploration/production/ transportation/refining/ distribution/ consumption. In view of above mentioned sustainability assumes importance and is therefore invoked. Thus it is pertinent that Oil and Gas companies should focus on under mentioned issues:-

(a)   **Safety measures around oil spills**

Safety is of utmost importance in terms of life, environment and ecological conservation. Therefore oil and gas and their subsidiary companies have to institute various measures and implement mitigation techniques embedded in their policy/guidelines.

(b)   **Renewable**

Oil and Gas companies have to be sincere in their efforts to reduce the outflow of GHG pollution making discharge and sincerely focus on renewable energy sources and reduce the adverse environmental degradation and its impact.

(c)   Energy Efficiency

A huge amount of energy is consumed in this industry. Be it exploration, production, from processing to re-fining or transportation. GHG are produced in   every stage of oil and gas company operations. During the process of direct combustion in various units and in the gas processing equipments to the process of flaring, venting and fugitive methane, at every stage GHG is let loose. A must requirement is therefore to disclose and reduce such emissions in the long run. A number of international organisations with standards and measures recommend ways to reduce emissions like Carbon Disclosure Project & the Global Methane Initiative.

(d)   **Water**

The oil and gas companies operations involve a large amount of consumption of water which also depends on oil and gas extraction methods. It is certain that water produced from various processes contaminates water bodies. The major water contaminating products of oil and gas company operations are fracking fluids, methane leaks, and oil or chemical spills, which may affect potable water. As per UN Global Compact – CEO water mandate, when corporate acknowledges global water challenges and its impact and risk on the business, and then a number of ways could be adopted for reduction of such risks.

Collaborate to change

It is pertinent for oil and gas companies to collaborate with other related energy producers and cause of climate changes in whatever form, and bring about a change in the mind set to reduce their, any kind of discharge and contribution to pollution affecting the environment. It is an established fact the energy forms an integral part of our lives driving all forms of life support services and equipment related to transportation, lighting, cooking and various other needs. Therefore sufficient efforts are required and coordination at different level to arrive at a workable plan and save environment.

CSR and sustainability drive for companies, importantly could be designed based on the above five areas of Exploration, drilling and production, transportation & consumption. Though there are many other aspects mentioned in the Global Reporting Initiatives, Oil and Gas Sector Disclosure as well as IPIECA guidelines.

The diagram highlights important issues oil and gas companies require to know :

Oil and Gas Materiality

Exploration	Production	Transportation	Refining	Consumption	Environment
Disturbing natural habitats	Oil spills prevention and response	Oil spills prevention and response	Oil spills prevention and response	Emissions	Ecological Degradation
Oil spills and response	Disturbing natural habitats	Emissions	Disturbing natural habitats	Waste	Climate Change
Drilling process plans	Protecting health and Safety	Supply chain related	Emissions	New Technology	Society
Protecting health and safety	Preventing major accidents	New Technology	Waste	Protecting health and safety	Workforce Training & Restructure
Local development	New Technology to de-risk	Protecting health and safety	Local development		Strikes & lockouts
	Local development		New Technology		Occupational Health& Safety
	Emissions		Protecting health and safety		Community Displacement
	Waste				

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TOURIST PERCEPTION ABOUT ECO-TOURISM DEVELOPMENTS IN GREAT HIMALAYAN NATIONAL PARK- AN UNESCO WORLD HERITAGE SITE

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Abstract

The concept of ecotourism basically developed from the Sustainability measures of the destination and community participation in the tourism activities. Tourist's perception plays an important role for the growth and development of any destination and well execution of tourism activities. Tourists give the exact feedback about the destination and their needs and want. The Great Himalayan National Park (GHNP), Kullu, Himachal Pradesh is one of the best ecotourism destination in the state. The GHNP organizes various adventurous activities like trekking, wildlife viewing, bird watching, Rafting, Climbing, Mountain biking, local sightseeing through the NGO, Bio-diversity Tourism & Community Advancement (BTCA). It was observed that it is a perfect place for ecotourism. The park have been inscribed in the UNESCO world heritage list in June 2104. This paper tries to analyze the tourists 'perception about various issues of eco-tourism in Great Himalayan National Park.
Key Words: Ecotourism, Tourist's Perception, UNESCO, Bio-diversity, Sustainability

Introduction

Himachal Pradesh as a state is known for its mountains and natural scenic beauty. The total area of Himachal is 55673 sq. kilometers out of which approximately 37,033 sq. kilometers falls under natural forests which covers around 4.80% of the total forest reserve of entire country. In addition, around 20.45% area of forests in Himachal is also reserved for the protection of wildlife and natural biodiversity. Ecotourism typically involves travel to destinations where flora, fauna, and cultural heritage are the primary attractions. Ecotourism is intended to offer tourists insight into the impact of human beings on the environment, and to foster a greater appreciation of our natural habitats. Community participation plays an important role for the ecotourism developments. Ecotourism ensures that the benefits; both social and economic should be realized by the local communities.

The most famous/well renowned national park of Himachal known as The Great Himalayan National Park (GHNP) falls under the geographical territory of Kullu district which is also known for its tourism potential. The GHNP was a joint initiative of British, American and Indian/state of Himachal Pradesh governments and was constituted in 1984 in the beautiful valley of Seraj. The total land coverage of GHNP was around 754.4 sq. kilometers at the time of its inception and was declared as full-fledged National Park in 1999. Further, to sustain eco-development programs which were supposed to run in GHNP, an area of 265.6 sq. kilometers is reserved for the population of around 16000-18000 people, 160 villages and approximately

2300 families living in the above mentioned area. Further, two additional wildlife sanctuaries in Sainj and Trithan valleys of Himachal were notified in 1994 covering the area of 90 and 61 sq. kilometers and were later added in the total area of Great Himalayan National Park Conservation Area expanding its pervious area from 754.4 sq kilometers to 1171 sq. kilometers.

Table 1

Geographical Area of Great Himalayan National Park

Sr. No.	Name of Protected Area	Area (Sq. Km.)	Population / Villages
1.	National Park	754.4	0
2.	Sainj Wildlife Sanctuary	90.0	3 Villages
3.	Tirthan Wildlife Sanctuary	61.0	0
4.	EcoZone	265.6	160 Villages 2300 Households
Total		1171.0	

Tourist's perception plays an important role for the growth and development of any destination and well execution of tourism activities. Tourists give the exact feedback about the destination and their needs and want. They help us to improve, maintain, sustain and change our policies for the growth and development of the destination. The concept of ecotourism basically developed from the Sustainability measures of the destination and community participation in the tourism activities. Community participation plays an important role in the conservation of tourist destination, as the local community is directly or indirectly affected with these activities and tourists must be satisfied with all the activities.

Picture 1

Camping in GHNP

Study Area

The study is confined to the Tourist Perception for the Ecotourism developments in the Great Himalayan National Park Conservational Area (GHNPCA) Kullu, Himachal Pradesh. The study explored the tourist's perceptions, satisfaction level for facilities and services with regards to Ecotourism developments in the area.

Need and Significance of the Study

The Great Himalayan National Park is an important nature based destination having a rich biodiversity, where visitors come to enjoy the natural beauty, landscapes, terrains, flora and fauna, biodiversity in its purest form. When a tourist is satisfied with the destination, services and facilities provided; a positive image develops in his mind for that destination and he brings more tourists to the destination with positive word of mouth about the destination. On the other hand if negative word of mouth about the destination can be threat to the tourism in that area. So there is a need to study the perception of tourists about the ecotourism developments in the study area.

Literature Review

A thorough study was done on information available about Ecotourism developments and Tourists perception from various research papers, journals, News articles, literature and other related articles. **Singh & Raj (1987)** in their study on tourism in Kullu Valley in Himachal Pradesh examined the problems and prospects of tourism. They observed that tourists come to visit the Valley for mountaineering, skiing, sightseeing, trekking, photography, fishing, and other entertainment activities. They observed that higher fares and inadequate public transport facilities are the cause of inconvenience for tourists in their local movement. They also observed that valley has less number of cheaper hotels and tourists face language problems in the remote areas. **World Tourism Organization (1998)** in their report on the role of local authorities explained that local authorities play an important role in many aspects for the development and operations of tourism which helps to provide better and convenient atmosphere to tourists. They said that community involvement is the key part in this process as it ensure the participation in planning and development, therefore it increases the possibility of achieving more local benefits from tourism like- employment, income, establishing tourism related enterprises. The report also highlighted that importance of proper planning, efficient implementation and effective management to optimize the benefits of tourism. **Shah and Gupta (2000)** in their study described that domestic or regional tourists are particularly important clients for self-employed sellers and owners of small establishments (the skilled poor and not-so-poor). They described that studies in Yogyakarta (Indonesia) and elsewhere in South East Asia show that domestic and other Asian tourist tend to buy more from the local vendors than Western tourists. **Gardner et at. (2002)** studied the tourism developments and its impacts on Kullu Manali area and observed that the accelerated growth of tourism in Kullu District of Himachal Pradesh over the past decade had a large number of impacts on local community, economy on environment. The Kullu District is blessed with the spectacular mountain scenery and fascinating cultural heritage with deep historical roots which had gained a rapid growth in mid-1990. They also observed that current level of tourism is not sustainable and the physical and cultural attractions of the area are compromised by certain impacts of tourism. They concluded that this growth in tourism had occurred with both positive and negative effects. **Shrivastava et al. (2004)** observed that strategic tourism planning in Seraj Valley, Himachal Pradesh is necessary to ensure that local peoples are able to get benefits from

tourism in their region as well as to ensure sustainable development in the fragile environment. They also suggested the number of possible ways by which local communities might be able to earn money from tourism directly. They also highlighted the need to frame a livelihood strategy for the development of local community through tourism and special focus to study the impacts of tourism. **Cros (2007)** observed that when a heritage site gets inscription into UNESCO world heritage list, it becomes a tourist attraction all over the world. It develops the curiosity among the peoples about the destination for different cultures and results in increasing the numbers of visitors to the world heritage site and leads to strengthen the country's economy. He also observed that it also help to increase the new job opportunities and improve the social life of the local community. He also suggested that by improving the quality standard and proving better advertisement opportunities, number of tourists and their stay at the destination increases to a large extent. **Allan et al. (2017)** studied threatens to the Natural World Heritage Sites from human pressure and forest loss. When any site gets designated as Natural Heritage Site by United Nations, they are globally recognized as containing Earth's most valuable assets and gets attentions all over the world. It becomes necessary to understand the ecological changes at the sites for their preservation. They observed that human pressure increased faster and more forest loss occurred in the areas surrounding Natural World Heritage Sites. They suggested the World Heritage Committee to access the status of these sites, which they analyzed as the threatened, and suggested the urgent conservation intervention to save many of these sites for the sustainable ecotourism development.

The GHNPCA has been successful in ecotourism development by providing alternate livelihoods in support of conserving biodiversity, creating a tangible impact and as a result, the local villagers have organized themselves through an NGO, Biodiversity Tourism and Community Advancement (BTCA) which is working with the Great Himalayan National Park Management to increase the facilities and service quality for sustainable ecotourism developments in the study area.

Objectives of the Study

The study was carried to meet the following objectives:

- To study the status of ecotourism developments in Great Himalayan National Park, Kullu, Himachal Pradesh.
- To study the perception of ecotourism developments in the Great Himalayan National Park Conservation Area.
- To suggest measures for ecotourism development in Great Himalayan National Park Conservation Area.

Methodology

The research design is descriptive in nature. This is an exploratory research study which attempts to analyze the perception of tourists about ecotourism activities and status of ecotourism developments in Great Himalayan National Park Conservation Area. The method of data collection is mainly based on primary data. However, an effort is made to collect the

information from competent persons off and on in the study area. A series of field trips was made to the study area and observations were made by taking the personnel interviews of Tourists, Officials of Park management, NGO officials, Local Communities and other stakeholders. The present study examined the perception of tourists about ecotourism developments in and around Great Himalayan National Park.

Data Analysis & Data Interpretation

The Great Himalayan National Park (GHNP), Kullu, Himachal Pradesh is one of the best ecotourism destination in the state. In order to study the perception of tourists about ecotourism developments in Great Himalayan National Park (GHNP), a sample size of 100 respondents from the tourist's community selected. The study was completed with the help of primary as well secondary data through structured questionnaires and observations done by the researcher during field trips in the study area. The respondents were tourist to the study area in and around the Great Himalayan National Park.

Table 1

Perception of Tourists about the Great Himalayan National Park

Attributes	SA	A	N	D	SD	Mean	Standard Deviation	Skewness	Kurtosis
Auxiliary interpretation such as books, brochures and pamphlets are goods	14	60	18	8	0	2.20	0.778	0.682	0.427
Physical environment is best	30	64	4	2	0	1.80	0.696	1.759	7.426
Layout of the park is good	32	62	4	0	2	1.78	0.705	1.753	7.173
Equipment of the park are good in working condition	44	46	10	0	0	1.66	0.655	0.485	-0.687
Guide plate quality is good	20	54	24	2	0	2.08	0.720	0.210	-0.239
Facilities for the handicapped tourists are nice	18	36	36	10	0	2.38	0.896	0.026	-0.763
Park atmosphere is good	46	44	8	2	0	1.66	0.714	0.946	0.838
Attractions of the park is good	54	38	6	2	0	1.56	0.701	1.219	1.505
Tourists perceptions about the park environment quality is good	40	46	12	2	0	1.76	0.740	0.723	0.204
Confortable recreational activities are available	54	36	8	2	0	1.58	0.727	0.947	0.522

Source: Data Collected through Questionnaires, S.A. strongly Agree, A. agrees, N. neutral, D. disagree, S.D. strongly disagree

Figure 1
Tourist's views for Auxiliary Interpretations
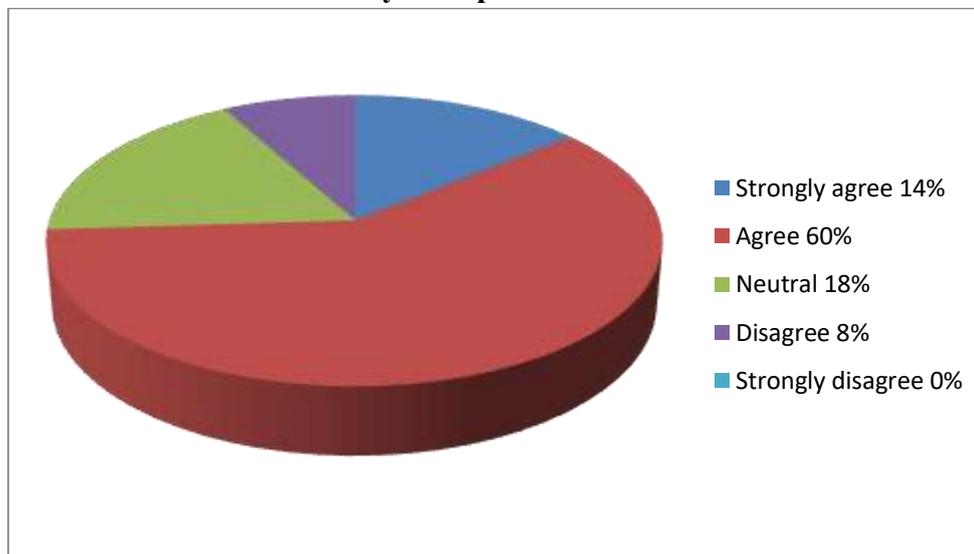
Tourist's views about the auxiliary interpretations with regards to Great Himalayan National park were analyzed, and it is observed from the figure 1 that 14% of the respondents have strongly agreed with the statement that the auxiliary interpretations such as books, brochures and pamphlets are goods; also 60% respondents have agreed; whereas 18% respondents have neutral opinion; however 8% respondents have disagreed opinion and no respondent have strongly disagreed opinion. It is revealed from the Table 7.1 that mean score to the responses relating to the auxiliary interpretations such as books, brochures and pamphlets about the study area is on higher side of the mean standard score from 2.20 in standard score 3 in five point scale. This reflects that their opinion is distributed towards from agree to strongly disagree side. The standard deviation 0.778 is on lower side of mean score and the value of Skewness has turned out to be affirmative indicating that variation has been scattered towards the lower side of the mean. The positive value of Skewness 0.682 denotes the disparity in the responses tends to fall below average. The calculated value of kurtosis 0.427 shows the distribution more towards lower of average. It leads to the conclusion that majority respondents have agreed opinion that auxiliary interpretations such as books, brochures and pamphlets about the study area is good.

Figure2
Tourist's views about Physical Environment
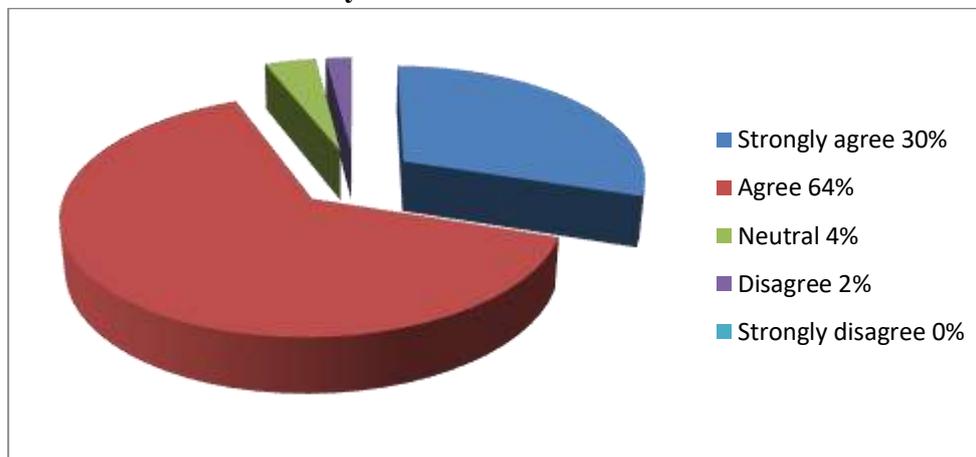
Tourists were asked about the physical environment with regards to Great Himalayan National park, and it is observed from the figure 2 that 30% of the respondents have strongly agreed with the statement that the physical environment is good; also 64% respondents have agreed; whereas 4% respondents have neutral opinion; however 2% respondents have disagreed opinion and no respondent have strongly disagreed opinion. It is observed from the Table 7.1 that mean score to the responses relating to the physical environment is on higher side of the mean standard score from 1.80 in standard score 3 in five point scale. This reflects that their opinion is distributed towards from agree to strongly disagree side. The standard deviation 0.696 is on lower side of mean score and the value of Skewness has turned out to be affirmative indicating that variation has been scattered towards the lower side of the mean. The positive value of Skewness 1.759 denotes the disparity in the responses tends to fall below average. The calculated value of kurtosis 7.426 shows the distribution more towards higher of average. It leads to the conclusion that majority respondents have agreed opinion that physical environment in the study area is good.

Picture 2

Tourist enjoying river crossing in GHNP

Figure 3

Tourist's views about Layout of the Park

- strongly agree 32%
- Agree 62%
- Neutral 4%
- Disagree 0%
- Strongly disagree 2%
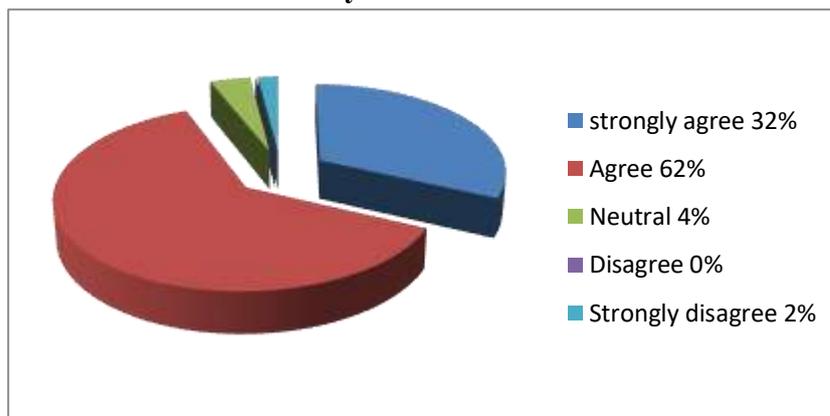
Tourist's views about the layout of Great Himalayan National park were analyzed, and it is observed from the Figure 3 that 32% of the respondents have strongly agreed with the statement that layout of the park is good; also 62% respondents have agreed; whereas 4% respondents have neutral opinion; however none of the respondent have disagreed opinion and 2% respondent have strongly disagreed opinion. It is revealed from the Table 7.1 that mean score to the responses relating to the layout of the park is on higher side of the mean standard score from 1.78 in standard score 3 in five point scale. This reflects that their opinion is distributed towards from agree to strongly disagree side. The standard deviation 0.705 is on lower side of mean score and the value of Skewness has turned out to be affirmative indicating that variation has been scattered towards the lower side of the mean. The positive value of Skewness 1.753 denotes the disparity in the responses tends to fall below average. The calculated value of kurtosis 7.173 shows the distribution more towards higher of average. It

leads to the conclusion that majority respondents have agreed opinion that layout of the park is good.

Figure 4
Tourist's views about Equipment of the Park
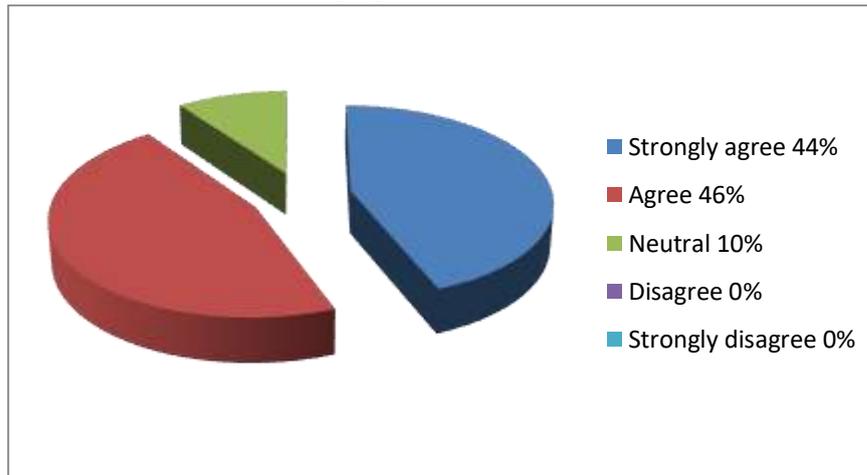
Tourists were asked about the working conditions of the equipment in the study area. It is evident from the Figure 4 that 44% of the respondents have strongly agreed with the statement that the equipment of the park are in good and working condition; also 46% respondents have agreed; whereas 10% respondents have neutral opinion; however no respondent have disagree opinion or strongly disagree opinion. It is noted from the Table 7.1 that mean score to the responses relating to the attitude of employees is on higher side of the mean standard score from 1.66 in standard score 3 in five point scale. This depicts that their opinion is distributed towards from agree to disagree side. The standard deviation 0.655 is on lower side of mean score and the value of Skewness has turned out to be affirmative indicating that variation has been scattered towards the lower side of the mean. The positive value of Skewness 0.485 denotes the disparity in the responses tends to fall below average. The calculated value of kurtosis -0.687 shows the distribution more towards lower of average. It leads to the conclusion that majority respondents have agreed opinion that the equipment of the park are in good and working condition.

Figure 5 Tourist's views about Guide Plate Quality
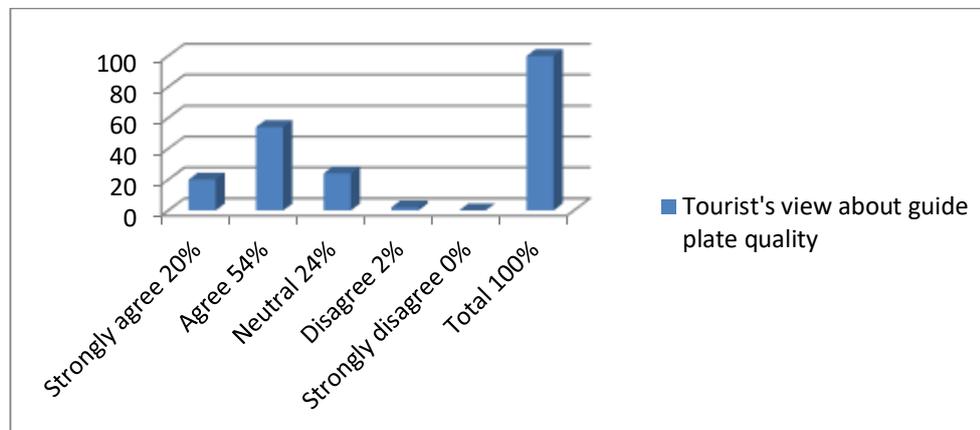
Tourist's views about the guide plate quality were analyzed, and it is observed from the Figure 5 that 20% of the respondents have strongly agreed with the statement that guide plate quality of the Guides working in and around the park is good; also 54% respondents have agreed; whereas 24% respondents have neutral opinion; however 2% of the respondent have disagreed opinion and no respondent have strongly disagreed opinion. It is revealed from the Table 7.1 that mean score to the responses relating to the guide plate quality is on higher side of the mean standard score from 2.08 in standard score 3 in five point scale. This reflects that their opinion is distributed towards from agree to strongly disagree side. The standard deviation 0.720 is on lower side of mean score and the value of Skewness has turned out to be affirmative indicating that variation has been scattered towards the lower side of the mean. The positive value of Skewness 0.210 denotes the disparity in the responses tends to fall below average. The calculated value of kurtosis -0.239 shows the distribution more towards lower of average. It leads to the conclusion that majority respondents have agreed opinion that Guide plate quality good.

Figure 6Tourist's views about Facilities for Handicapped Tourists
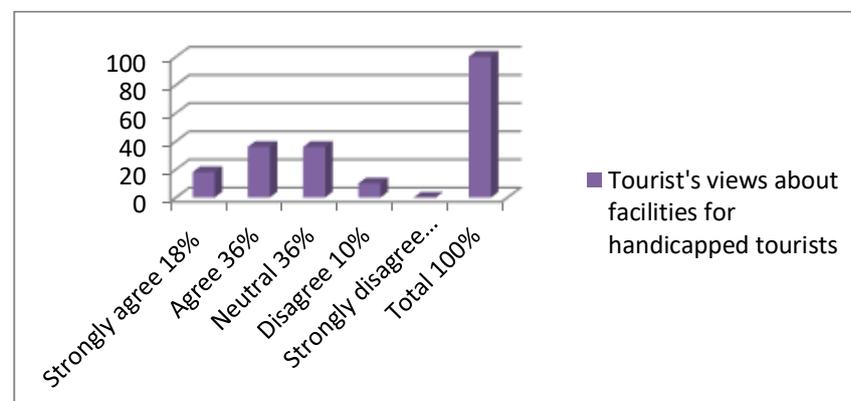
Picture 3Tourist giving their opinion during field survey

Tourists were asked about the facilities for the handicapped tourists in the study area. It is evident from the Figure 6 that 18% of the respondents have strongly agreed with the statement that the facilities for the handicapped tourists in the study area are nice; also 36% respondents have agreed; whereas 36% respondents have neutral opinion; however 10% respondents have disagree opinion and no respondent have strongly disagree opinion. It is noted from the Table 7.1 that mean score to the responses relating to the attitude of employees is on higher side of the mean standard score from 2.38 in standard score 3 in five point scale. This depicts that their opinion is distributed towards from agree to strongly disagree side. The standard deviation 0.896 is on lower side of mean score and the value of Skewness has turned out to be affirmative indicating that variation has been scattered towards the lower side of the mean. The positive value of Skewness 0.026 denotes the disparity in the responses tends to fall below average. The calculated value of kurtosis -0.763 shows the distribution more towards lower of average. It leads to the conclusion that majority respondents have agreed opinion that the facilities for the handicapped tourists in the study area are nice.

Figure 7

Tourists' views about Park Atmosphere

- Strongly agree 54%
- Agree 44%
- Neutral 8%
- Disagree 2%
- Strongly disagree 0%
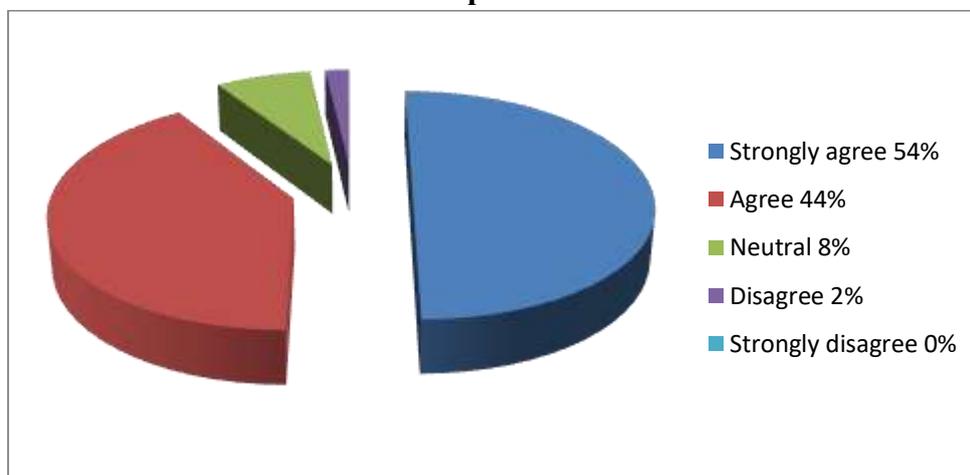
Tourists were asked about the park atmosphere in the study area. It is evident from the Figure 7 that 54% of the respondents have strongly agreed with the statement that the park's atmosphere is good; also 44% respondents have agreed; whereas 8% respondents have neutral opinion; however 2% respondents have disagree opinion and no respondent have strongly disagree opinion. It is noted from the Table 7.1 that mean score to the responses relating to the attitude of employees is on higher side of the mean standard score from 1.66 in standard score 3 in five point scale. This depicts that their opinion is distributed towards from agree to strongly disagree side. The standard deviation 0.714 is on lower side of mean score and the value of Skewness has turned out to be affirmative indicating that variation has been scattered towards the lower side of the mean. The positive value of Skewness 0.946 denotes the disparity in the responses tends to fall below average. The calculated value of kurtosis 0.838 shows the distribution more towards lower of average. It leads to the conclusion that majority respondents have agreed opinion that the park's atmosphere is good.

Figure 8

Tourist's views about Attractions of the Park
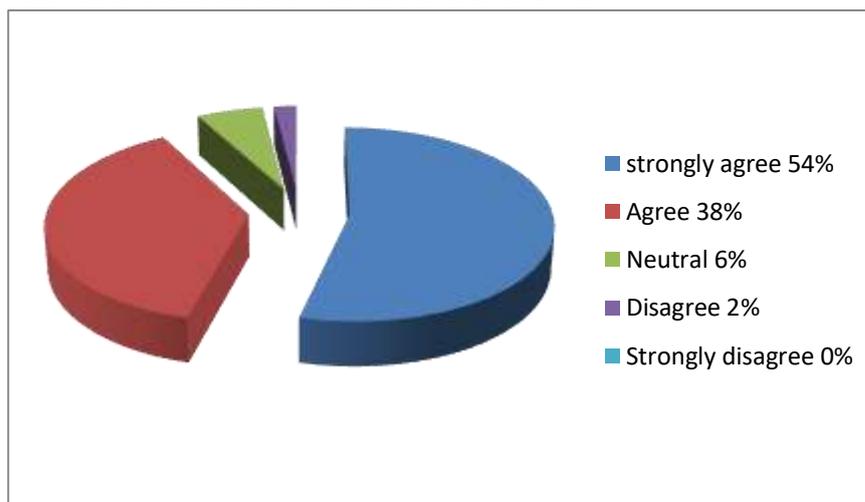
Tourist's views about attractions of the park were analyzed, and it is observed from the Figure 8 that 54% of the respondents have strongly agreed with the statement that attractions of the park are good; also 38% respondents have agreed; whereas 6% respondents have neutral opinion; however 2% of the respondent have disagreed opinion and no respondent have strongly disagreed opinion. It is revealed from the Table 7.1 that mean score to the responses relating to the attractions of the park is on higher side of the mean standard score from 1.56 in standard score 3 in five point scale. This reflects that their opinion is distributed towards from agree to strongly disagree side. The standard deviation 0.701 is on lower side of mean score and the value of Skewness has turned out to be affirmative indicating that variation has been scattered towards the lower side of the mean. The positive value of Skewness 1.219 denotes the disparity in the responses tends to fall below average. The calculated value of kurtosis 1.505

shows the distribution more towards lower of average. It leads to the conclusion that majority respondents have agreed opinion that attractions of the park are good.

Figure 9

Tourist's views about Comfortable Recreational Activities
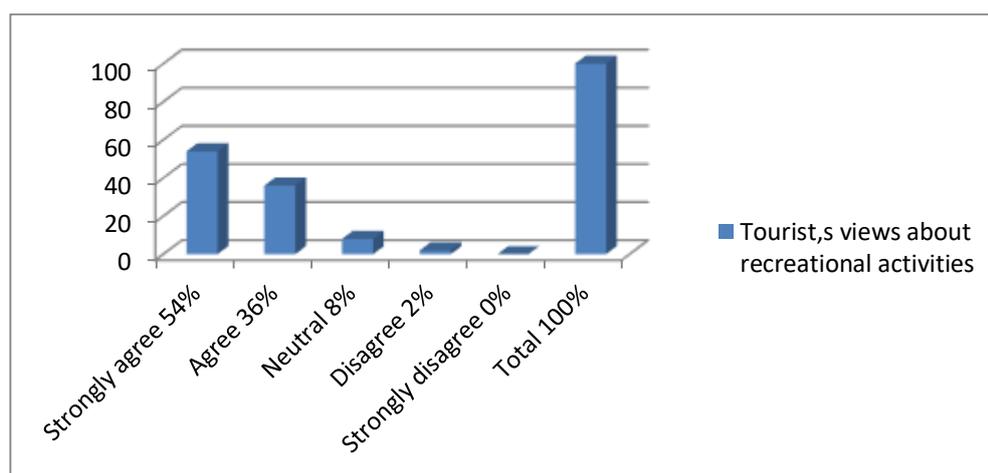
Tourist's views about comfortable and recreational activities in the park were analyzed, and it is observed from the figure 9 that 54% of the respondents have strongly agreed with the statement that comfortable and recreational activities are available in the park; also 36% respondents have agreed; whereas 8% respondents have neutral opinion; however 2% of the respondent have disagreed opinion and no respondent have strongly disagreed opinion. It is revealed from the Table 7.1 that mean score to the responses relating to the attractions of the park is on higher side of the mean standard score from 1.58 in standard score 3 in five point scale. This reflects that their opinion is distributed towards from agree to strongly disagree side. The standard deviation 0.727 is on lower side of mean score and the value of Skewness has turned out to be affirmative indicating that variation has been scattered towards the lower side of the mean. The positive value of Skewness 0.947 denotes the disparity in the responses tends to fall below average. The calculated value of kurtosis 0.522 shows the distribution more towards lower of average. It leads to the conclusion that majority respondents have agreed opinion that comfortable and recreational activities are available in the park.

Suggestions & Conclusion

The Great Himalayan National Park is one of the pioneer ecotourism destinations in Himachal Pradesh. It was constituted in 1984 and was formally declared a national park in 1999. The GHNP organizes various adventurous activities like trekking, wildlife viewing, bird watching, Rafting, Climbing, Mountain biking, local sightseeing through the NGO, Bio-diversity Tourism & Community Advancement (BTCA). It was observed that it is a perfect place for ecotourism.

It is observed from the study that majority of respondents from different age groups, educational qualifications and income have strongly agreed opinion that Ecotourism developments in the Great Himalayan National Park are satisfactory. It is concluded that World Heritage Designation to Great Himalayan National Park have positive impacts on the ecotourism growth in the study area. Although tourism is growing in the study area and tourists are satisfied with the services and facilities, but government needs to work on improving the basic amenities like roads, drinking water, electricity etc as the number of tourists are increasing day by day.

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INFLUENCE OF SOCIAL MEDIA ON THE BUYING BEHAVIOUR OF CONSUMERS: AN EMPIRICAL STUDY

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ABSTRACT

The influence of social media is all pervasive and is on the rise in almost every aspect or field of life and it has also become an essential part of our daily lives, where the netizens as they are called, are tweaking their life style to keep themselves in tune with what is trending and which products they should be seen using. The number of social media users is also increasing due to ease of access especially in the wake of the internet becoming a more common phenomena in these days and times of information era. Wide network coverage and formidable speeds have contributed immensely to an increase in the effective reach of the social media in the light of the fact that these days, every internet user of any age-group or generation, is more amenable to the use of social media. The companies are cashing in on this new found fascination of consumers towards social media and are not leaving any stone unturned to translate this into a tool for changing or tweaking the consumer behavior in a manner suitable to their interests. It is not any surprise that most of the companies are making use of this opportunity and are trying to promote their products through social media networks such as Facebook, Twitter and Instagram etc.

In the current research work, 600 consumers were selected at random to elicit their responses regarding the influence of social media on their buying behavior. The respondents were chosen from the Twin States of Andhra Pradesh and Telangana i.e. Hyderabad, Warangal, Vijayawada and Vishakapathnam.. Two cities were selected from each of the State, Hyderabad and Warangal from Telangana State and Vijayawada and Vishakapatnam (Vizag) from Andhra Pradesh. These cities were selected as they are the most upwardly mobile in the states concerned and are considered mega cities in the states. From each of these four cities, 150 respondents were selected randomly and the ratio of male and female consumers was consciously kept 50% to make the analysis more meaningful. The current paper highlights the influence of social media on the buying behavior of the consumers.

KEYWORDS:

Social Media, Consumer, Buying Behavior

INTRODUCTION

Technological advancement has given a new fillip to the way a product is marketed and the niche to which it carters to also due to the enhancement in the technology, the way of marketing the products is changing and almost all the companies have adopted themselves to the changing environment of competition and technology. Now, the trend of online marketing is on the boom and social media is emerging as the strongest tool to promote the brands.

Recently, XioMi smart phone manufacturing company made use of social media tool ,Twitter, to promote its smart phones where a number of celebrities were included in the campaign and they were asked to tweet about launching of new Mi smart phones. Hence, digital social media has become an important tool for the companies where they can promote their products online.

The biggest advantage of using social media for the purpose of marketing is that it is cost-effective as companies need not spend a lot of money in order to promote the products, and the importance or value attached to the social media is more because the consumers feel that this not being a paid publicity, as it comes from users of the products themselves, lends more credibility to the messages promoted through the social media. Moreover, the buying behavior of the consumers can be evaluated easily through the data mining of the information obtained through social networking sites.

All the comments written by the users in reply of the advertisement of a product, are analyzed by the social media experts to understand the purchasing behavior of the consumers and such an understanding helps them to evaluate whether the consumers are keen to buy these products or not. This also helps in knowing the pitfalls or drawbacks of the products and companies can eliminate these pitfalls drawbacks in the next version of the product.

Hence, social media is becoming more and more useful for the consumers as well as the manufacturing companies as both get the opportunity to know the trend related to the newly launched products. Conversely, the scope of using social media for marketing the products is not going to fade for a fairly long period of time.

Additionally, consumers get the opportunity to know the full specifications of the launched products by studying all the details about a particular product, as a result, the consumer can make an informed decision regarding the purchase of a product rather than taking an importune decision moreover, a consumer can make his or her mind easily as regards the purchase.

According to a recent report, the influence of social media is more evident on the people living in the urban cities as compared to the people of rural regions. The reason behind this fact was shown to be the lack of education and awareness about advanced technology among the rural people. But, in the coming years, it can be expected that the rural people would become more inclusive as regards the reach of social media under the program of Digital India initiated by Indian government. Hence, it can be said that the influence of social media on the buying behavior of the consumers is going to increase in the coming years.

INFLUENCE OF SOCIAL MEDIA ON THE BUYING BEHAVIOUR OF CONSUMERS

In the current research work, 600 consumers were selected to get their responses regarding the influence of social media on their buying behavior. All the respondents were chosen from four cities of the Twin states of Andhra Pradesh and Telangana i.e. *Hyderabad, Warangal, Vijayawada and Vishakapathnam* (Vizag) From each of these four cities, 150 respondents were selected randomly and the ratio of male and female consumers was kept at 50%.

Table 1: Mean Scores, S.D and t- ratio of Feedback on whether Social media affects the buying behavior

Level of Participation	Performance	Feedback	Mean	S.D.	M.D.	S.E.	t-ratio
Hyderabad	N=75 (Males)	40	24.61	2.01	2.51	0.681	3.68*
	N=75 (Females)	20	22.00	2.16			
Warangal	N=75 (Males)	70	25.57	2.27	2.21	0.722	3.06*
	N=75 (Females)	10	23.26	2.16			
Vijayawada	N=75 (Males)	50	27.26	2.59	2.33	0.808	2.86*
	N=75 (Females)	10	24.83	2.38			
Vizag	N=75 (Males)	15	27.86	2.83	2.42	0.942	2.16*
	N=75 (Females)	35	25.00	2.54			

*Significant at 0.05 level of confidence

Data Interpretation

In the case of Hyderabad, the mean scores of feedback of male respondents on whether social media affects the buying behavior is 24.61, S.D. 2.01, the mean scores of feedback of female respondents on whether social media affects the buying behavior is 22.00, S.D. 2.16, the 't' ratio 3.68 was found significant at 0.05 level of confidence.

In the case of Warangal, the mean scores of feedback of male respondents on whether social media affects the buying behavior is 25.57, S.D. 2.27, the mean scores of feedback of female respondents on whether social media affects the buying behavior is 23.26, S.D. 2.16, the 't' ratio 3.06 was found significant at 0.05 level of confidence.

In Vijayawada, the mean scores of feedback of male respondents on whether social media affects the buying behavior is 27.26, S.D. 2.59, the mean scores of feedback of female respondents on whether social media affects the buying behavior is 24.83, S.D. 2.38, the 't' ratio 2.86 was again found significant at 0.05 level of confidence.

In Vizag, the mean scores of feedback of male respondents on whether social media affects the buying behavior is 27.86, S.D. 2.83, the mean scores of feedback of female respondents on whether social media affects the buying behavior is 25.00, S.D. 2.54, the 't' ratio 2.16 was again found significant at 0.05 level of confidence.

Interpretation of the findings

Table 1 shows the feedback of the respondents regarding the influence of social media on the buying behavior of the consumers. It can be observed from the table that majority of male respondents of the study area like Hyderabad, Warangal and Vijayawada think that social media has the power to influence the buying behavior of the consumers.

On the other hand, in Vizag; majority of female respondents favored the power of social media to influence the purchasing behavior of the consumers.

Overall, 41.6% respondents i.e. 250 out of 600 respondents agreed that the role of social media is increasing and it is going to be the game changer in coming years for the retail and manufacturing companies. Hence, still there are 58.4% respondents who do not think that social media has enough power to influence the consumer behavior.

Table 2: Mean Scores, S.D and t- ratio of Feedback on whether social media is a good tool to create awareness regarding new products

Level of Participation	Performance	Feedback	Mean	S.D.	M.D.	S.E.	t-ratio
Hyderabad	N=75 (Males)	10	36.03	3.00	3.01	1.080	2.85*
	N=75 (Females)	45	39.14	3.66			
Warangal	N=75 (Males)	37	31.46	2.67	2.95	0.888	3.30*
	N=75 (Females)	45	34.51	2.81			
Vijayawada	N=75 (Males)	45	23.35	1.86	0.84	0.636	1.35*
	N=75 (Females)	50	24.29	2.02			
Vizag	N=75 (Males)	40	15.08	0.57	0.43	0.441	0.84*
	N=75 (Females)	30	12.02	1.47			

*Significant at 0.05 level of confidence

Data Interpretation

In the case of Hyderabad, the mean scores of feedback of male respondents on whether social media is a good tool to create awareness regarding the new products is 36.03, S.D. 3.00, the mean scores of feedback of female respondents on whether social media is a good tool to create awareness regarding the new products is 39.14, S.D. 3.66, the 't' ratio 2.85 was found significant at 0.05 level of confidence.

In the case of Warangal, the mean scores of feedback of male respondents on whether social media is a good tool to create awareness regarding new products is 31.46, S.D. 2.67, the mean scores of feedback of female respondents on whether social media is a good tool to create awareness regarding the new products is 34.51, S.D. 2.81, the 't' ratio 3.30 was found significant at 0.05 level of confidence.

In Vijayawada, the mean scores of feedback of male respondents on whether social media is a good tool to create awareness regarding the new products is 23.35, S.D. 1.86 the mean scores of feedback of female respondents on whether social media is a good tool for the awareness regarding the new products is 24.29, S.D. 2.02, the 't' ratio 1.35 was again found significant at 0.05 level of confidence.

In Vizag, the mean scores of feedback of male respondents on whether social media is a good tool to create awareness regarding the new products is 15.08, S.D. 0.57, the mean scores of feedback of female respondents on whether social media is a good tool to create awareness regarding the new products is 12.02, S.D. 1.47, the 't' ratio 0.84 was again found significant at 0.05 level of confidence.

Interpretation of the findings

Table 2 reveals the results of feedback of the respondents regarding the role of social media in enhancing the awareness about new products. The data shows that majority of the female respondents of study areas Hyderabad, Warangal and Vijayawada think that the awareness about new products can be promoted easily with the help of social media.

On the other hand, an exception is observed in Vizag where majority of male respondents agree the role of social media in ebranding the new products.

Hence, it can be concluded that overall 50.3% i.e. 302 respondents out of 600 respondents are in favor of increasing trend of social media in spreading the awareness about the new products.

Table 3: Mean Scores, S.D and t- ratio of Feedback on whetherSocial media is capable of building a good image of a product

Level of Participation	Performance	Feedback	Mean	S.D.	M.D.	S.E.	t-ratio
Hyderabad	N=75 (Males)	32	32.03	1.96	2.42	0.506	3.35*
	N=75 (Females)	30	30.14	1.92			
Warangal	N=75 (Males)	40	33.06	2.63	2.31	0.684	2.70*
	N=75 (Females)	10	30.51	2.08			
Vijayawada	N=75 (Males)	40	34.35	2.82	2.27	0.832	2.35*
	N=75 (Females)	15	31.29	2.18			
Vizag	N=75 (Males)	30	35.08	3.00	2.05	0.937	1.84*
	N=75 (Females)	35	32.00	2.43			

*Significant at 0.05 level of confidence

Data Interpretation

In the case of Hyderabad, the mean scores of feedback of male respondents on whether social media is capable of building a good image of a product is 32.03, S.D. 1.96, the mean scores of feedback of female respondents on whether social media is capable of building a good image of a product is 30.14, S.D. 1.92, the 't' ratio 3.35 was found significant at 0.05 level of confidence. In the case of Warangal, the mean scores of feedback of male respondents on whether social media is capable of building a good image of a product is 33.06, S.D. 2.63, the mean scores of feedback of female respondents on whether social media is capable of building a good image of a product is 30.51, S.D. 2.08, the 't' ratio 2.70 was found significant at 0.05 level of confidence. In Vijayawada, the mean scores of feedback of male respondents on whether social media is capable of building a good image of a product is 34.35, S.D. 2.82 the mean scores of feedback of female respondents on whether social media is capable of building a good image of a product is 31.29, S.D. 2.18, the 't' ratio 2.35 was again found significant at 0.05 level of confidence.

In Vizag, the mean scores of feedback of male respondents on whether social media is capable of building a good image of a product is 35.08, S.D. 3.00, the mean scores of feedback of

female respondents on whether social media is capable of building a good image of a product is 32.00, S.D. 2.43, the 't' ratio 1.84 was again found significant at 0.05 level of confidence.

Interpretation of the findings

Table 3 depicts the result of feedback of respondents regarding the capability of the social media for the branding of a product. It is clear from the table 3 that from the study areas of Hyderabad, Warangal and Vijayawada, majority of the male respondents think that social media has the capability to build a good image of a product.

On the other hand, a variation is observed in Vizag where majority of females are in favor of considering social media as a good tool for the branding of new products.

Form this table, it is analyzed that 38.6% respondents i.e. 232 respondents out of 600 think that positive image of the products can be built easily with the help of social media.

Table 4: Mean Scores, S.D and t- ratio of Feedback on whether Social media advertisements help in decision making to purchase a product

Level of Participation	Performance	Feedback	Mean	S.D.	M.D.	S.E.	t-ratio
Hyderabad	N=75 (Males)	26	34.03	1.94	2.11	0.501	3.17*
	N=75 (Females)	28	32.14	1.90			
Warangal	N=75 (Males)	30	34.06	2.48	2.09	0.647	2.56*
	N=75 (Females)	33	32.51	2.18			
Vijayawada	N=75 (Males)	17	34.68	2.67	2.01	0.798	2.09*
	N=75 (Females)	26	33.16	2.04			
Vizag	N=75 (Males)	19	34.11	2.85	2.19	0.856	1.69*
	N=75 (Females)	21	31.03	2.01			

*Significant at 0.05 level of confidence

Data Interpretation

In the case of Hyderabad, the mean scores of feedback of male respondents on whether social media advertisements help in decision making to purchase a product is 34.03, S.D. 1.94, the mean scores of feedback of female respondents on whether social media advertisements help in decision making to purchase a product is 32.14, S.D. 1.90, the 't' ratio 3.17 was found significant at 0.05 level of confidence.

In the case of Warangal, the mean scores of feedback of male respondents on whether social media advertisements help in decision making to purchase a product is 34.06, S.D. 2.48, the mean scores of feedback of female respondents on whether social media advertisements help in decision making to purchase a product is 32.51, S.D. 2.18, the 't' ratio 2.56 was found significant at 0.05 level of confidence.

In Vijayawada, the mean scores of feedback of male respondents on whether social media advertisements help in decision making to purchase a product is 34.68, S.D. 2.67 the mean scores of feedback of female respondents on whether social media advertisements help in decision making to purchase a product is 33.16, S.D. 2.04, the 't' ratio 2.85 was again found significant at 0.05 level of confidence.

In Vizag, the mean scores of feedback of male respondents on whether social media advertisements help in decision making to purchase a product is 34.11, S.D. 2.85, the mean scores of feedback of female respondents on whether social media advertisements help in decision making to purchase a product is 31.03, S.D. 2.01, the 't' ratio 1.69 was again found significant at 0.05 level of confidence.

Interpretation of the findings

Table 4 depicts the result of feedback of respondents regarding the role of social media advertisements in decision making to purchase a product. It is clear from the table 4 that from the study areas of Hyderabad, Warangal, Vijayawada and Vizag, majority of the female respondents think that the advertisements uploaded on social media help in making decision about purchasing a particular product.

Form this table, it is analyzed that 33.3% respondents i.e. 200 respondents out of 600 think that social media has emerged as an effective tool for them which help in taking decision regarding the purchase of a new product as all the good and bad things of the products can be easily identified.

RESEARCH CONCLUSION

Consumers today are progressively utilizing technology and particularly Social Media as an effective tool in their online shopping process. This process can be defined as an electronic process that allows consumers to deal with business people and meet their purchase needs. This study has shown that the consumers rely to a certain extent on social media for information which assists them in deciding the relative significance of the several appraising criteria which influences them to make purchases online and also the degree to which they alternate features that they consider significant. Online consumers in the past were confined to sharing

information with their neighbors, family or friends; however, now people are able to influence the sellers of the products by articulating their personal experiences on the Internet. If companies ignore the personal experiences of the shoppers who now articulate their impressions of the products online, they may be left behind as the pulse of the consumers at large resonates in the consumer comments made on the performance of the products. The companies will do well to take this pulse into cognizance and design and/or redesign their product offering in tune with the aspirations of the commuters.

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IMPACT OF SERVICE QUALITY AND SERVICE PERFORMANCE ON 'UP-SELLING' AND 'CROSS-SELLING': A STUDY ON INDIAN TELECOM RETAIL SECTOR

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Abstract - At this point, we are confident that we have understood the value of this idea in market research. It is expected that the contextual research shared in this article will provide you with a practical understanding of the use of this idea in the exam. Cross selling and up selling from the bottom up are one of the most used distinctive features in the marketing technique of any organization.SERVPERF and SERVQUAL are two service quality assessment tools that are commonly used in the assessment of quality of service in different service areas, for example, banking, hospital, tourism, insurance and so forth. In any case, quality literature of the service shows that there is a significant difference in the principle of estimation of the quality of service in these two matrices, and in addition, results using these two matrices actually do not require coordination.Therefore, the quality of service is rich in literary models, hypotheses and criticisms, the way dynamic research has progressed in the last two decades. The recognized issue in this research is this: Do both of these metrics agree in their results or there is a significant difference in their results for a given telecom service sector. The exam extracts between the results of these two metrics, and how to improve the service quality and service performance in the telecommunications industry, while examining the possibility of suggesting tips and suggestions based on a consolidated outcomes.

KEYWORD: Service Quality, Service Performance, Up-selling, Cross-selling, Telecom Retail

I. INTRODUCTION

Telecom service providers in India have seen extreme times from the days of exponential growth in the first decade of its operations (starting in 1995) to a grinding halt (and even negative growth) in revenues by the start of the second decade (i.e. around 2007). While the initial years were good for revenue growth for first few operators like Airtel and Vodafone (earlier known as Hutch), later years focused more on addition of subscribers than revenue growth. Each operator was trying to add as many subscribers as possible and report higher numbers every month. Though it did take quite some time but focus on revenue was slowly but surely setting in. The uncertainty regarding the government regulations for telecom industry has also impacted the investments in the industry. With less money coming from promoters after the economy hitting a rough patch in 2008 and ARPUs (Average Revenue Per Customer)

coming down due to both the customer quality and cheap talk-time plans. Telcos (short for Telecom Companies) had no choice but to change the business model.

While the adoption of 2G or the voice services lead to a steep rise in revenues, the adoption of 3G (or the data services) has been slower than expected and does not justify the huge license fees paid by the telcos to the government (at least in the short run till now).

Even during these turbulent times there has been some good news for some of the telecom companies. A few of the telcos have reported growth in the data usage and in turn revenues as well. This has largely been driven due to adoption of smart-phones by the Indian consumers and usage of internet-based applications like 'FaceBook' and 'WhatsApp'.

Smartphone sales have also now exceeded the sales of feature phones.

All big telecom companies have exclusive retail presence which focuses on up-selling new services to increase ARPUs (Average Revenue Per User) of their existing customers. These retail stores not only sell telecom services but also handsets and accessories. A customer's perception of service quality of a telecom service provider, his/her awareness levels of 'need' and the personalized sales pitch by a Sales Advisor (promoter at a telecom retail store) are the three most likely parameters which may affect success rate of an up-selling attempt. Also, the follow-up with a structured sales call which includes probing, objection handling, closing and repeated up-selling attempts are also critical to maintain a prospect's interests leading an actual sale and hence higher monthly Average Revenue Per User (ARPU).

In this research article we discussed the objectives, hypothesis, research method, scope, benefits of the study, concept of telecommunications and current status in India, Parasuraman perception of service quality, service performance of telecom industry and its effect on cross selling and upselling and its idea and in last results, findings, conclusion and draw suggestion under this context.

II. OBJECTIVES

This research aims at finding of the Impact of Service Quality and Service Performance on 'Up-selling' and 'Cross-selling': A Study on Indian Telecom Retail Sector. Along with it, this research has following objectives of study

- To study impact of customer perception of service quality on up-selling and cross-selling conversion rates.
- To understand consumer behavior with respect to new product adoption (NPA) amongst Indian consumers.
- To create a training framework for the Sales Advisors (store promoters) at a retail store in order to increase up-selling and cross-selling conversion rates

III. HYPOTHESIS

Directly impact of customer perception of service quality on up-selling and cross-selling conversion rates in telecom retail sector

Indirectly impact of customer perception of service quality on up-selling and cross-selling conversion rates in telecom retail sector

Emphatically impact identified with their attitude toward autonomous decision-making consumer behavior with respect to new product adoption (NPA) amongst Indian consumers.

There is no significant difference between the expectations and perceptions of the customers of the mobile telephony service providers.

IV. METHODS AND PROCEDURES

Population

The study is proposed to be conducted at retail stores in Delhi and NCR for at least three private operators. All the customers who visit these retail stores will be considered as 'population'.

Sample

The study is proposed to be conducted in at least 25 exclusive retail stores covering 250 telecom subscribers.

Data Collection

Primary data will be collected by administering questionnaires and feedback forms. These tools will cover Sales Advisors, Store Walk-ins and Store Managers.

V.SCOPE OF THE STUDY

The study will be conducted in telecom retail stores in Delhi and National Capital Region for three telecom service providers.

he study will focus on customer service and its impact on business.

The study aims to establish relationship between perceptions of service quality and manpower training to business results.

VI. BENEFITS OF THE STUDY

The research captures consumer behavior, sales team's competencies and business results. The research shall benefit

Marketing Team in measuring consumer perception of service quality and its impact on up-selling and cross-selling.

Training Team in defining competency levels for effecting up-selling initiatives leading to business effective workshops.

Product team in creating relevant and customer centric solution as per customer's needs.

VII. CONCEPT OF TELECOMMUNICATION

The word telecommunication was regulated by the French word telecommunication. It is a compound of the Greek prefix tele-meaning "far" and Latin to communicate, which means "to share". The French word telecommunication was written in 1904 by French designer and writer EdouardEstaunie. Telecommunications are the transmission, between or between approaches indicated by the customer, of the customer selection data, without changes to the structure or substance of the data as they were sent and obtained.

World Telecom Industry

The global telecommunications industry is a growing sector, which continues towards the goal of reaching two thirds of the world telecommunications associations. In recent years, technology has changed data and maps emotionally and for this reason, the global Telecom industry will be an explosive sector.

The important financial growth and the growing population increase the rapid growth of this sector. The global telecommunications market is set to grow 11 percent by year-end by the end of 2010. Leading telecommunications organizations such as AT & T, Vodafone, Verizon, SBC Communications, Bell South and Qwest Communications are trying to exploit this growth. These organizations are eliminating telecommunications sectors and broadband innovations, advances EDGE (increased data rates for global development), the organization of LAN-WAN entuerzos, the administration of optical systems, the voice convention on the Internet, the service of wireless information, etc.

Indian Telecom Industry

Telecommunications Agreement India is the world's second largest number of telephone customers (fixed and mobile), with 1,179 million supporters as of July 31, 2018. [1] has one of the smallest tasks calling the world, enabled by super telecommunications administrators and hyper-rivalry between them. As of July 31, 2018, India has the second largest world-wide internet customer base with 460.240 thousand broadband followers in the country. [1] As of

December 31, 2018, India had a populace of 130 crore people (1.3 trillion), 123 crore (1.23 trillion cards), mechanized biometric Aadhaar, 121 crore phones (1210 billion) of cells, 44.6 crore (4460 million) cell phones, 56 crore (560 million or 43% of the populace) Internet clients, contrasted with 481 million individuals (35% of the absolute populace) in December 2017 and a development of 51% in business [2, 3] and raised gross income (2018) 160,814 crore (US $ 22 billion) [4]..

VIII. PARASURAMAN PERCEPTION OF SERVICE QUALITY

Parasuraman [5] characterizing quality is the general experience that a customer sees when associating an article and services. They also suggest that there are five explicit components of service quality: physical assets, reliability, responsiveness, guarantee and empathy (Bolton [6]; Cronin 1992 [7]; Parasuraman et al., 1988 [5] Shepherd 1999) [8] to represent the quality of service as a sort of mentality, correlated but not identical to respect deriving from the correlation of desires with execution. According to Bitner and Hubert (1994) [9], Tsoukatos (2006) [10] quality of service is seen as an impression on the relative mediocrity / superiority of a service provider and its services. Bose (2010) [11] in his article focus on problems and related service organizations for obtaining lucrative segments of lost client's strategies. In the light of the investigation, it is assumed that service quality, relationship building, and overall service performance can improve business relationships with customers[12].

Parasuraman Perception of Service Quality Evaluation

Parasuraman et al. (1988) [13] assessed their work and subdivided them into five dimensions that are otherwise called the RATER model, which include:

Reliability, which is characterized by the "ability to satisfy the guaranteed service in a coherent and precise manner" (Buttle, 1996) [14].

Assurance, which implies "the information and gratitude of the representatives and their ability to transmit trust and certainty" (Buttle, 1996) [14].

Tangible, which contains the "presence of physical offices, equipment, labor force and materials for correspondence" (Buttle, 1996) [14]

Empathy, what is the "arrangement of the mind, the individualized attention to customers "(Buttle, 1996) [14].

Responsiveness, which communicates the "ability to support customers and offer them a short service" (Buttle, 1996) [14].
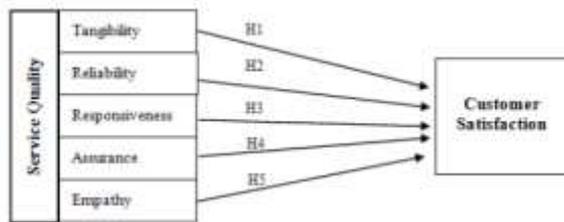
The five hypotheses are significantly affect customer satisfaction.

IX. SERVICE PERFORMANCE OF TELECOM INDUSTRY

 Wireless Communication and Wireline Communication

  Wireless communication is the fastest-growing segment of the telecommunications industry in India. Through the advancement of wireless correspondence, it has become easier to transmit data between at least two points that cannot be associated with an electrical conduit. Modifications in the market structure are mainly because of alterations of the national telecommunications strategy of 1999. The Indian government is offering favorable circumstances to private players to create in this segment. The correspondence of mobile telephones is a standout amongst the best-known voices of wireless technology and, else, it is called mobile correspondence. The genuine wireless operators are Bharti Airtel, Vodafone, Reliance Communications, Idea Cellular, Tata Indicom and BSNL/MTNL [15, 16].

Table 1: Development of phones throughout the years (in million)

S.No.	Year	Wireless Subscriber	Wireline Subscriber	Total Subscriber	Annual Growth
1	March -2007	165.11	40.75	205.86	45
2	March -2008	261.07	39.42	300.49	46
3	March -2009	391.76	37.96	429.72	43
4	March -2010	584.32	36.96	621.28	45

5	March -2011	811.59	34.73	846.32	36
6	March -2012	919.17	32.17	951.34	12
7	March -2013	867.8	30.21	898.01	-6
8	March -2014	904.54	28.5	933.02	4
9	March -2015	969.9	26.59	996.49	7
10	March -2016	1033.63	25.22	1058.86	5
11	March -2017	1170.18	24.4	1194.58	3
12	March -2018	1183.41	22.81	1206.22	1.3
13	Oct- 2018	1170.07	22.02	1192.04	0.05

Source: TRAI Annual Reports from 2012- 2019, Press Releases of TRAI

The table above demonstrates that throughout the years the quantity of wireless clients has expanded, while there has been a decline in the quantity of wireline clients because of a developing enthusiasm for wireless telephones over landlines.

Figure 1 Overall Performance Indicator of Telecom from 2007 to 2018.

The past line diagram shows unequivocally that there has been a positive development in the quantity of supreme phones in earlier years, except for 2007-19, because of the removal of latent mobile telephone relationship by the administration [17-19].

The wireless segment of the telecommunications industry in India involves the sponsors of GSM and CDMA:

 GSM is a wireless automated communication technology that implies worldwide framework for mobile communications made in 1982.   GSM arranges work in the frequency bands of 900 MHz and 1800 MHz. A standout amongst the most imperative parts of GSM is the character module of the endorser, by and large known as a SIM card.

CDMA represents practically 20% of the telecommunications market share.

Table 2: GSM and CDMA subscribers from 2007 to 2018

Year	GSM Subscriber	CDMA Subscriber
2007	120.47	44.64
2008	192.70	68.37
2009	297.26	94.50
2010	478.68	105.64
2011	698.37	113.22
2012	814.06	105.11
2013	794.03	73.78
2014	847.41	57.10
2015	876.15	54.05
2016	989.54	44.09
2017	1154.59	12.59
2018	1179.12	4.29

Source: TRAI Annual Reports from 2007 to 2019

Tele-density

Tele density demonstrates the quantity of phone relationship out of a hundred people. It is a striking marker of the passage of telecommunications into the country.   There is an exponential development of tele density in India because of the advancement of innovative wireless advances.
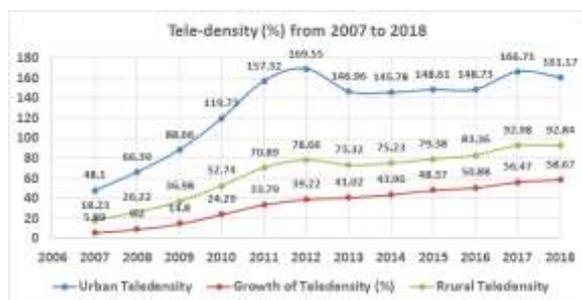
Source: TRAI Annual Reports from 2007 to 2019

Figure 2: Trends of Tele- density from 2007 to 2019 (in Millions)

  The fast increment in rural tele density is basic for the budgetary and social improvement of rural areas, which will add to the general advancement of the entire country. The Indian government has utilized a few measures to spread the mobile framework in remote rural areas. Private telecommunications operators are doing everything conceivable to extend their services in rural areas by giving astounding services.
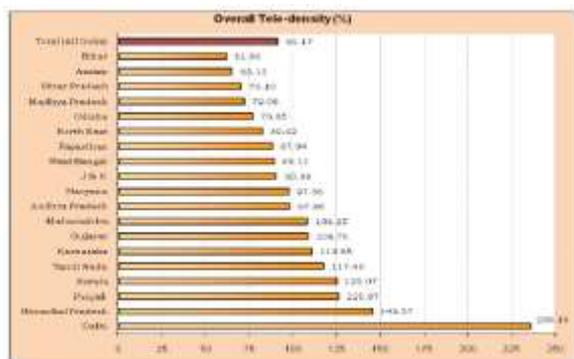
Figure 3. Overall Tele-density (%) State wise

Source: Press release of TRAI 2019 As shown in the table, Metro urban communities have a high telephone density compared to other service areas [6].

X. IDEA OF CROSS SELLING AND UPSELLING

Strategic launch and sales growth are one of the most important ideas in marketing testing. Each of the other days when you visit a supermarket, a restaurant to buy something, this idea does not bear fruit. This idea is taught in every marketing class all over the world, so it is hoped scholars to know it.

Are you wondering why we chose this "Strategic launch" theme? In reality, the answer to this is exceptionally obvious. To the extent that we can say (the generation of a very long time) the creation and preparation of groups, we have conducted many meetings. And prepare to be

dragged. For our standard query of "Expand in a company you've dealt with from start to finish", the most continuous reaction was a cross-selling model! However, when many individuals were evaluated around the essential ideas to increase / sell strategically, they could not give acceptable answers. They would realize that the code used has not yet been able to clarify this direct idea.

Therefore, here we are talking about our interpretation of this well-known and vital cross-selling story. To reveal the process from beginning to end, we also did a contextual analysis in the second 50% of the article. We hope this article will become a reference prepared for anyone interested in strategically updating the launch / sale in telecom organization.

Definition – Cross-Sell and Up-Sell

The strategic launch includes the closure of several items offered by a supplier of solitary goods / services to another existing customer or customer. The up sale is selling more valued items / services to a current customer.

And if we start with how Miller Heiman [20] characterizes launching and selling strategically? Strategic releases: (1) Expanding the number and quality of connections between key people in the purchasing organization and the sales organization, (2) Making the organization accessible to purchase important additional agreements.

Up-selling: conversion of an underlying request into a progressively productive request. The customer is regularly shown to be responsible for (1) additional units of the seller's response or (2) a first-order adaptation of the seller's response. This does not mean that you sell to telecom customers something they do not have to worry about; it means selling to customers more than something they require.

Why do not these two sales exercises occur more frequently? Dread. The fear caused by the confusion that "required more" increases the danger of losing the agreement. To end this fear, it is essential to use quality business data. By neglecting the opportunity to accumulate end-to-end data on customers and prospects, marketers can get more information about their accounts, reveal new business opportunities and maintain strategic distance from a significant number of fears that impede performance. Strategic launch and up sale exercises.

For example:

You are willing to purchase a mobile phone within a range of Rs values. 30,000 (~ $ 500). However, in the long run, you end up buying a cell phone of Rs.42,000 ($ 650) due to the fact that the sales representative gave the phones several incredible aspects and you ran off with them. (This is for up sale) .

They organize to buy a mobile phone worth Rs. 30,000 (~ $ 500), however, the sales representative offered a fascinating deal to buy a cell phone with selective JBL hearing aids for Rs.40,000 (~ $ 634) and you ran off again. (This is cross selling).

Cross-selling is a central part of a customer-driven relationship methodology and requires an integrated customer perspective. The implementation of a cross-selling program is based on influences that authorize, for example, the responsibility of the organization; All around the company technique characterized; powerful usual control of the execution; and successful approach in the system. Cross selling has become a characteristic methodology for beneficial growth in several segments.

Every one of these methods requires an ever more profound comprehension of the customer's key exercises and the colossal issues confronting every single potential purchaser inside the organization. Shutting isn't an ideal opportunity to begin the most exceedingly bad time to begin considering strategically pitching and the extra deal is towards the finish of the business cycle. By then, the final turning point has passed. By combining the aforementioned means into telecom retail business strategies, we will be constantly looking for approaches to take advantage of each agreement, while encouraging telecom customers.

XI. RESULTS AND FINDINGS

The research clearly indicated that there is a significant difference in the results of the SERVQUAL and SERVPERF metrics. It can be concluded that if meaningful results are to be obtained, these two metrics should be applied to a service sector and, based on the combined inference that is extracted, suggestions should be given to improve quality.

Any visit to operator's retail store

We concluded that out of 335 respondents, 74.9% of respondent were agreed for visit to operator's retails store and 25.1% of respondents were not agreed for it.
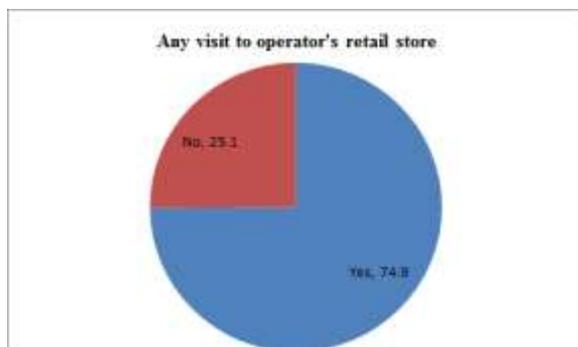
Figure 4:- Any visit to operator's retail store

Gender of respondents

We concluded that out of 335 respondents, 64.5% of respondent were male and 35.5% of respondent were female.
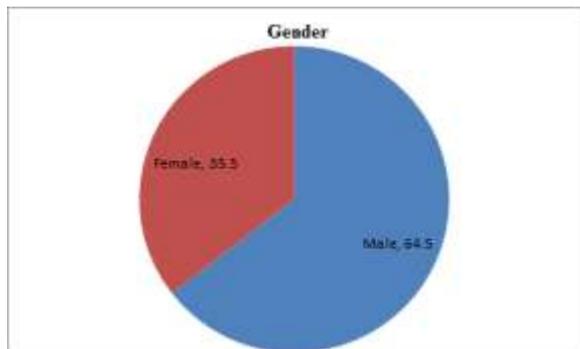

Figure 5:- Gender of respondents

Age of respondents

Now we were discussing about the age of respondents, out of 335 respondents, 3.6% of respondents were less than 20 years, 20.6% of respondents were in between 20 and 29 years, 46.4% of respondents were between 30 and 39 years and 29.3% of respondents were in 40 years or more.
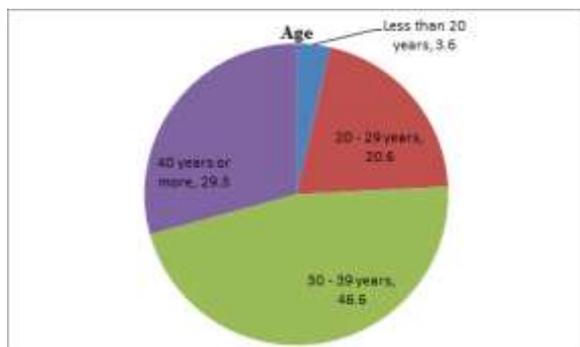

Figure 6:- Age of respondents

Annual Family Income of respondents

We concluded that out of 335 respondents, 23.0% of respondent had less than 5 lakhs as annual family income, 24.2% of respondent had between 5 – 10 lakhs, 25.7% of respondents had 10 – 20 lakhs, 8.4% of respondents had 20 – 30 lakhs and 18.8% of respondents had more than 30 lakhs as annual incomes.
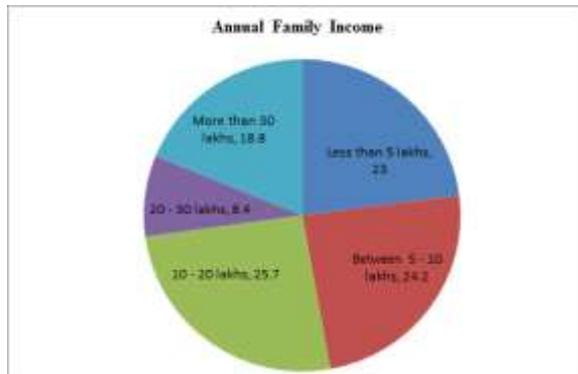
Figure 7:- Annual Family Income of respondents

Company's SIM for respondents

We concluded that out of 335 respondents, 46.6% of respondents were using Airtel, 2.4% of respondents were using BSNL, 37.9% of respondents were using Idea/Vodafone, 9.6% of respondents were using JOI, 0.6% of respondents were using MTNL, 0.9% of respondents were using Reliance communication, 2.1% of respondents were using Tata Indicome/DOCOMO for company's sim.
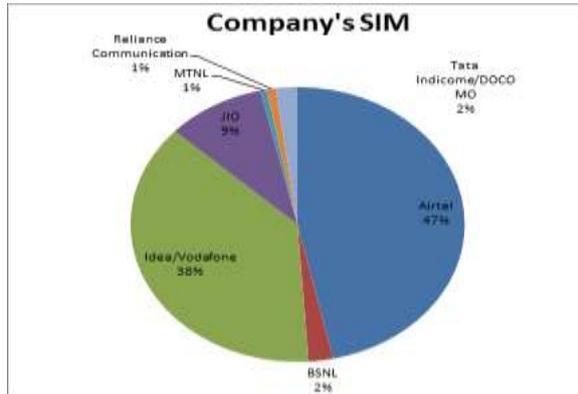
Figure 8:- Company's SIM

Parameters of Service Quality

Tangibles of services quality

The value for Cronbach alpha of Tangibles of services quality was .884 and reflects the high reliability and it indicated a high level of internal consistency

We concluded that we had calculated the mean and standard deviation and number of each variable of parameters tangibles of services quality. The highest mean of variables was 4.9821.

Reliability of services quality

The value for Cronbach alpha of Reliability of services quality was .929 and reflected reflects the high reliability and it indicated a high level of internal consistency

We concluded that we had calculated the mean and standard deviation and number of each variable of parameters reliability of services quality. The highest mean of variables was 4.7433.

Responsiveness of service quality

The value for Cronbach alpha of responsiveness of services quality was .903 and reflects the high reliability and it indicated a high level of internal consistency

We concluded that we had calculated the mean and standard deviation and number of each variable of parameters responsiveness of services quality. The highest mean of variables was 4.8836.

Assurance of services quality

The value for Cronbach alpha of assurances of services quality was .901 and reflected reflects the high reliability and it indicated a high level of internal consistency

We concluded that we had calculated the mean and standard deviation and number of each variable of parameters assurances of services quality. The highest mean of variables was 4.9910.

Empathy of services quality

The value for Cronbach alpha of empathy of services quality was .910 and reflects the high reliability and it indicated a high level of internal consistency.

We concluded that we had calculated the mean and standard deviation and number of each variable of parameters empathy of services quality. The highest mean of variables was 4.8746

Telecom products/services have been using from this telecom operator

We concluded that out of 335 respondents, 34.6% of respondents had one telecom operator, 37.6% of respondents had two telecoms operators, 16.7% of respondents had three telecom operators and 11.0%of respondents had more than 3 telecom operators as telecom products or services.
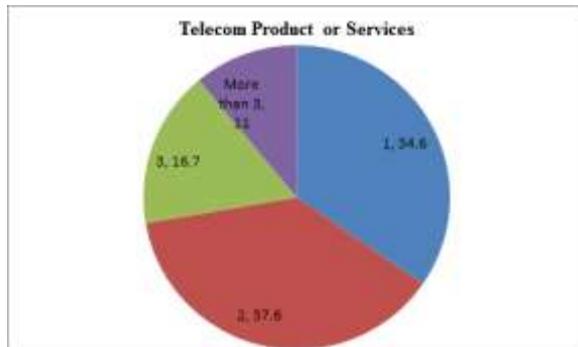
Figure 9:- Telecom products/services have been using from this telecom operator

Preference of products/services from this telecom company in future

We concluded that out of 335 respondents, 25.4% of respondents had definitely prefer the products, 30.4% of respondents had very likely prefer the products, 32.8% of respondents had somewhat likely prefer the products and 11.3% of respondents had unlikely prefer the product or services from this telecom company in future.
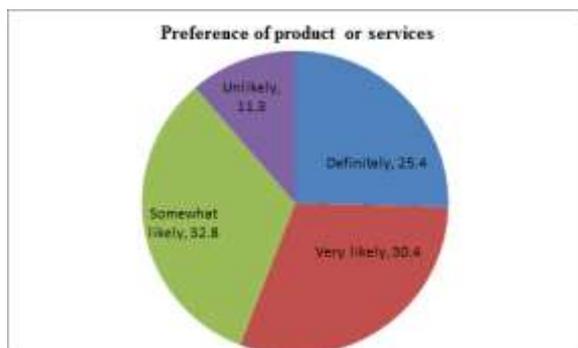

Figure 10:- Preference of products/services from this telecom company in future

Preference for recommendation this telecom company for friends and family
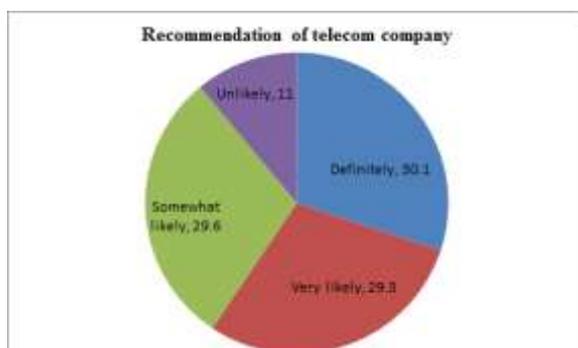
Figure 11:- Preference for recommendation this telecom company for friends and family

We concluded that out of 335 respondents, 30.1% of respondents had definitely prefer the recommendation, 29.3% of respondents had very likely prefer the recommendation, 29.6% of respondents had somewhat likely prefer the recommendation and 11.0% of respondents had unlikely prefer the recommendation the telecom company for friends and family.

Analysis between Telecom products/services have been using from this telecom operator with consumer NPA.

Table describes the mean, standard deviation and number of parameter of service quality within the telecom product or services using. ANOVA-test had used between response telecom product and services using of telecom with parameter of tangibles, reliability, responsiveness, Assurance and empathy of service quality. Tangibles and reliability parameter of service quality showed the significant p-value within the telecom product or services using. It meant that Tangibles and reliability parameter of service quality of telecom operator had got affected by the age of operator for the consumers' NPA.

		N	Mean	Std. Deviation	ANOVA
Tangibles	1	116	4.7802	1.39843	3.076*
	2	126	4.7877	1.14108	
	3	56	5.1116	1.26304	
	More than 3	37	5.3919	1.20119	
	Total	335	4.9060	1.27392	
Reliability	1	116	4.5793	1.51683	2.728*
	2	126	4.4429	1.32656	
	3	56	4.8929	1.45125	
	More than 3	37	5.0865	1.26714	
	Total	335	4.6364	1.42105	
Responsiveness	1	116	4.6056	1.46412	1.519
	2	126	4.5714	1.26525	
	3	56	4.8661	1.58542	
	More than 3	37	5.0473	1.41647	
	Total	335	4.6851	1.41225	
Assurance	1	116	4.9159	1.47587	1.453
	2	126	4.8294	1.16861	
	3	56	5.1384	1.40366	
	More than 3	37	5.2635	1.11950	
	Total	335	4.9590	1.32032	
Empathy	1	116	4.6069	1.45756	1.824
	2	126	4.6492	1.21370	
	3	56	4.9107	1.46221	
	More than 3	37	5.1189	1.28362	
	Total	335	4.7301	1.35735	

After satisfying the adequacy of the data for factor analysis, the set of 25 variables explaining the critical success factors/ barriers of KMO were subjected to factor analysis. Factors with eigenvalue more than 1.0 have been selected. Table contains the initial eigenvalues for all the

components. It is observed that only 47.5% of the variance, the second factor 60.8% of the variance, and a third factor 68.7% of the variance.

XII. CONCLUSION

In this articlewe explored the quality of the service of the telecommunications companies is analyzed. Furthermore, to analyze in depth and reality, the surveys and interviews are conducted accordingly. Valuable data from different age groups, different regions and different origins are collected and analyzed, so a theoretical analysis is performed. In addition to the analysis of the current quality of service in the telecommunications sector, a suggestion for improvement is also presented. In the future, an additional survey could be performed to check suggestions for improvement. Perhaps another survey can also be done to set an improved suggestion.

XIII. SUGGESTION

The results of these two metrics, and how to improve the service quality and service performance in the telecommunications industry, while examining the possibility of suggesting tips and suggestions based on a consolidated outcome.

- The inclination of the dimensions of quality telecommunications can contrast in different countries. Vital branches: the growth of literature in the field of telecommunications service quality seems to have grown progressively, which provides a constant update and benefits from discoveries.
- The identified cross-selling systems are presumably recommended, offering suggestions to customers who depend on the comparability of their purchase reports with the accounts of different customers.
- The first and most important step forward in discovering new opportunities for cross-selling and up-selling is the adoption of a travel-based strategy
- Only with this complete vision, it is possible to obtain the complete image of the client's preferences, interests, behaviours and feelings, which should show the best idea in a random minute.
- Finally, so as to measure the adequacy of the fight between strategically pitching and rising sales and choose the requirement for changes or changes halfway through future campaigns, it is important to screen logically and long-haul experiences through instinctive boards

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'MAKE IN INDIA' –CHALLENGES FOR INDIAN DEFENCE SECTOR

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Abstract: Defence production within India is experiencing a tremendous change to accomplish self-reliance in defence technology. A growing number of AONs have been released under Make India, Buy and Make India Categorization. The quantum of Offset commitments under defence agreements is usually increasing. Offset responsibilities in defence agreements open up a wide range of possibilities for the Indian organizations primarily for MSMEs and start-ups enthusiastic about the defence sector. An ambitious Make in India venture by the government of India cannot primarily change up the image of the nation as a hub for production but additionally as a desired destination to do business. Frustrated by India's reputation due to the fact the world's leading arms importer, the Indian government would like to establish a sophisticated defence industry which aims to make the nation right into a production giant. Along with significant no of big-ticket acquisitions within the pipe-line as well as 'Make in India' Projects, there are certainly massive possibilities within the Defence Sector. This Particular paper initiative to present a state of matters associated with the Indian Defence subsequently illustrates the global circumstances associated with defence and tries to recognize their possibilities as well as the obstacles for the Make in India strategy for the defence sector.

Introduction

Self-sufficiency in the defence sector has been a long cherished dream for our country. The best case scenario for a country to stake claims for self-sufficiency is an ability to complete the entire circle of design, develop, make and modify i.e. the ability to envision, manufacture and integrate the various parts , test under varied conditions , maintain and timely upgrade the defence system as per the needs. The dictionary meaning of '**Indigenisation**' is '*to become dominant or under the influence or control of local people'* in the defence context, it applies either to import components and further integrate the various subsystems or to manufacture a complete weapon system inside the country.

 On Feb 2017 in the space sector India launched 104 satellites in a single mission and crossed over previous record of launching 37 satellites by Russia [i,] on the other hand in the defence sector we are still importing almost all the basic weaponry required to wage a war. One of the leading industrialist quoted Hon'ble Prime Minister Narendra Modi   "… even the tears we shed in this country are not our own? Every tear gas shell used by our security agencies is actually imported!"[i] Recent induction of US M777 ULH with transfer of technology (ToT) and acceptance of import of K9 Vajra Self Propelled guns has taken place after a gap of four decades. [i] Number of high powered committees namely Kelkar committee, Naresh Chandra Committee, Kargil Review Committee were constituted to identify the problems with the defence sector and most of the recommendations made have also been complied with. However, the condition on ground has not changed much.

 In the defence sector, there are three stakeholders. Firstly is the user ; the defence forces who desire for the latest weapon with minimum of delay, secondly it is defence industry majorly

constituted by Defence public Service Units (DPSUs) and Ordnance Factory (OF) who with their inherent inefficiencies and past records stake claim for supply of all items in the defence sector. Few Private companies have also joined the venture now but with an aim of quick profit and fast capital turnover. The third stakeholder is Academia mainly DRDO and IITs on whom rests the responsibility of   R&D and management of technology in the defence sector. At the helm of this entire milieu, there are various ministries and government offices who have rigid procedures, the desire for maximum media coverage and a mandate of play safe approach.

The recent "Make in India" initiative for self-reliance by the govt, promulgation of new Defence Procurement Procedure (DPP) 2016 and Foreign Direct Investment (FDI) policy has given a fresh impetus of self reliance to the defence sector. This paper examines the present scenario in the Indian defence sector, deliberate upon the various opportunities as well as challenges put forth by Make in India' programme and finally recommends future courses of action.The present scenario in Indian defence sector is summarised below : -

- India has the third prominent military forces worldwide with respect to active personnel.
- India imports 60% of weapon from different nations. This is the world's prominent weapon importer and also accounts for 14 % of the world's weapon imports.
- India is among the biggest importers of standard defence equipment and usually spends around 40% of its overall defence budget on capital purchases.
- India places 8th rank all over the world in armed forces expenditures
- India will likely invest $100-150 billion (about Rs 5.4-8.1 lakh crore) on defence evolution programmes simply by 2022
- The government of India, as the sole buyer of defence equipments, usually spends intensely alongside defence expenditure accounting for in close proximity to 15 percent of central government expenditure.
- Foreign direct investment (FDI) as part of defence is actually risen up to 49% from 26%.
- Rarely any investment in R & D by government. Exclusively 6 % of the defence expenses is actually redirected in direction of R & D.
- Indian organizations have actually spurned some $15 billion worth of government tenders to put together a variety of weaponry since 2013
- The allocation for defence within the last budget ended up being approximate USD 37.3 Billion. [1][2][3]

PART I - OPPORTUNITIES FOR MAKE IN INDIA IN DEFENCE SECTOR

Our country has made tremendous progress in all industrial sectors since independence. During that period for self-reliance in the defence sector, four broad policy directions were given out:-

(a)   **Broad front licensing strategy** - The strategy involved a massive import of foreign technology through the wide ranging net of foreign collaborations.

(b)   **Creation of general-purpose R& D structure -** A creation of broad-based general-purpose structure of R & D was decided through a wide network of high quality science laboratories in the public sector.

(c) **Creation of specific mission oriented institution-** The rapid creation of specific mission-oriented institutions for R & D was decided in selected areas where generation of local technology is necessary.

(d) **Creation of scientific and technical work force** Enormous increase in scientific and technical work force to service the industrial system. It was decided to make provision for higher education.[i]

To meet the above goals specifically for defence R&D and production various Ordnance Factories (OFs) and many mission-oriented Defence Public Sector Undertakings (DPSUs) and Defence Research and Development organisation (DRDO) were created.

At present, the Indian defence R&D machinery consists of 52 technological laboratories and six corporations under DRDO. The DRDO preserves collaboration approximately 40 leading educational institutions, 15 national Science and Technology (S&T) organizations, 50 PSU's (including nine Defence PSU's), 39 Ordnance Factories (OF's) and 1000 and private sector industries.[i] Despite that in 1993 a review, committee, headed by late President Dr APJ Abdul Kalam, then SA to RM, had recommended to set a goal of enhancing indigenous content in defence industry from 30% in 1995 to possible 70 % by 2005. Due to the slow progress made, this target had to be rescheduled for 2020.Which also appears difficult at the current pace.

Long time of indecisiveness at various levels has caused us embarrassment and lead to emergency purchase like ammunition for 155mm Bofors was procured during Kargil or purchase of basic trainers for the Air Force with the HPT-32 aircraft grounded due to safety issues in 2009. Now due to 'Make in India' initiative there is however, a realization and a sense of urgency that is evident and a number of measures are being taken. The thrust of government has been to increase the share of manufacturing from the current level of 15 per cent of Gross Domestic Product (GDP) to 25 per cent and create additional employment opportunity of ten million per year.[i]

The government has realized that the biggest challenge for implementing 'Make in India' concept is changes, which are required in the policy framework of the existing R&D infrastructure. Dhirendra Singh Committee 2015 gave 43 recommendations out of which 15 recommendations pertained to Make in India.[i] One of the recommendations the policy on Strategic Partnership (SP) in defence sector was promulgated on 31 May 2017. A SP is a legal agreement between two or more companies to share access to their technology, trademarks or other assets. By this method, a few private sector firms based on their capability would be declared as systems integrators. These firms then would tie up with foreign OEMs for manufacture and ToT. These firms would make long-term investments and thus R&D and production facilities would be developed. The policy would encourage private sector participation along with DPSUs /OFB, in the manufacturing of defence platforms and equipment in four segments namely aircraft, helicopters, AFVs and submarines. The role of Strategic Partner (SP) would also include   development of support infrastructure for provision of spares and capacities for repair and maintenance of the platforms. The policy would assist Medium and Small Enterprises (MSME) who constitutes a   major portion of Indian economy and accounts for 40% of employment.

The Govt has taken significant measures to promote indigenisation. Releasing the list of Defence items required in future, as LTIPP, further pruning down the list, enhancing FDI limit in Defence and initiating 'On-line' application for issue of Industrial Licenses are few examples. In order to simplify the issue of industrial licensing procedure there is proposal to accept licences as "deemed approved" if the security clearance from home ministry is delayed beyond a "reasonable" time.

The defence budget for 2018-19 has shown an increase to cater for inflation and the revenue portion of the budget. Although the capital expenditure has shown a downward trend yet there lie many opportunities in the sector for venture capitalists. Few DPSUs, OFs and Private Companies have also forwarded proposals for export of military equipment to other countries like Israel, Kazakhstan, Philippines and Vietnam etc. The cumulative figure for the current financial year is likely to be well above Rs 2000 cr. Hence, every day new opportunities are being created and it can be concluded that urgency for self-reliance has been well understood to fulfil the long cherished dream.

On 10 Sep 2018 Defence Corridor was inaugurated in UP six nodal points have been identified for the corridor which are Agra, Aligarh, ,Lucknow, Kanpur, Chitrakoot and Jhansi. Most of the DPSUs declared large investments along the corridor. During the function Hon'ble RM remarked " *Startups and MSMEs can show their innovative products to us. After required tests are completed, we are ready to buy those products. I assure you to give orders for minimum 10 yrs.*"[i] Other state govts are also planning such ventures by declaring exclusive industrial zone for defence manufacturing.

In DPP 2007, "Make in India" was introduced for the first time as a new category and was expected to change the entire procurement scenario for self-reliance. Two projects "Infantry Combat Vehicle (ICV)" and "Battlefield Management System (BMS)." were initially selected as test cases for Make in India venture. Two Private industries were also identified since than two decades have passed and award of contract is still not on the horizon and commencement of manufacture in a trickle is likely to begin minimum two to three yrs later. The defence sector also has success stories like Brahmos Aerospace a consortium approach[i] between Indian Government and Russian Federation has been extremely successful in jointly producing Brahmos Super Sonic Cruise Missile. Pinaka MBRL is another case study wherein public and private companies developed a formidable weapon system together. The Armament Research & Development Establishment (ARDE), Tata, L&T and OFB worked in close cooperation to make the project a success. With such a mix bag of success and failure the various challenges offered by Make in India venture have been discussed in succeeding part.

PART II – CHALLENGES ENVISAGED FOR MAKE IN INDIA

Technology in Indian Defence Sector

For being self-reliant in addition to acquisition of weapon platforms,we should have a strategy for technology acquisition. We cannot succeed in defence production and indigenisation if technology **evolution/ acquisition, development and deployment** are not planned in advance. Nowadays due to rapid pace of technology development and increased sophistication the product life cycle has reduced, as a result there is a need to shorten product development time as well as bring more flexibility in the organisations concerned. For a developing country, the choices available for technology development are either to develop indigenously or import from outside as part of Foreign Direct Investment (FDI).

FDI remains the most useful method of technology transfer for developing and underdeveloped countries. In the union budget 2015-16, the earlier limit of 26% in defence sector was revised to 49%. Higher levels of   foreign investments more than 49% were also permitted on case-to-case basis after the approval of Cabinet Committee on Security (CCS). Despite this as per figures tabled in the parliament in March last year *"the government has got just six FDI proposals worth Rs 96 crore ($15.3 million) in the defence production sector, with only two of them being for 49 percent."* [i]The condition has not much improved even now

A strong R&D is another challenge to all firms planning to be part of Make in India in the defence sector. Any technology with defence applications would require substantial investment in terms of time, money and human resources to develop, in addition different countries government policies put defence technologies under restrictive export regime. Hence, it is mandatory that long-term capability requirements be identified and development of appropriate technology be undertaken as per perspective planning.

In the Private as well as govt defence sector industry there is a feeling that security forces pitch their technology requirement very high intentionally since the same would not be available with the domestic players. On the contrary long procurement period and short life span of technology and a requirement to overshadow your opponent force defence planners to look for future technologies hence a need for continuous R&D. This creates mistrust that defence forces do not want weapons from Indian firms. Furthermore, despite hosting a major portion of LTIPP in the open domain it is Request for Proposal (RFP) that first time the private sector comes across the defence requirements, which leaves tight timelines for all vendors to respond. Hence a feeling of being left out amongst the private sector.

Manufacturing of any item is a direct function of Land, Labour and capital. Consideration of challenges in each merit attention. Defence industry although is manpower intensive yet it requires a highly skilled labour force. The Indian education system is presently mired in a mess and needs millions of skilled workers coming out of the ITIs with quality training. The private sector has contributed significantly to the growth of technical and management education in the country. It is the quality of education and lack of research, which affects the employability of students adversely despite the abundant opportunities. A survey by New Delhi Based employment solutions company, Aspiring Minds, on 1.5 lakh engineering graduates of 2013 found only 7 percent suitable for core engineering jobs[i]. There is an urgent need to set the things right. To create the skilled workforce the following actions have recently been initiated by the government :-

(a)   A separate **Ministry for Skill Development** has been created.

(b)   A total of 17 sectors are covered under National Skill Development Council (NSDC) including Agriculture, Beauty and Wellness, Media, and even the security guards, the Defence sector is yet to form a part of it.

(c)   The NSDC website lists out the ministries with which it coordinates functioning , here also MoD has not been included.

Investment in Defence sector involves huge costs and large incubation period for the invested capital. The capital involvement is continuous for initial manufacturing / procurement of a weapon platform and later for provisioning of maintenance and repairs. Unfortunately, our defence strategists are **not** financial experts and the reverse is also not true either. As a result, all proposals are bogged down in the   various clauses of the Defence Procurement Procedures and the inability to reap the **benefit** out of the offset clauses. When the equipment procurement for security forces is concerned, the queries should not be about the price but about the **'Cost of denial'.**

Any extensive contribution associated with the private industry as part of defence would definitely need to have a apparent roadmap for involvement, along with definitely recognized forced segments. There is no central institution in the country to lay down a long-term roadmap for the defence industry, to set the targets for self-reliance in the industry. Few yrs back even modalities of working out indigenous content in an equipment were not clear. Whether indigenous content is to be worked out based on the cost or the percentage of items in the equipment. The SP model is a great idea but the challenge lies in the execution. The procedures for selecting a private company for a big project are quite long and complex. The process commences with inviting bidders for financial evaluations, assessment of technical capabilities followed by lengthy conversations on pricing and delivery. Another method of involving private sector in a public private partnership is by formulation of a Joint Working Group (JWG) comprising of private sector leading representatives and key decision makers in the government. All policy decisions regarding investments in technology, manufacture and maintenance are than taken by JWG.

Next challenge is to generate funds for long gestation R& D projects in the defence sector and attract young potential from academia. There is a requirement to make R&D in the defence sector economically lucrative and equally rewarding. A Sovereign Defence Fund may be on a PPP model (govt contributing 49 % and private sector making the balance need to be worked out. A major chunk of budget is required to be earmarked for the capital acquisition/ modernization of the forces.

The defence procurement procedure is so designed that procurement from a single source is unacceptable whereas foreign import govt to govt is or Business to Business is acceptable. There is a requirement of a prevalent framework for defence procurement throughout research establishments, ordinance factories, DPSUs and private sector. Decision making requires to be straightforward, more rapidly and also translucent. There is a necessity to deal with and enhance the ease-of-doing-business.

Another issue is due to security and need to know information the entire procedure remains under iota of doubts and mistrust. One single news leads to black listing of entire firm

for unfair practice . It is also not certain whether only firm or all its business firms would come under shadow of doubts. At one time we had most of the arms manufacturing company on the list or a court case going in the court.

The Ministry of Defence may be the only customer for the defence industry in the country. Without having long-term agreements, certainty of volumes, quick alternative strategy, as well as openness and reasonable payment terms and conditions, there exists very little inducement for the personalized participants to participate in the bid process. Finally, the challenge is to replace the long shadow of the 3Cs – CBI, CVC and CAG – by   Cooperation, Competition, and Collaboration.

PART III - RECOMMENDATIONS

R&D in Defence Sector –

Monopoly of DRDO over defence R&D and creation of nodal point as center of excellence has not yielded the desired results. Another innovative defence manufacturing countries persuade R&D at different sources which include specialized research institutes, universities or colleges as well as industry. We should follow the model of R&D management on the lines of DARPA of US and Israel's Office of the Chief Scientist (OCS) who do not do R&D but recognize ideas from industry, academia, government laboratories and individuals, and awards R&D contracts. The govt should undertake partial/complete risk for all R&D undertaken. To enhance the confidence and authority of DRDO a greater financial and administrative autonomy is required to be given.

The foreign vendors invest in sectors which are fast growing and likely to be profitable in short as well as long run. The govt regulations play a very important role to attract foreign investors . Certain recommendations are :-

(a)   **T**echnology absorption monitoring board be constituted for the purpose of closely monitoring investment in R&D and actual ToT absorption.

(b)   For allowance of more than 49% FDI for clarity the criteria for considering State of Art technology with timeline should be defined. A state of art technology today may get obsolete by the time procurement actually commences.

(c)   Leaving aside a proportionate increase in the profits, there is little difference between FDI limits of 26 per cent and 49 per cent since in both cases, effective control remains with the indigenous company. We should adopt a policy of 100 per cent FDI permissible in defence based upon the merit of the case and offered technology.

(d)   The technology developed in India through JVs or being transferred should be of global standards and the IPRs should reside with the JV in India.

Develop in House Capability

The Navy has developed in house design capability by setting up of Naval design Bureau (NDB). Their dependence on DRDO has substantially reduced and is limited to development of subsystems. All shipyards involved with Manufacturing of battle ships are headed by serving naval Officer. The Navy has also included a two-week course in indigenisation at the Southern

Naval Command (SNC). On the other hand, the Army and Air Force are dependent on the DRDO and DPSUs/OFB. Although Army had also set up the Army design Bureau in 2016 as the nodal agency to act as a repository of technical knowledge. The real benefits are yet to be seen. Other organisations like RFP cell   under DGWE were also short lived.

Development of Private Sector

Creation of level playing field for the private industry, DPSUs and OFB is utmost required needed for developing the mutual trust few measures in this regard are discussed below :-

   (a)   **Share Information -**senior military officers, technical officers (in service and retired) and managers from the private sector participating in defence should jointly formulate a clear weapon system development philosophy. An advisory cell under MoD may be organised to act as a single point military interface with industry for establishing a clear, healthy and productive two-way communication between the end user and the manufacturer.

   (b)   **Share Infrastructure** -   Private sector needs to be assisted in terms of access to infrastructure and lab facilities. Access to trial ranges, assistance from quality experts and ToT of already indigenised technologies. All facilities available in public as well as private sector should form part of National resource for manufacturing of defence products on long term basis and should be shared jointly by all. Public Private partnership should be encouraged at all levels. Private companies should be allowed to access the research infrastructure and labs created using govt resources and R &D.

   (c)   **Share Present Situation -** To tide over the current situation the Private sector should be involved immediately to manage critical deficiency with armed forces. The equipment that has already been produced by private sector should be accepted for trials and if it meets the qualitative requirements, the equipment should be procured.

   (d)   **Share Responsibility** - The fear of failure amongst Private sector is required to be replaced by hope of success. The Private sector needs guarantee for confirmed orders. It would undertake R&D provided security is provided for acceptance of results. The private sector must be allotted big-ticket contracts to boost their confidence and morale. We need to establish a everlasting arbitration cell to whom almost all arguments tend to be resolved as well as whoever judgements tend to be final instead of subjected to analyze. The ease of doing business in India would be achieved when the government is able to alleviate concerns around FDI,IPR, investor protection, land acquisition, licensing issues and taxation regime .

Assist Public Sector Units

To assist DPSUs and overcome the problem of overshooting contracted timelines first challenge is to review and upgrade their production capacities and secondly integrate private sector expertise in manufacture, management and marketing. Once the DPSUs and OFs are able to meet domestic demands then we should plan for exports of weapons, equipment and ammunition to friendly foreign countries. At the same time all items earmarked for export must be first introduced in own country.

Develop Complementary Sectors

To develop defence sector we should simultaneously develop various complementary sectors like communication alloys, composites, components, precision engineering items etc. Our progress in some of the sectors like metallurgy, alloys a lot is required to be achieved. Lack of strong logistics supply chain and adequate infrastructure pitches logistics costs upwards thus reducing the cost optimisation and efficiency. A strong supply chain is actually thus essential for a defence manufacturer seeking to optimise cost

Simplify Defence Procurement Procedure

Long vs. Short DPP - The DPP has undergone eight revisions since 2002. While each revision refined the procedures and made them more transparent but at the same time, it created doubt for participating vendors regarding longevity of a particular procedure. DPP 2016 has focussed on achieving Make In India by according priority to Buy (Indian) IDDM(Indian Designed, Developed and manufactured), Buy (Indian) and Buy and Make (Indian) category over Buy (Global). Still we need to analyse that do we need incremental changes or entire procedure overhauling is required. **Rather than making a large document, running in more than 200 pages a basic document consisting of 10-12 pages may be considered and supplements may be issued separately on required basis.** A brief document will be easy to understand and limited amendments would be possible.

Human Resource Development

India possesses intense skill pool in science, modern technology as well as scientific studies, and a few of the most affordable labour charges in the arena. ISRO runs a passionate University Indian Space Science and Technology (IIST) which taps skills at an earlier phase and offers graduate, postgraduate and doctoral programme within the aspects of space science and modern technology. Generally There is not any this type of technological institution available in the country for defence industry. In defence, the academia and industry need to create collaboration in order to motivate research and technological innovations and produce a talent pool. The specialist procurement cadre of officers and staff at department of defence production needs to be created and given longer tenures. There is a need to promote National Technological University for such purpose.

Area of Specialisation

Like US scientists focus on next generation materials for manufacturing, Japan focuses on implications of demographic changes and prioritise research on new production technologies with emphasis on quality and reliability. Germany puts efforts related to manufacturing processes and capital machinery that protect products from piracy. On the similar lines, we can concentrate resources on few core areas like software development for next generation battlefield such as Artificial Intelligence and cyber security where such focus would lead to better results in manufacturing the "chip" indigenously.

Conclusion

Electrifying all villages in India seems to be an easier proposition than achieving self-sufficiency in the defence sector. If after all these voluminous instructions the armed forces do not receive the weapon systems they desire, then the fault lies with every citizen who raises hurdles to ensure status quo is maintained. We need to promote not only 'Make in India' but

also Make 'For' India and Make 'With' India. It really should first fulfil the local marketplace right after which seek out the exports. If the goal is to accomplish export capacity, then the weapon system need to first be in service along with our armed forces.

This essay has attempted to analyse the defence sector needs that are required to be mobilized on a "war footing" and every department, agency or individual connected with the procurement or manufacture has to be held accountable. With defence sector being the high priority emphasis subject, the nation will quickly come out as a favoured place to go for the co-development and co-creation of an native self reliant system. Simply by following consortium strategy, stimulating private sector market to participate in defence R&D as well as manufacturing, streamlining the entire process of dilemma of commercial license, liberalizing export of defence products and services to friendly foreign countries, relaxation in FDI approach and forging public-private joint ventures, this particular graduation might possibly be accelerated.

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A DETAILED STUDY ON ROLE OF EDUCATION IN SUSTAINABLE ECONOMIC DEVELOPMENT IN RURAL AREA

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Abstract

The earth's environment has been deemed as an amazingly sustainable, self correcting machine, taking care of all human mishaps and attacks on delicate biosphere. But this misunderstanding of nature cannot be taken for granted. New technology in industry and agriculture, as well as other developmental activities of modern society are well selfish in nature, which is raising pollution and causing huge damage to the environment. Origin of smoke and gases from industry and automobiles leads to increased carbon dioxide items in the air. Flows of the industry and mining are polluting water sources and are destroying the land. High dose of fertilizers are polluting lakes. Pesticide rests in the soil dirty water sources. The developmental activities including agriculture speed up the desertification and reduction of genetic variety. Pollution of air and water is a great challenge which is closely connected with the health of population and ecosystem. Inland water sources and coastal areas have so far been treated as dustbin for wastes thus affecting water and marine life. Environmental destruction refers to the reducing of a local ecosystem or the biosphere as a whole, due to human activity. The long term final result of environmental destruction may cause unsustainability of human population.

Keyword: Nature, Technology, Technology.

Introduction

Education in its current development should be aspired at the future, should "predict" and form in a definite way and satisfy needs of future generations of people. It means that education should be preventive to social, economic and cultural life; it should structure a desirable sustainable future. A new educational example will be a micro form of sustainable society. But such ideas could not be recognized in old organizational structures of education system. There is a need for new organizational structures and educational institutions that are movable, synergetic, creative, future-oriented which could give the execution of new goals and new historical roles of education. For that it is essential to include possible standards of sustainable development into all fields of life. These fields of life should not only be deemed at the individual level, but at the community level. There is a major scope for regional and global teamwork in sustainable development. Education for sustainability is a new example for a lifelong learning process that leads to an updated and involved community having the creative

problem-solving skills, scientific, technological, and social literacy, and promise to engage in responsible actions that will help ensure an environmentally sound, socially just, and economically flourishing future for all.

Education for sustainable development is depending on ideals and standards that cause sustainability such as intergenerational equity, gender equity, social tolerance, poverty reduction, environmental protection and renovation. This is stated in Rio Declaration which includes 27 standards of sustainability . These standards can help governments, communities and school systems identify knowledge, standards, skills and values on which they will create education for sustainable development or repeat existing education to address sustainability .

Review of literature

Constantinaand Maria (2007) is of the outlook that environmental migrants and climate banish esarep eoplewhocan nolong ergaina secure livelihoodin their home lands because of drought, soilerosion, desertification, deforestation and other environmental problems, together with therelated problems of population pressures and poverty. According to them, sustainability represents a soundwaytodealwiththeenvironmentalmigrantproblem,throughgreaterpolicy highlights on environmental protection,togetherwitheffortstoaddressassociated problemsof population growth, poverty,landlessness, and basic human needs. The key tothis difficultoutlookiseducation.Educationforsustainabledevelopment isparticularlyimportanttomake sure aclearunder standing of sustainability among the local decision makers, stakeholders andthegeneralpopulation, and it would show a payoff and longruninvestmentinpromotingsustainabledevelopmentin developingor developedcountries.

Research Methodology

This research is designed to study the **"Role of Education in Sustainable Economic Development in Rural Area - A case study with reference to Nagpur district".** To keep the research design in-line with the research objectives the researcher has taken due care, that the tools used in research are objective oriented. The study is prepared as a part of PhD work and hence, the design and framework of the study is prepared while keeping in mind the rules and guidelines for preparing a PhD thesis.

Objectives of Study

The objectives of study are as under.
1. To study the Role & importance of Technical & Vocational Education in economic development of rural areas.
2. To study Issues Affecting the Costs and Financing of Rural Education Infrastructure.

Hypothesis

A hypothesis is a suggestions or proposed explanation made on the basis of limited evidence on a starting point for further investigation.

H1. Quality Education in Rural Areas has proven important for Sustainable Economic Development

Data analysis

Hypothesis 1: Quality Education in Rural Areas has proven important for Sustainable Economic Development.

The above hypothesis is a general social statement, which can be converted into a proper statistical statement. The statistical test in this case is processed on the basis of data collected from Teachers and Lecturers.

The sample size of 269 teachers collected for this hypothesis has been investigated under 13 attributes. The 5 point Likert's scale data is converted into the categorical data, in form of Yes and No. For this if the responses are given as 1: Strongly disagree or 2: Disagree or even 3: Neutral ones are converted as 0 means No (Non supportive towards the given fact). On the other hand if the responses are given as 4: Agree or 5: Strongly Agree are converted as 1 means Yes (Supportive towards the given fact).

Hypothesis testing using Chi square test, For testing the dichotomous type of data for the given 13 attributes, Chi-square test is used at 5% of level of significance. Statistical Software SPSS is used to carry this test.

Test Statistics

	Emp_Opp	Reduce_Poverty	Disease_Control	Compititive_Glb_Env	Sup_Edu	Promote_Eco_Dev	Promote_Env_Protection	Promote_Evn_Protection	Publ_under_Awernes	Int_Enh_Role_of_EDU	Training_for_Sco_Dev	Raising_Std_of_Living	Raising_Income_Level
Chi-Square	20.911[a]	24.390[a]	23.201[a]	34.978[a]	29.446[a]	15.706[a]	24.390[a]	11.245[a]	20.911[a]	18.740[a]	20.911[a]	49.164[a]	42.561[a]
df	1	1	1	1	1	1	1	1	1	1	1	1	1
Asymp. Sig.	.000	.000	.000	.000	.000	.000	.000	.001	.000	.000	.000	.000	.000

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 134.5.

Interpretation: Since all the 13 Asymp Sig. (i.e. p values) < 0.05 we reject the null hypothesis at 5% level of significance and accept the alternative Hypothesis H_{IT1} to conclude that "According to the perception of the Teachers and Lecturers, the quality education in rural areas has proven important for Sustainable Economic Development". i.e. there is an effect of quality education in rural areas on the Sustainable Economic Development.

Findings

- ➢ Maximum of the people from all the three category do not support the fact that rural educational institutes ensures that children receive quality education which prepare them to compete in the competitive global environment.
- ➢ Maximum of the people from all the three category do not support the fact that rural area educational institutions are promoting environmental protection
- ➢ It can be seen that Parents do not support the given fact, whereas Teacher and Lecturers and also Educational Office Executives believe that talented individuals are recognized in rural education.
- ➢ It can be seen that Educational Office Executives and also the Parents do not support the given fact, whereas Teacher and Lecturers believe that the rural educational institutes pay special attention to children so that each child gets an equal and important opportunity.

Suggestions

- ➢ There are lot of changes in teaching methodology now a day. The teachers must upgrade themselves with these modern day methodology like live projects, case studies, psychomotor training etc.
- ➢ Books and periodicals are the essential part of the education system. However due to lack of fund or lack of awareness, most schools are not maintaining adequate books, newspaper & magazines. Science kits and equipments are also required for experimentation. It should be maintained.
- ➢ rural area educational institutions should also focus on developing public understanding and awareness regarding environmental protection & economic stability.

Conclusion

Value education is promoted by educational institution. It is a good sign for the society. Social upliftment is possible when educational institution will take effort in this direction. There should be appropriate training programs to promote the social development. Rural area educational institutions are important in raising standard of living of people. They are also important in raising income level & Literacy level of people. There should be proper system to identify talented students. It will help in enhancing the special talent which is there in particular student. This will support the nation in getting future genius.

Due to lack of staff & other workload it becomes really difficult for teacher to provide equal and important opportunities to every students. Here, teacher must ensure that they provide equal and important opportunities to students as well as government should also ensure that they are providing sufficient manpower to schools and colleges for maintaining the quality of education. Students should be taught in such a way that they should be able to express their views, observations and experiences.

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Some Strongly Convergent Difference Sequence Spaces Defined by A Sequence of Modulus Functions

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Abstract

In the present paper we introduce strongly convergent difference sequence spaces defined by a sequence of modulus functions $F = (f_{ij})$. We also study some topological properties and inclusion relations between these spaces.

Key words : Modulus function, Statistical convergence, Para-norm space.

1. Introduction Preliminaries

Let $A = (\lambda_{mn})$ be a non-decreasing sequence of positive real numbers   tending to infinity and $\lambda_{mn} = 1$ and $\lambda_{m+1,n+1} \leq \lambda_{mn} + 1$. The generalized   de la Valle-Poussin means is defined by $t_{mn}(x) = \dfrac{1}{\lambda_{mn}} \sum\sum_{2 \leq i+j \leq I_{m+n}} x_{ij}$, where $I_{mn} = [m + n - \lambda_{mn} + 1, mn]$. A sequence $x = (x_{ij})$ is said to be (V, λ)-summable to a number L if $t_{mn}(x) \rightarrow L$ as $m + n \rightarrow \infty$ see [18]. If $\lambda_{mn} = mn$ then the (V, λ)-summability is reduced to ordinary to a number L if $t_{mn} (|x - L|) \rightarrow 0$ as $m + n \rightarrow \infty$.

Let $A = (a_{mn}^{ij})$ be an infinite matrix of complex numbers. We write $Ax = (A_{mn}(x))_{m,n=1}^{\infty}$ if $A_{mn}(x) = \sum\sum_{2 \leq i+j \leq N} a_{mn}^{ij} x_{ij}$ converges for each $m + n \in N$. Spaces of strongly summable sequences were studied by Kuttner [17], Maddox [19] and others. The class of sequences which are strongly Cesaro summable with respect to a modulus was introduced by Maddox [20] as an extension of the definition of strongly Cesaro summable sequences. Conner [8] extended further this definition to a definition of strongly A-summability with respect to a modulus when A is a non-negative regular matrix.

Let w be the set of all sequences, real or complex numbers and λ_{∞}, c and c_0 be respectively the Banach spaces of bounded, convergent and null sequences $x = (x_k)$ normed by $\|x\| = \sup_k|x_k|$, where $k \in N$, the set of positive integers.

The notion of differences sequence spaces was introduced by Kiznaz [15], who studid the difference sequence spaces $\lambda_{\infty}^2 (\Delta)$, $c^2(\Delta)$ and $c_0^2 (\Delta)$. The notion was further generalized

by Et and Colak [11] by introducing the spaces $\lambda_\infty^2 (\Delta^{mn})$, $c^2(\Delta^{mn})$ and $c_0^2 (\Delta^{mn})$. Let w be the space of all complex or real sequences $x = (x_{ij})$ and let $m'n'$, $k'\lambda'$ be non-negative integers, then for $Z = \lambda_\infty^2$, c^2, c_0^2 we have sequence spaces

$$Z(\Delta_{k'\lambda'}^{m'n'}) = \{x = (x_{ij}) \in w : \Delta_{k'\lambda'}^{m'n'} x_{ij} \in z\}$$

where $\Delta_{k'\lambda'}^{m'n'} = (\Delta_{k'\lambda'}^{m'n'} x_{ij}) = (\Delta_{k'\lambda'}^{m'-1,n'-1} x_{ij} - \Delta_{k'\lambda'}^{m'-1,n'-1} x_{ij} + 1)$ and $\Delta_{k'\lambda'}^{00} x_{ij} = x_{ij}$ for all $i,j \in N$, which is equivalent to the following binomial representation

$$\Delta_{k'\lambda'}^{m'n'} x_{ij} = \sum_{2 \leq m'+n' \leq N} \sum (-1)^{u,v} \binom{k' \ \lambda'}{u \ v} x_{i+m'u, \, j+n'v}$$

Taking $k' = \lambda' = 1$, we get the spaces which were studied by Et and Colak [11].

Taking $k' \neq \lambda' = 1$, $m \neq n = 1$, we get the spaces which were introduced and studied by Kizmaz [15].

The difference space bv_p consisting of all sequences $x = (x_{ij})$ such that $(x_{ij} - x_i - x_j) \in \lambda_p^2$ is studied in the case $1 \leq p \leq \infty$ by Basar and Altay [4] and in the case $0 < p < 1$ by Altay and Basar [2], respectively. Later, Atlay [1] extended the space bv_p to the mth order difference space $\lambda_p(\Delta^{(m)})$.

A modulus function is a function $f : [0,\infty) \to [0,\infty)$ such that
1. $f(x) = 0$ if and only if $x = 0$,
2. $f(x + y) \leq f(x) + f(y)$ for all $x \geq 0$, $y \geq 0$,
3. f is increasing
4. f is continuous from right at 0.

It follows that f must be continuous everywhere on $[0,\infty)$. The modulus function may be bounded or unbounded. For example, if we take $f(x) = \dfrac{x}{x+1}$,   then $f(x)$ is bounded. Subsequently, modulus functions have been discussed in   [3, 22, 24, 25, 27] and many others.

Let X be a linear metric space. A function $p : X \to R$ is called paranorm, if
1. $p(x) \geq 0$, for all $x \in X$,
2. x) = p(x), for all $x \Box p(\in X$,
3. $P(x + y) \leq p(x) + p(y)$, for all x, y $\in$ X,
4. If (λ_n) is a sequence of scalars with $\lambda_n \to \lambda$ as $n \to \infty$ and (x_n) is a sequence of vectors with $p(x_n x)\Box \to 0$ as $n \to \infty$, then $p(\lambda_n x_n \Box \lambda_x) \to 0$ as $n \to \infty$.

A paranorm p for which $p(x) = 0$ implies $x = 0$ is called total paranorm   and the pair (X, p) is called a total paranormed space. It is well known that   the metric of any linear metric space is given by some total paranorm   (see [30, Theorem 10.4.2, p. 183]).

Let $A = (a_{mn}^{ij})$ be an infinite matrix of complex numbers, $u = (u_{ij})$ be a sequence of strictly positive real numbers, $p = (p_{ij})$ be a bounded sequence of positive real numbers such that $0 < h = \inf_{i,j} p_{ij} \leq p_{ij} \leq \sup p_{ij} = H < \infty$. $F = (f_R)$ also be a sequence of modulus functions.

Now, we define the following sequence spaces :

$$^2V_1^\lambda \, [A, \, \Delta_{k'\chi'}^{m'n'}, \, u, \, p, \, F] =$$

$$\left\{ x = (x_{ij}) \in w : \lim_{m+n \to \infty} \sum \sum_{2 \leq ij \leq I_{mn}} \frac{u_{ij}\Big[f_{ij}(\| A_{ij}(\Delta_{k'\chi'}^{m'n'} x_{ij}) - L, z_1,...,z_{m-1,n-1} \|) \Big]^{p_{ij}}}{\lambda_{m,n}} = 0, \text{for some L} \right\}$$

$$^2V_0^\lambda \, [A, \, \Delta_{k'\chi'}^{m'n'}, \, u, \, p, \, F] =$$

$$\left\{ x = (x_{ij}) \in w : \lim_{m+n \to \infty} \sum \sum_{2 \leq ij \leq I_{mn}} \frac{u_{ij}\Big[f_{ij}(\| A_{ij}(\Delta_{k'\chi'}^{m'n'} x_{ij}), z_1,...,z_{m-1,n-1} \|) \Big]^{p_{ij}}}{\lambda_{m,n}} = 0 \right\}$$

and

$$^2V_\infty^\lambda \, [A, \, \Delta_{k'\chi'}^{m'n'}, \, u, \, p, \, F] =$$

$$\left\{ x = (x_{ij}) \in w : \sup_{m,n} \sum \sum_{2 \leq ij \leq I_{mn}} \frac{u_{ij}\Big[f_{ij}(\| A_{ij}(\Delta_{k'\chi'}^{m'n'} x_{ij}), z_1,...,z_{m-1,n-1} \|) \Big]^{p_{ij}}}{\lambda_{m,n}} < \infty \right\}$$

where $A_{ij}(\Delta_{k'\chi'}^{m'n'} x_{ij}) = \displaystyle\sum \sum_{2 \leq i+j \leq N} a_{mn}^{ij} \Delta_{k'\chi'}^{m'n'} x_{ij}$ for all $m, n \in N$.

If $F(x) = x$, we get

$$^2V_1^\lambda [A, \Delta_{k'\chi'}^{m'n'}, u, p] =$$

$$\left\{ x = (x_{ij}) \in w : \lim_{m+n \to \infty} \sum \sum_{2 \leq i+j \leq I_{mn}} \frac{u_{ij}\Big[(\| A_{ij}(\Delta_{k'\chi'}^{m'n'} x_{ij}) - L, z_1,...,z_{m-1,n-1} \|) \Big]^{p_{ij}}}{\lambda_{m,n}} = 0, \text{ for some L} \right\}$$

$$^2V_0^\lambda [A, \Delta_{k'\chi'}^{m'n'}, u, p] =$$

$$\left\{ x = (x_{ij}) \in w : \lim_{m+n \to \infty} \sum \sum_{2 \leq i+j \leq I_{mn}} \frac{u_{ij}\Big[(\| A_{ij}(\Delta_{k'\chi'}^{m'n'} x_{ij}), z_1,...,z_{m-1,n-1} \|) \Big]^{p_{ij}}}{\lambda_{m,n}} = 0 \right\}$$

and

$$^2V_\infty^\lambda [A, \Delta_{k'\chi'}^{m'n'}, u, p] =$$

$$\left\{ x = (x_{ij}) \in w : \sup_{m,n} \sum \sum_{2 \leq i+j \leq I_{mn}} \frac{u_{ij}\Big[\| A_{ij}(\Delta_{k'\chi'}^{m'n'} x_{ij}), z_1,...,z_{m-1,n-1} \| \Big]^{p_{ij}}}{\lambda_{m,n}} < \infty \right\}.$$

If $p = (p_{ij}) = 1, \; \forall \, i, j \in N$, we have

$$^2V_1^\lambda [A, \Delta_{k'\chi'}^{m'n'}, u, F] =$$

$$\left\{ x = (x_{ij}) \in w : \lim_{m+n \to \infty} \sum \sum_{2 \leq i+j \leq I_{mn}} \frac{u_{ij}\Big[f_{ij}(\| A_{ij}(\Delta_{k'\chi'}^{m'n'} x_{ij}), -L, z_1,...,z_{m-1,n-1} \|) \Big]}{\lambda_{m,n}} = 0, \text{ for some L} \right\}$$

$$^2V_0^\lambda [A, \Delta_{k'\chi'}^{m'n'}, u, F] =$$

$$\left\{ x = (x_{ij}) \in w : \lim_{m+n \to \infty} \sum \sum_{2 \le i+j \le I_{mn}} \frac{u_{ij}\left[f_{ij}(\| A_{ij}(\Delta_{k'\lambda'}^{m'n'} x_{ij}), z_1,...,z_{m-1,n-1} \|)\right]}{\lambda_{m,n}} = 0 \right\}$$

and

$${}^2 V_\infty^\lambda[A, \Delta_{k'\lambda'}^{m'n'}, u, F] =$$

$$\left\{ x = (x_{ij}) \in w : \sup_{m,n} \sum \sum_{2 \le i+j \le I_{mn}} \frac{u_{ij}\left[f_{ij}(\| A_{ij}(\Delta_{k'\lambda'}^{m'n'} x_{ij}), z_1,...,z_{m-1,n-1} \|)\right]}{\lambda_{m,n}} < \infty \right\}.$$

If we take $p = (p_{ij}) = 1$ and $u = (u_{ij}) = 1, \ \forall \ i, j \in N$, we have

$${}^2 V_1^\lambda[A, \Delta_{k'\lambda'}^{m'n'}, F] =$$

$$\left\{ x = (x_{ij}) \in w : \lim_{m+n \to \infty} \sum \sum_{2 \le i+j \le I_{mn}} \frac{\left[f_{ij}(\| A_{ij}(\Delta_{k'\lambda'}^{m'n'} x_{ij}) - L, z_1,...,z_{m-1,n-1} \|)\right]}{\lambda_{m,n}} = 0, \text{ for some } L \right\}$$

$${}^2 V_0^\lambda[A, \Delta_{k'\lambda'}^{m'n'}, F] =$$

$$\left\{ x = (x_{ij}) \in w : \lim_{m+n \to \infty} \sum \sum_{2 \le i+j \le I_{mn}} \frac{\left[f_{ij}(\| A_{ij}(\Delta_{k'\lambda'}^{m'n'} x_{ij}), z_1,...,z_{m-1,n-1} \|)\right]}{\lambda_{m,n}} = 0 \right\}$$

and

$${}^2 V_\infty^\lambda[A, \Delta_{k'\lambda'}^{m'n'}, F] =$$

$$\left\{ x = (x_{ij}) \in w : \sup_{m,n} \sum \sum_{2 \le i+j \le I_{mn}} \frac{\left[f_{ij}(\| A_{ij}(\Delta_{k'\lambda'}^{m'n'} x_{ij}), z_1,...,z_{m-1,n-1} \|)\right]}{\lambda_{m,n}} < \infty \right\}.$$

If we take $F(x) = f(x)$, $u = (u_{ij}) = 1$, $k'\lambda' = 0$, $\|.,...,.\| = 1$, then the above spaces reduce to ${}^2 V_1^\lambda[A, \Delta^{m'n'}, p, f]$, ${}^2 V_0^\lambda[A, \Delta^{m'n'}, p, f]$ and ${}^2 V_\infty^\lambda[A, \Delta^{m'n'}, p, f]$ which were studied by Ayhan Esi and Ayten Esi [10], and if we take $m', n' = 0$, we get the spaces ${}^2 V_1^\lambda[A, p, f]$, ${}^2 V_0^\lambda[A, p, f]$ and ${}^2 V_\infty^\lambda[A, p, f]$ which were studied by Bilgin and Altun [5]. Throughout the paper Z will denote one of the notations 0, 1 or ∞.

The following inequality will be used throughout the paper. If $0 < h = \inf p_{ij} \le p_{ij} \le \sup p_{ij} = H$, $D = \max(1, 2^{1-H})$ then

(1.1) $|a_{ij} + b_{ij}|^{p_{ij}} \le D\left\{ |a_{ij}|^{p_{ij}} + |b_{ij}|^{p_{ij}} \right\}$

Some strongly convergent difference sequence spaces…
For all i,j and $a_{ij}, b_{ij} \in C$.

In the present paper we introduce the sequence spaces defined by a sequence of modulus function $F = (f_{ij})$. We study some topological properties and prove some inclusion relations between these spaces.

2. Main Results

In this section we examine some topological properties of $^2V_z^\lambda[A, \Delta_{k'\chi'}^{m'n'} p, F]$ spaces and investigate some inclusion relations between these spaces.

Theorem 2.1 : Let $F = (f_{ij})$ be a sequence of modulus functions, $u = (u_{ij})$ be any sequence of strictly positive real numbers and $p = (p_{ij})$ be a bounded sequence of positive real numbers. Then $^2V_z^\lambda[A, \Delta_{k'\chi'}^{m'n'} p, F]$ is a linear space over the field C of complex numbers.

Proof. Let $x = (x_{ij})$, $y = (y_{ij}) \in {}^2V_0^\lambda[A, \Delta_{k'\chi'}^{m'n'} p, F]$ and α, $\beta \in C$. Then there exists integers M_α and N_β such that $|\alpha| \le M_\alpha$ and $|\beta| \le N_\beta$. By using inequality (1.1) and the properties of modulus function, we have

$$\sum_{\substack{\sum \\ 2 \le i+j \le I_{m,n}}} \frac{\left[\left(\| \sum_{\substack{\sum \\ 2 \le i+j \le N}} a_{mn}^{ij} \left(\Delta_{k'\chi'}^{m'n'}(\alpha x_{ij} + \beta y_{ij})\right), z_1,...,z_{m-1,n-1} \|\right)\right]^{p_{ij}}}{\lambda_{mn}}$$

$$\le \sum_{\substack{\sum \\ 2 \le i+j \le I_{m,n}}} \frac{u_{ij}\left[f_{ij}\left(\| \sum_{\substack{\sum \\ 2 \le i+j \le N}} \alpha a_{mn}^{ij}\Delta_{k'\chi'}^{m'n'}x_{ij} + \sum_{\substack{\sum \\ 2 \le i+j \le N}} \beta a_{mn}^{ij}\Delta_{k'\chi'}^{m'n'}y_{ij}, z_1,...,z_{m-1,n-1} \|\right)\right]^{p_{ij}}}{\lambda_{mn}}$$

$$\le D \sum_{\substack{\sum \\ 2 \le i+j \le I_{m,n}}} \frac{u_{ij}\left[M_\alpha f_{ij}\left(\| \sum_{\substack{\sum \\ 2 \le i+j \le N}} a_{mn}^{ij}\Delta_{k'\chi'}^{m'n'}x_{ij}, z_1,...,z_{m-1,n-1} \|\right)\right]^{p_{ij}}}{\lambda_{mn}}$$

$$+ D \sum_{\substack{\sum \\ 2 \le i+j \le I_{m,n}}} \frac{u_{ij}\left[N_\beta f_{ij}\left(\| \sum_{\substack{\sum \\ 2 \le i+j \le N}} a_{mn}^{ij}\Delta_{k'\chi'}^{m'n'}y_{ij}, z_1,...,z_{m-1,n-1} \|\right)\right]^{p_{ij}}}{\lambda_{mn}}$$

$$\le D M_\alpha^H \sum_{\substack{\sum \\ 2 \le i+j \le I_{m,n}}} \frac{u_{ij}\left[f_{ij}\left(\| \sum_{\substack{\sum \\ 2 \le i+j \le N}} a_{mn}^{ij}\Delta_{k'\chi'}^{m'n'}x_{ij}, z_1,...,z_{m-1,n-1} \|\right)\right]^{p_{ij}}}{\lambda_{mn}}$$

$$+ D N_\beta^H \sum_{\substack{\sum \\ 2 \le i+j \le I_{m,n}}} \frac{u_{ij}\left[f_{ij}\left(\| \sum_{\substack{\sum \\ 2 \le i+j \le N}} a_{mn}^{ij}\Delta_{k'\chi'}^{m'n'}y_{ij}, z_1,...,z_{m-1,n-1} \|\right)\right]^{p_{ij}}}{\lambda_{mn}}$$

$\to 0$ as $m+n \to \infty$.

This proves that $^{2}V_{0}^{\lambda}[A, \Delta_{k'\chi'}^{m'n'}, u, p, F]$ is a linear space. Similarly, we can prove that $^{2}V_{1}^{\lambda}[A, \Delta_{k'\chi'}^{m'n'}, u, p, F]$ and $^{2}V_{\infty}^{\lambda}[A, \Delta_{k'\chi'}^{m'n'}, u, p, F]$ are linear spaces.

Theorem 2.2 : Let $F = (f_{ij})$ be a sequence of modulus functions. Then we have
$$^{2}V_{0}^{\lambda}[A, \Delta_{k'\chi'}^{m'n'}, u, p, F] \subset {}^{2}V_{1}^{\lambda}[A, \Delta_{k'\chi'}^{m'n'}, u, p, F] \subset {}^{2}V_{\infty}^{\lambda}[A, \Delta_{k'\chi'}^{m'n'}, u, p, F].$$

Proof. The inclusion $^{2}V_{0}^{\lambda}[A, \Delta_{k'\chi'}^{m'n'}, u, p, F] \subset {}^{2}V_{1}^{\lambda}[A, \Delta_{k'\chi'}^{m'n'}, u, p, F]$ is obvious. Now, let x $= (x_{ij}) \in {}^{2}V_{1}^{\lambda}[A, \Delta_{k'\chi'}^{m'n'}, u, p, F]$ such that $x = (x_{ij}) \to L\left({}^{2}V_{1}^{\lambda}[A, \Delta_{k'\chi'}^{m'n'}, u, p, F]\right)$. By using inequality (1.1), we have

$$\sup_{m,n} \sum \sum_{2 \le i+j \le I_{mn}} \frac{u_{ij}\left[f_{ij}\left(\| A_{ij}(\Delta_{k'\chi'}^{m'n'}x_{ij}), z_{1}, ..., z_{m-1,n-1} \|\right)\right]^{p_{ij}}}{\lambda_{mn}}$$

$$= \sup_{m,n} \sum \sum_{2 \le i+j \le I_{mn}} \frac{u_{ij}\left[f_{ij}\left(\| A_{ij}(\Delta_{k'\chi'}^{m'n'}x_{ij}) - L + L, z_{1}, ..., z_{m-1,n-1} \|\right)\right]^{p_{ij}}}{\lambda_{mn}}$$

$$\le D \sup_{m,n} \sum \sum_{2 \le i+j \le I_{mn}} \frac{u_{ij}\left[f_{ij}\left(\| A_{ij}(\Delta_{k'\chi'}^{m'n'}x_{ij}) - L, z_{1}, ..., z_{m-1,n-1} \|\right)\right]^{p_{ij}}}{\lambda_{mn}}$$

$$+ D \sup_{m,n} \sum \sum_{2 \le i+j \le I_{mn}} \frac{u_{ij}\left[f_{ij}\left(\| L, z_{1}, ..., z_{m-1,n-1} \|\right)\right]^{p_{ij}}}{\lambda_{mn}}$$

$$\le D \sup_{m,n} \sum \sum_{2 \le i+j \le I_{mn}} \frac{u_{ij}\left[f_{ij}\left(\| A_{ij}(\Delta_{k'\chi'}^{m'n'}x_{ij}) - L, z_{1}, ..., z_{m-1,n-1} \|\right)\right]^{p_{ij}}}{\lambda_{mn}}$$

$$+ D \max\left\{f_{ij}(\| L, z_{1}, ..., z_{m-1,n-1} \|)^{h}, f_{ij}(\| L, z_{1}, ..., z_{m-1,n-1} \|)^{H}\right\}$$

$$< \infty.$$

Hence, $x = (x_{ij}) \in {}^{2}V_{\infty}^{\lambda}[A, \Delta_{k'\chi'}^{m'n'}, u, p, F]$. This proves that $^{2}V_{1}^{\lambda}[A, \Delta_{k'\chi'}^{m'n'}, u, p, F] \subset {}^{2}V_{\infty}^{\lambda}[A, \Delta_{k'\chi'}^{m'n'}, u, p, F]$. This completes the proof of the theorem.

Theorem 2.3 : Let $F = (f_{ij})$ be a sequence of modulus functions and $p = (p_{ij}) \in \lambda_{\infty}^{2}$. Then $^{2}V_{0}^{\lambda}[A, \Delta_{k'\chi'}^{m'n'}, u, p, F]$ is a paranormed space with the paranorm defined by

$$g(x) = \sup_{m,n} \left(\sum \sum_{2 \le i+j \le I_{mn}} \frac{u_{ij}\left[f_{ij}\left(\| A_{ij}(\Delta_{k'\chi'}^{m'n'}x_{ij}), z_{1}, ..., z_{m-1,n-1} \|\right)\right]^{p_{ij}}}{\lambda_{mn}} \right)^{\frac{1}{M}}$$

where $M = \max\left(\sup_{i,j} p_{ij}\right)$.

Proof. Clearly $g(-x) = g(x)$. It is trivial that $\Delta_{k'\lambda'}^{m'n'} x_{ij} = 0$ for $x = 0$. Hence, we get $g(0)$.

Since $\dfrac{p_{ij}}{M} \leq 1$ and $M \geq 1$, using Minkowski's inequality and definition of modulus function, for each x, we have

$$\left(\sum_{2 \leq i+j \leq I_{mn}} \sum \frac{u_{ij}\Big[f_{ij}\big(\| A_{ij}(\Delta_{k'\lambda'}^{m'n'}(x_{ij}+y_{ij})), z_1, z_2, ..., z_{m-1,n-1} \|\big)\Big]^{\frac{1}{p_{ij}}}}{\lambda_{mn}} \right)^{\frac{1}{M}}$$

$$\leq \left(\sum_{2 \leq i+j \leq I_{mn}} \sum \frac{u_{ij}\Big[f_{ij}\big(\| A_{ij}(\Delta_{k'\lambda'}^{m'n'}x_{ij}), z_1, z_2, ..., z_{m-1,n-1} \|\big) + f_{ij}\big(\| A_{ij}(\Delta_{k'\lambda'}^{m'n'}y_{ij}), z_1, z_2, ..., z_{m-1,n-1} \|\big)\Big]^{p_{ij}}}{\lambda_{mn}} \right)^{\frac{1}{M}}$$

$$\leq \left(\sum_{2 \leq i+j \leq I_{mn}} \sum \frac{u_{ij}\Big[f_{ij}\big(\| A_{ij}(\Delta_{k'\lambda'}^{m'n'}x_{ij}), z_1, z_2, ..., z_{m-1,n-1} \|\big)\Big]^{p_{ij}}}{\lambda_{mn}} \right)^{\frac{1}{M}}$$

$$+ \left(\sum_{2 \leq i+j \leq I_{mn}} \sum \frac{u_{ij}\Big[f_{ij}\big(\| A_{ij}(\Delta_{k'\lambda'}^{m'n'}y_{ij}), z_1, z_2, ..., z_{m-1,n-1} \|\big)\Big]^{p_{ij}}}{\lambda_{mn}} \right)^{\frac{1}{M}}.$$

Now it follows that g is sub-additive. Finally, to check the continuity of multiplication, let us take any complex number α. By the definition of the modulus function F, we have

$$g(\alpha x) = \sup_{m,n} \left(\sum_{2 \leq i+j \leq I_{mn}} \sum \frac{u_{ij}\Big[f_{ij}\big(\| A_{ij}(\Delta_{k'\lambda'}^{m'n'}x_{ij}), z_1, z_2, ..., z_{m-1,n-1} \|\big)\Big]^{p_{ij}}}{\lambda_{mn}} \right)^{\frac{1}{M}}$$

$$\leq K^{\frac{H}{M}} g(x)$$

where $K = 1 + [|\alpha|]$ ($[|\alpha|]$ denotes the integer part of α). Since F is a sequence   of modulus function, we have $x \to 0$ implies $g(\alpha x) \to 0$. Finally we have fixed x and $\alpha \to 0$ implies $g(\alpha x) \to 0$. This completes the proof.

Theorem 2.4 : Let $F = (f_{ij})$ be a sequence of modulus functions. Then $^2 V_z^\lambda[A, \Delta_{k'\lambda'}^{m'n'}, u, p] \subset {}^2 V_z^\lambda[A, \Delta_{k'\lambda'}^{m'n'}, u, p, F]$.

Proof. Let $x = (x_{ij}) \in {}^2 V_z^\lambda[A, \Delta_{k'\lambda'}^{m'n'}, u, p]$ and $c > 0$. We can choose $0 < \delta < 1$ such that $f_{ij}(t) < \varepsilon$ for every $t \in [0, \infty)$ with $0 \leq t \leq \delta$. Then, we can write

$$\sum_{2 \leq i+j \leq I_{mn}} \sum \frac{u_{ij}\Big[f_{ij}\big(\| A_{ij}(\Delta_{k'\lambda'}^{m'n'}x_{ij}) - L, z_1, ..., z_{m-1,n-1} \|\big)\Big]^{p_{ij}}}{\lambda_{mn}}$$

$$= \sum_{2 \le i+j \le I_{mn} \, \|A_{ij}(\Delta_{k'\chi'}^{m'n'} x_{ij})-L,z_1,...,z_{m-1,n-1}\| \le \delta} \frac{u_{ij}\Big[f_{ij}\big(\| A_{ij}(\Delta_{k'\chi'}^{m'n'} x_{ij})-L,z_1,....,z_{m-1,n-1} \|\big)\Big]^{p_{ij}}}{\lambda_{mn}}$$

$$+ \sum_{2 \le i+j \le I_{mn} \, \|A_{ij}(\Delta_{k'\chi'}^{m'n'} x_{ij})-L,z_1,...,z_{m-1,n-1}\| > \delta} \frac{u_{ij}\Big[f_{ij}\big(\| A_{ij}(\Delta_{k'\chi'}^{m'n'} x_{ij})-L,z_1,....,z_{m-1,n-1} \|\big)\Big]^{p_{ij}}}{\lambda_{mn}}$$

$$\le \; \max\{f_{ij}(\varepsilon)^h, f_{ij}(\varepsilon)^H\} \; + \; \max\{1, (2f_{ij}(1)\delta^{-1})^H\} \sum_{2 \le i+j \le I_{mn} \, \|A_{ij}(\Delta_{k'\chi'}^{m'n'} x_{ij})=Lx_{m,n},z_{m-1,n-1}\| > \delta}$$

$$\frac{u_{ij}\big(\| A_{ij}(\Delta_{k'\chi'}^{m'n'} x_{ij})-L,z_1,....,z_{m-1,n-1} \|\big)^{p_{ij}}}{\lambda_{mn}}$$

Therefore, $x = (x_{ij}) \in {}^2V_1^\lambda[A, \Delta_{k'\chi'}^{m'n'}, u, p, F]$. This completes the proof of the theorem. Similarly, we can prove the other cases.

Theorem 2.5 : Let $F = (f_{ij})$ be a sequence of modulus functions. If $\lim_{t \to \infty} \frac{f_{ij}(t)}{t} = s > 0$, then ${}^2V_z^\lambda[A, \Delta_{k'\chi'}^{m'n'}, u, p] = {}^2V_z^\lambda[A, \Delta_{k'\chi'}^{m'n'}, u, p, F]$.

Proof. The proof is easy, so we omit it.

Theorem 2.6 : t let $0 < p_{ij} \le q_{ij}$ for all $i,j \in N$ and let $\left(\dfrac{q_{ij}}{p_{ij}}\right)$ be bounded. Then

$${}^2V_z^\lambda[A, \Delta_{k'\chi'}^{m'n'}, u, q, F] \subset {}^2V_z^\lambda[A, \Delta_{k'\chi'}^{m'n'}, u, p, F].$$

Proof. Let $x = (x_{ij}) \in {}^2V_z^\lambda[A, \Delta_{k'\chi'}^{m'n'}, u, q, F]$. Let

$$t_{ij} = u_{ij}\Big[f_{ij}\big(\| A_{ij}(\Delta_{k'\chi'}^{m'n'} x_{ij})-L,z_1,....,z_{m-1,n-1}\big)\Big]^{q_{ij}}$$

and $\lambda_{ij} = \left(\dfrac{p_{ij}}{q_{ij}}\right)$ for all $i,j \in N$ so that $0 < \lambda \le \lambda_{ij} \le 1$. Define the sequences (u_{ij}) and (v_{ij}) as follows :

For $ij \ge 1$. Let $u_{ij} = t_{ij}$ and $v_{ij} = 0$ and for $t_{ij} < 1$, let $u_{ij} = 0$. Let $u_{ij} = 0$ and $v_{ij} = t_{ij}$. Then clearly for all $i,j \in N$, we have $t_{ij} = u_{ij} + v_{ij}$, $t_{ij}^{\lambda_{ij}} = u_{ij}^{\lambda_{ij}} + v_{ij}^{\lambda_{ij}}$, $u_{ij}^{\lambda_{ij}} \le u_{ij} \le t_{ij}$ and $v_{ij}^{\lambda_{ij}} \le v_{ij}^{\lambda_{ij}}$. Therefore

$$\frac{1}{\lambda_{mn}} \sum_{2 \le i+j \le I_{mn}} \sum t_{ij}^{\lambda_{ij}} \le \frac{1}{\lambda_{mn}} \sum_{2 \le i+j \le I_{mn}} \sum t_{ij} + \frac{1}{\lambda_{mn}} \sum_{2 \le i+j \le I_{mn}} \sum v_{ij}^\lambda.$$

Hence $x = (x_{ij}) \in {}^2V_z^\lambda[A, \Delta_{k'\chi'}^{m'n'}, u, p, F]$. Thus

$${}^2V_z^\lambda[A, \Delta_{k'\chi'}^{m'n'}, u, q, F] \subseteq {}^2V_z^\lambda[A, \Delta_{k'\chi'}^{m'n'}, u, p, F].$$

This completes the proof of the theorem.

Corollary 2.7 : Let $F = (f_{ij})$ be a sequence of modulus functions. Then the following relation holds :

(a) If $0 < \underset{ij}{\inf} \, p_{ij} \leq 1$ for all $i,j \in N$, then $^2V_z^\lambda[A, \Delta_{k'\chi'}^{m'n'}, u, F] \subset \, ^2V_z^\lambda[A, \Delta_{k'\chi'}^{m'n'}, u, p, F]$

(b) If $1 \leq p_{ij} \leq \sup_{ij} p_{ij} = H < \infty$ for all $i,j \in N$, then

$$^2V_z^\lambda[A, \Delta_{k'\chi'}^{m'n'}, u, p, F] \subset \, ^2V_z^\lambda[A, \Delta_{k'\chi'}^{m'n'}, u, F].$$

Proof. (a) It follows from Theorem 2.6 with $q_{ij} = 1$ for all $i,j \in N$.

(b) It follows from Theorem 2.6 with $p_{ij} = 1$ for all $i,j \in N$.

Theorem 2.8 : Let $F = (f_{ij})$ be a sequence of modulus functions. If $0 < \underset{ij}{\inf} \, p_{ij} \leq p_{ij} \leq \underset{ij}{\sup}$

$p_{ij} = H < \infty$. Then $^2V_z^\lambda[A, \Delta_{k'\chi'}^{m'n'}, u, p, F] = \, ^2V_z^\lambda[A, \Delta_{k'\chi'}^{m'n'}, u, F].$

Proof. It is easy to prove so we omit it.

Theorem 2.9 : Let $F = (f_{ij})$ be a sequence of modulus functions and $p = (p_{ij})$ be a bounded sequence of strictly positive real numbers. Let $m' + n' \geq 1$ be a fixed integer, then $^2V_z^\lambda[A, \Delta_{k'\chi'}^{m'-1,n'-1}, u, p, F] \subset \, ^2V_z^\lambda[A, \Delta_{k'\chi'}^{m'n'}, u, p, F].$

Proof. The proof of the inclusion follows from the following inequality

$$\underset{2 \leq i+j \leq I_{mn}}{\sum\sum} \frac{u_{ij}\Big[f_{ij}(\| A_{ij}(\Delta_{k'\chi'}^{m'n'} x_{ij}), z_1, ..., z_{m-1,n-1})\Big]^{p_{ij}}}{\lambda_{mn}}$$

$$\leq D \underset{2 \leq i+j \leq I_{mn}}{\sum\sum} \frac{u_{ij}\Big[f_{ij}(\| A_{ij}(\Delta_{k'\chi'}^{m'-1,n'-1} x_{ij}), z_1, ..., z_{m-1,n-1})\Big]^{p_{ij}}}{\lambda_{mn}}$$

$$+ D \underset{2 \leq i+j \leq I_{mn}}{\sum\sum} \frac{u_{ij}\Big[f_{ij}(\| A_{ij}(\Delta_{k'\chi'}^{m'n'} x_{ij}), z_1, ..., z_{m-1,n-1})\Big]^{p_{ij}}}{\lambda_{mn}}.$$

3. Statistical Convergence

The notion of statistical convergence of sequences was introduced by Fast [13], Buck [6], and Schoenberg [28] independently. It is also found in Zygmund [31]. Later on it was studied from sequence space point of view and linked with summability theory by Fridy [14], Connor [8], Salat [26], Maddox [21], Kolk [16], Rath and Tripathy [23], Tripathy [29], and many others. The notion depends on the density of subsets of the set N of natural numbers. A subset E of N is said to have density $\delta(E)$ if $\delta(E) = \underset{m+n \to \infty}{\lim} \underset{2 \leq i+j \leq I_{mn}}{\sum\sum} XE \, (p_{ij})$ exists, where

XE is the characteristic function of E.

A complex number sequence $x = (x_{ij})$ is said to be statistically convergent to the number L if for every $\varepsilon > 0$, $\underset{m+n \to \infty}{\lim} \frac{|K(\varepsilon)|}{n} = 0$, where $|K(\varepsilon)|$ denotes the number of elements in the set $K(\varepsilon) = \{ \lambda_{ij} \in N : |x_{ij} - L| \geq \varepsilon \}$.

A complex number sequence x = (x_{ij}) is said to be strongly generalized difference S^λ $\left(A, \Delta_{k'\chi'}^{m'n'}\right)$ –statistically convergent to the number L if for every $\varepsilon > 0$, $\lim\limits_{m+n\to\infty} \dfrac{1}{\lambda_{mn}}$ $\left\lfloor KA\left(\Delta_{k'\chi'}^{m'n'}, \varepsilon\right)\right\rfloor = 0$, where $\left\lfloor KA\left(\Delta_{k'\chi'}^{m'n'}, \varepsilon\right)\right\rfloor$ denotes the number of elements in the set $KA\left(\Delta_{k'\chi'}^{m'n'}, \varepsilon\right) = \{ k \in I_{mn} ; |A_{ij}(\Delta_{k'\chi'}^{m'n'} x_{ij}) - L| \geq \varepsilon \}$. The set of all strongly generalized difference statistically convergent sequences is denoted by $S^\lambda \left(A, \Delta_{k'\chi'}^{m'n'}\right)$. If $m', n' = 0$, $\Delta = 0$, $S^\lambda \left(A, \Delta_{k'\chi'}^{m'n'}\right)$ reduces to $S^\lambda (A)$ which was defined and studied by Bilgin and Altum [5]. If A is identity matrix, and $\lambda_{mn} = m + n$, $k' = \chi' = 0$, $S^\lambda \left(A, \Delta_{k'\chi'}^{m'n'}\right)$ reduces to $S^\lambda (\Delta^{m'n'})$ which was defined and studied by Et and Nuray [12]. If $m' = n' = 0$, $k' = \chi' = 0$ and $\lambda_{mn} = n$, $S^\lambda \left(A, \Delta_{k'\chi'}^{m'n'}\right)$ reduces to S_A, which was defined and studied by Easi [9]. If $m' = n' = 0$, $k' = \chi' = 0$, A is identity matrix and $\lambda_{mn} = m + n$ strongly generalized difference $S^\lambda \left(A, \Delta_{k'\chi'}^{m'n'}\right)$ -statistically convergent sequences reduces to ordinary statistical convergent sequences.

Theorem 3.1 : Let F = (f_{ij}) be a sequence of modulus functions. Then
$^2V_1^\lambda[A, \Delta_{k'\chi'}^{m'n'}, u, p, F] \subset {}^2S^\lambda(A, \Delta_{k'\chi'}^{m'n'})$.

Proof. Let x = $(x_{ij}) \in {}^2V_1^\lambda[A, \Delta_{k'\chi'}^{m'n'}, u, p, F]$. Then

$$\sum\sum_{2 \leq i+j \leq I_{mn}} \frac{u_{ij}\left[f_{ij}(\| A_{ij}(\Delta_{k'\chi'}^{m'n'} x_{ij}) - L, z_1, ..., z_{m-1,n-1})\right]^{p_{ij}}}{\lambda_{mn}}$$

$$\geq \sum_{\substack{2 \leq i+j \leq I_{mn} \\ \|A_{ij}(\Delta_{k'\chi'}^{m'n'} x_{ij}) - L, z_1,...,z_{m-1,n-1}\| > \delta}} \frac{u_{ij}\left[f_{ij}(\| A_{ij}(\Delta_{k'\chi'}^{m'n'} x_{ij}) - L, z_1, ..., z_{m-1,n-1})\right]^{p_{ij}}}{\lambda_{mn}}$$

$$\geq \sum_{\substack{2 \leq i+j \leq I_{mn} \\ \|A_{ij}(\Delta_{k'\chi'}^{m'n'} x_{ij}) - L, z_1,...,z_{m-1,n-1}\| > S}} \frac{u_{ij}\left[f_{ij}(\varepsilon)\right]^{p_{ij}}}{\lambda_{mn}}$$

$$\geq \sum_{\substack{2 \leq i+j \leq I_{mn} \\ \|A_{ij}(\Delta_{k'\chi'}^{m'n'} x_{ij}) - L, z_1,...,z_{m-1,n-1}\| > S}} \min\left(f_{ij}(\varepsilon)^h, f_{ij}(\varepsilon)^H\right)$$

$$\geq \min\left(f_{ij}(\varepsilon)^h, f_{ij}(\varepsilon)^H\right)\frac{1}{\lambda_{mn}} | KA(\Delta_{k'\chi'}^{m'n'}, \varepsilon) |.$$

Hence x = $(x_{ij}) \in {}^2S^\lambda(A, \Delta_{k'\chi'}^{m'n'})$.

Theorem 3.2 : Let F = (f_{ij}) be a bounded sequence of modulus functions. Then
$^2V_1^\lambda[A, \Delta_{k'\chi'}^{m'n'}, u, p, F] = {}^2S^\lambda(A, \Delta_{k'\chi'}^{m'n'})$.

Proof. By Theorem 3.1, it is sufficient to show that
$^2V_1^\lambda[A, \Delta_{k'\chi'}^{m'n'}, u, p, F] \supset {}^2S^\lambda(A, \Delta_{k'\chi'}^{m'n'})$.

Let $x = (x_{ij}) \in {}^2S^\lambda(A, \Delta_{k'\chi'}^{m'n'})$. Since $F = (f_{ij})$ is bounded, so there exists an integer $K > 0$ such that $f_{ij}(\| A_{ij}(\Delta_{k'\chi'}^{m'n'} x_{ij}) - L, z_1,...,z_{m-1,n-1} \|) \leq K$. Then for a given $\varepsilon > 0$, we have

$$\underset{2 \leq i+j \leq I_{mn}}{\sum\sum} \frac{u_{ij}\left[f_{ij}(\| A_{ij}(\Delta_{k'\chi'}^{m'n'} x_{ij}) - L, z_1,...,z_{m-1,n-1} \|)\right]^{p_{ij}}}{\lambda_{mn}}$$

$$= \underset{2 \leq i+j \leq I_{mn} \, \| A_{ij}(\Delta_{k'\chi'}^{m'n'} x_{ij}) - L, z_1,...,z_{m-1,n-1} \| \leq S}{\sum} \frac{u_{ij}\left[f_{ij}(\| A_{ij}(\Delta_{k'\chi'}^{m'n'} x_{ij}) - L, z_1,...,z_{m-1,n-1} \|)\right]^{p_{ij}}}{\lambda_{mn}}$$

$$+ \underset{2 \leq i+j \leq I_{mn} \, \| A_{ij}(\Delta_{k'\chi'}^{m'n'} x_{ij}) - L, z_1,...,z_{m-1,n-1} \| > S}{\sum} \frac{u_{ij}\left[f_{ij}(\| A_{ij}(\Delta_{k'\chi'}^{m'n'} x_{ij}) - L, z_1,...,z_{m-1,n-1} \|)\right]^{p_{ij}}}{\lambda_{mn}}$$

$$\leq \max\left(f_{ij}(\varepsilon)^h, f_{ij}(\varepsilon)^H\right) + K^H \frac{1}{\lambda_{mn}} | KA(\Delta_{k'\chi'}^{m'n'}, \varepsilon) |.$$

Taking the limit as $\varepsilon \to 0$ and $n \to \infty$, it follows that
$x = (x_{ij}) \in {}^2V_1^\lambda[A, \Delta_{k'\chi'}^{m'n'}, u, p, F].$

This completes the proof of the theorem.

Acknowledgement

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तुलनात्मक अध्ययन और अंतरानुशासनिक अध्ययन का अंतरसंबंध

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तुलनात्मक अध्ययन का मूल उद्देश्य किन्हीं दो या दो से अधिक भाषाओं में रचे गए साहित्यों के बीच समानता और असमानता का अध्ययन करते हुए उनके अंतरसंबंध की खोज करना होता है। तुलना इस अध्ययन पद्धति का मुख्य अंग है और तुलनात्मक अध्ययन की सीमा का विस्तार अनंत है। तुलनात्मक अध्ययन किसी राष्ट्र की परिधि के भीतर रचित साहित्य के साथ ही विभिन्न राष्ट्रों में रचित साहित्य को अपने अध्ययन में शामिल करता है। अलग-अलग देशों के आर्थिक, सामाजिक, राजनैतिक तथा सांस्कृतिक परिवेश की समानता और असमानता के परिप्रेक्ष्य में तुलनात्मक अध्ययन हो सकता है। तुलनात्मक अध्ययन का क्षेत्र ज्ञान की विभिन्न शाखाओं से संबंधित है, लेकिन साहित्य का ज्ञान के अन्य क्षेत्रों के साथ संबंध का अध्ययन विशेष रूप से इसके अंतर्गत आता है। यह तथ्य व्यापक स्वीकृति प्राप्त कर चुका है कि तुलनात्मक अध्ययन सिर्फ एक अध्ययन पद्धति नहीं है, बल्कि यह एक स्वतंत्र ज्ञानानुशासन है। यह भी माना जाने लगा है कि एकल अध्ययन से तुलनात्मक अध्ययन का कोई विरोध नहीं है।

ऐसी संकल्पना है कि प्रारंभ में एक या दो अनुशासन ही थे उसके उपरांत उन्ही अनुशासनों में से अनेक अनुशासनों का निर्माण होता गया। किसी अनुशासन के निर्माण की प्रकिया काफी जटिल एवं धीमी होती है। जब किसी अनुशासन विशेष के एक क्षेत्र की लोकप्रियता एवं समाज में उसकी प्रासंगिकता बढ़ती जाती है जिसके परिणाम स्वरूप उस क्षेत्र के अपने सिद्धांत, अवधारणाएँ, प्रविधि एवं संभावनाएं भी बढ़ती जाती हैं। जिसके फलस्वरूप उस विषय का वह क्षेत्र स्वतंत्र अनुशासन के रूप में अध्ययन किया जाने लगता है।

अंतर-अनुशासनिक अध्ययन को एक विषय के रूप भले ही मान्यता 20वीं - 21वीं सदी में मिली है, परंतु अंतर-अनुशासनिक अध्ययन का इतिहास अति प्राचीन है। प्रारंभ से ही देखा जाए तो प्लेटो, सुकरात, अरस्तु एवं हिप्पोक्रेट्स का योगदान लगभग सभी अनुशासनों के लिए अविस्मणीय है। उपरोक्त विद्वानों को लगभग दर्जनों भर विषयों के जनक के रूप में जाना जाता है। जिससे पता चलता है कि अंतर-अनुशासनिक अध्ययन प्रारंभ से ही होते रहे हैं। अंतर-अनुशासनिक अध्ययन प्रश्नों के उत्तर खोजने की एक प्रकिया है, समस्या समाधान की प्रणाली है या बहुत अधिक जटिल या विस्तृत विषय को संबोधित करने की शैली है, जो एक अनुशासन के द्वारा पूर्ण रूप से संबोधित हो पाना संभव नहीं हो पाता है और अनुशासन से परिप्रेक्ष्य और अंतर्दृष्टि को समन्वित कर व्यापक परिप्रेक्ष्य की रचना करता है।

अंतरानुशासनिक अध्ययन का अभिप्राय एवं स्वरूप

अंतरानुशासनिक अध्ययन को अंतरानुशासनिक अध्ययन पद्धति के रूप में भी जाना जाता है। अंतरानुशासनिक अध्ययन शोध और अध्ययन का एक नवीन माध्यम है, जो तीव्र गति से स्वतंत्र ज्ञानानुशासन का स्वरूप प्राप्त करने की ओर बढ़ रहा है। यह स्वयं में एक बहुत बड़ी अध्ययन पद्धति कही जा सकती है, जो खुले मंच की तरह हमारे सम्मुख ज्ञान के विभिन्न स्तरों और स्वभावों को प्रस्तुत करती है। अंतरानुशासनिक अध्ययन अनेक अनुशासनों की अध्ययन और शोध पद्धतियों को अपने अंदर समाए हुए है। यह पद्धति इतनी व्यापक और संश्लिष्ट है कि इसे व्याख्यायित या परिभाषित करना एक जटिल कार्य है। जिस प्रकार किसी संस्थान को चलाने के लिए सार्थक परिस्थितियों और उत्पादनों के द्वारा या उनके साथ मिलकर कार्य किया जाता है और एक साथ मिलकर ही उद्देश्यों की प्राप्ति की जाती है, उसी प्रकार अध्ययन एवं शोध की यह व्यवस्था अन्य अध्ययन अनुशासनों के साथ मिलकर तथा उनके स्वरूप, स्वभाव और स्थितियों से परिचित होकर अपने उद्देश्य की प्राप्ति करती है।

अंतरानुशासनिक अध्ययन पद्धति ज्ञान की बुनियादी समझ विकसित करने और समस्याओं को हल करने की दिशा में सक्रिय रहती है। यह दो या दो से अधिक अध्ययन क्षेत्रों या ज्ञान के विशेष निकायों के माध्यम से विकसित शोध की एक ऐसी पद्धति है, जिसमें

समूहों या व्यक्तियों द्वारा विविध सूचनाओं, तथ्यों, तकनीकों, उपकरणों, दृष्टिकोणों और अवधारणाओं को एकीकृत किया जाता है। इसे समझने के लिए साहित्य और प्रदर्शनकारी कला ज्यादा उपयुक्त होते हैं जिसमें सभी विषयों और कलाओं का समाहार हो जाता है। इसलिए स्वाभाविक है कि इन विषयों का अध्ययन इनके मूल सिद्धांतों के अतिरिक्त अन्य विषयों के कोणों से करना अपेक्षित हो जाता है।

अंतर अनुशासनिक अध्ययन अंग्रेजी भाषा के 'इंटर डिसिप्लिनरी स्टडी' का हिन्दी पर्याय है। विद्वानों ने 'डिसिप्लिन' शब्द का सटीक हिन्दी पर्याय 'विद्या' शब्द होने के चलते 'इंटर डिसिप्लिनरी स्टडी' का हिन्दी पर्याय 'अंतरविद्यावर्ती अध्ययन' माना है। डॉ॰ फादर कामिल बुल्के ने भी अपने अंग्रेजी-हिन्दी शब्दकोश में 'डिसिप्लिन' के लिए 'विद्या' शब्द ही दिया है। लेकिन अंतर अनुशासनिक अध्ययन ही 'इंटरडिसिप्लिनरी स्टडी' का हिन्दी पर्याय रूप में चल पड़ा।

डबल्यू नेवेल द्वारा संपादित 'एडवांसिंग इंटरडिसिप्लिनरी स्टडीज़' पुस्तक में जे. क्लेन और डबल्यू. नेवेल (1998) द्वारा अंतरानुशासनिक अध्ययन को विवेचित किया गया। उनके अनुसार- "किसी प्रश्न का उत्तर खोजने या किसी समस्या के समाधान, अथवा किसी ऐसे विषय को लक्ष्य बनाने की प्रक्रिया अंतरानुशासनिक अध्ययन है, जहाँ उस प्रश्न, समस्या या विषय के अत्यधिक व्यापक या जटिल होने के कारण किसी एकल अनुशासन या पेशे से उसका समुचित रूप में समाधान नहीं हो पाता। इसके माध्यम से हम अनुशासनात्मक दृष्टिकोणों को ग्रहण करते हैं और फिर अपेक्षाकृत कहीं अधिक व्यापक दृष्टिकोण की निर्मिति करते हुए गहरी अंतर्दृष्टि को समाहित करते हैं"। जाहिर है यह अध्ययन पद्धति ज्ञान-विज्ञान की जटिलता और व्यापकता को आसान बनाने में विशेष तौर पर कारगर सिद्ध हो सकती है। वैसे तो अंतरानुशासनिक अध्ययन प्राचीन युग से होते आ रहे हैं, किन्तु एक स्वतंत्र अध्ययन अनुशासन के विकास की इच्छा रखते हुए अध्ययन की नवीन प्रणालियों की खोज की दृष्टि से आधुनिक युग में इनका विशेष महत्व उभर कर आया है। अंतरानुशासनिक अध्ययन के मूल में अनेक कारण हैं, जैसे- समाज एवं प्रकृति की जटिलता, नित-नई सामाजिक समस्याओं को

सुलझाने की आवश्यकता, समस्याओं या प्रश्नों के उत्तर पाने की जिज्ञासा, नई तकनीक की सामर्थ्य और उससे प्राप्त सुविधाएँ, विश्व युद्धों के बाद सामाजिक कल्याण से जुड़े प्रश्नों के हल निकालने की अनिवार्यता आदि।

अंतरानुशासनिक अध्ययन ज्ञान की रूढ़ सीमाओं के पार कुछ नया बनाने और उसे विस्तार देने का महत्त्वपूर्ण दृष्टिकोण भी है। इसका प्रयोग मुख्य रूप से अकादमिक क्षेत्रों में किया जाता है, जहाँ दो या दो से अधिक अनुशासनों के शोधकर्ताओं द्वारा अपने दृष्टिकोणों का समन्वय किया जाता है। इसी तरह यह पद्धति वहाँ भी प्रयुक्त होती है, जहाँ समूह शिक्षण पाठ्यक्रम के संदर्भ में अध्येताओं को कई पारंपरिक अनुशासनों के परिप्रेक्ष्य में किसी एक विषय को समझने की आवश्यकता होती है। सामाजिक घटनाएँ विविध पक्षीय व बहु-कारकीय होती हैं, जिनका अध्ययन ज्ञान की किसी एक शाखा की समझ के परे होता है। इसका उपाय यही है कि विभिन्न ज्ञानानुशासनों की अंतरदृष्टि को एकीकृत किया जाए। उदाहरण के लिए अनुवाद अनुशासन के क्षेत्र में कार्य करने के लिए सांस्कृतिक अध्ययन, मनोभाषाविज्ञान, समाज भाषाविज्ञान, प्रवासन अध्ययन, पर्यावरण अध्ययन, स्त्री अध्ययन, राजनैतिक मानवशास्त्र, सामाजिक अर्थशास्त्र, ऐतिहासिक मनोविज्ञान आदि अनेक अध्ययन अनुशासनों की समन्वित दृष्टि की आवश्यकता है।

अंतरानुशासनिक अध्ययन : विद्वानों के अभिमत

विभिन्न विद्वानों ने अंतरानुशासनिक अथवा अंतरानुशासनिक अध्ययन के संबंध में जो अभिमत प्रकट किए हैं, उनमें से कुछ प्रस्तुत किए जा रहे हैं :

क्लीन और नेवेल (1997) "अंतरानुशासनिक अध्ययन प्रश्नों के उत्तर देने की प्रक्रिया है, समस्या समाधान की एक प्रणाली या बहुत विस्तृत या जटिल विषय को संबोधित करने की एक शैली है, जो एक अनुशासन के द्वारा पूर्ण रूप में संबोधित नहीं हो पाते तथा साथ ही यह अनुशासनों से प्राप्त परिप्रेक्ष्यों और अंतरदृष्टियों को समन्वित कर व्यापक परिप्रेक्ष्य की रचना करता है"।

डायना रोटन, मार्क चुन और जुली टी क्लीन (2006)): "अंतरानुशासनिक अध्ययन पाठ्यक्रम के प्रारूप तैयार करने और प्रशिक्षण की वैसी विधि, जिसके तहत फ़ैकल्टी, व्यक्तिगत या समूह/दल के रूप में विद्यार्थियों की क्षमता को विकसित करने, मुद्दों की समझ, समस्याओं को संबोधित करने और नए उपागम के निर्माण तथा समस्या समाधान की दिशा में जो एक अनुशासन या प्रशिक्षण के क्षेत्र से बाहर है, के लिए दो या दो से अधिक अनुशासनों की सूचनाओं, आँकड़ों, तकनीक और उपागम तथा सिद्धांतों की पहचान तथा मूल्यांकन करता है"।

वेरोनिका बॉइक्स मैनसिला (2005): "अंतरानुशासनिक अध्ययन ज्ञान को समन्वित करने और सोचने की वैसी पद्धति है, जिसे दो या दो से अधिक अनुशासनों से प्राप्त किया गया हो, जिसका उद्देश्य है, संज्ञानात्मक प्रगति को प्राप्त करना। उदाहरण के लिए किसी घटना का वर्णन, समस्या का समाधान, किसी वस्तु का निर्माण या नए प्रश्नों को उठाना जिन्हें किसी एक विषय के माध्यम से प्राप्त नहीं किया जा सकता"।

विलियम नेवैल (2007): "अंतरानुशासनिक अध्ययन दो भागों की वैसी प्रक्रिया है, जिसमें पहले, बहुत क्षीण या नाजुक तौर पर अनुशासन से अंतरदृष्टि प्राप्त की जाती है और दूसरे, किसी जटिल प्रघटना की वृहद समझ के लिए उपस्थित अनुशासनों की अंतरदृष्टियों का समन्वय किया जाता है।"

इन विद्वानों के अतिरिक्त अंतरानुशासनिक अध्ययन के बारे में द नेशनल एकेडमी ऑफ साइन्स संस्था का मत भी उल्लेखनीय है, जो इस प्रकार है-

"अंतरानुशासनिक अध्ययन "किसी शोध दल या व्यक्तिगत स्तर पर किए जाने वाले या अंशों की आधारभूत समझ को विकसित करने के लिए या समस्याओं के समाधान के लिए, जिनका समाधान किसी एक अनुशासन के शोध अभ्यास के क्षेत्र से परे है, से संबंधित सूचनाओं, आकड़ों, तकनीकों, उपकरणों, परिप्रेक्ष्यों, अवधारणाओं को समन्वित किया जाता है"।

ये अभिमत अंतरानुशासनिक अध्ययन के तत्वों और स्वरूप को समझने में हमारी सहायता करते हैं। क्लीन नवेल के अनुसार यह जटिल समस्याओं के समाधान की एक प्रणाली है। यह अध्ययन विभिन्न अनुशासनों से सामग्री प्राप्त कर ज्ञान के स्तर को व्यापक करता है।

वहीं विभिन्न अकादमियों ने इसे एक व्यापक अध्ययन माना है, जिसमें किसी अनुशासन की समझ विकसित करने के लिए तथा समस्याओं के समाधान हेतु दूसरे अनुशासन से संबंधित समग्रियों व तकनीकों को लिया जाता है। इन्हीं विचारो के तहत डायना रोटन व उनके साथी सह लेखकों ने अंतरानुशासनिक अध्ययन को एक विधि के रूप में उद्घोषित किया है। वे इसे एक ऐसी प्रशिक्षण विधि मानते हैं, जिसमें विद्यार्थियों की क्षमता को विकसित करने तथा समस्याओं के समाधान के लिए प्रशिक्षण के क्षेत्र के परे दो या अधिक अनुशासनों का मूल्यांकन किया जाता है। मनसीला ने इसे दो या दो से अधिक अनुशासनों के समन्वित रूप से प्राप्त एक पद्धति घोषित किया है, जो संज्ञानात्मक प्रगति में सहायक है।

इन अभिमतों के आधार पर हम अंतरानुशासनिक अध्ययन की एक समन्वित परिभाषा करते हुए कह सकते हैं कि - अंतरानुशासनिक अध्ययन प्रश्नों के उत्तर देने की प्रक्रिया, समस्या के समाधान की पद्धति और जटिल विषय को संपूर्णता में समझने की एक विधि है। यह ऐसे प्रश्नों से जूझती है, जिनके उत्तर एक विषय या एक ज्ञानानुशासन के पास नहीं होते। अंतरानुशासनिक अध्ययन में विभिन्न ज्ञानानुशासनों पर निर्भर रहते हुए उनकी अंतरदृष्टियों का समन्वय इस लक्ष्य के साथ किया जाता है कि संबंधित समस्याओं पर एक वृहद दृष्टिकोण और संपूर्ण समझ बन सके।

तुलनात्मक अध्ययन तथा अंतरानुशासनिक अध्ययन का अंतरसंबंध

अंतरानुशासनिक अध्ययन आधुनिक युग की आवश्यकता है इसका कारण यह है कि ज्ञान अखंड भले ही हो, लेकिन उसकी प्राप्ति और प्रतीति के मार्ग अलग-अलग होते हैं। ज्ञान का विभाजन दर्शन, विज्ञान आदि संकायों में नहीं किया जाता था। कौटिल्य के 'अर्थशास्त्र' में राजनीतिक और सामाजिक पहलुओं का ज्ञान एक साथ ही मिलता है। गैलीलियो से पहले दर्शन और विज्ञान को एक ही समझा जाता था। तब दर्शन को मीमांसा दर्शन और विज्ञान को व्यावहारिक दर्शनों के नाम से जाना जाता था। प्लेटो के 'रिपब्लिक' में भी ज्ञान अखंड रूप में ही विद्यमान है। इसके पश्चात विभाजन का युग आया और ज्ञान का रूप विशिष्ट यानि अलग-अलग होने लगा। बाद के दिनों में ज्ञान की अनेकों शाखाएँ विकसित हो गई। लेकिन

ज्ञान की ये शाखाएँ स्वतंत्र होते हुए भी दूसरे से पूर्णतः निरपेक्ष नही हैं क्योकि विद्या की प्रत्येक शाखा जीवन को समझने का ही मार्ग प्रदान करती हैं इसलिए उनका प्रभाव एक दूसरे पर पड़ता ही है। उत्तर आधुनिक युग में विद्वानों ने महसूस किया की ज्ञान का शुद्ध स्वरूप तभी स्थिर हो सकता है जब उसकी एक से अधिक शाखाओं के बीच के अंतर सम्बन्धों का अध्ययन किया जाये। इसलिए वर्तमान समय में अंतर आधुनिक अध्ययन का जो स्वरूप विकसित हुआ है वह तीन-चार दशक ही पुराना है लेकिन इसकी लोकप्रियता और उपयोगिता इसके नए-नए आयाम विकसित कराते जा रहे हैं। शुद्ध विज्ञान का आधार पूर्णतः बौद्धिक होता है इसलिए उसमें कम लेकिन मानविकी विषयों में अंतर अनुशासनिक अध्ययन की अधिक आवश्यकता होती है। अनुपर्युक्त विज्ञान की शाखाओं में भी अंतर अनुशासनिक अध्ययन की अधिक उपयोगिता होती है।

तुलनात्मक अध्ययन तथा अंतरानुशासनिक अध्ययन में अन्योन्याश्रित संबंध है। तुलनात्मक अध्ययन के अंतर्गत किसी समस्या को प्रकाशित तथा उसके समाधान हेतु दो या अधिक भाषाओं, साहित्यों, संस्कृतियों तथा विषयों के मध्य तुलना करने के लिए अंतरानुशासनिक दृष्टि का सहारा लिया जाता है। वहीं अंतरानुशासनिक अध्ययन में समस्या का तुलनात्मक दृष्टि से दो अनुशासनों में सापेक्षिक अध्ययन किया जाता है। दोनों ही अध्ययन ज्ञान के विस्तृत फ़लक से संबंध रखते हैं। इसके साथ ही दोनों अध्ययनों में एक से अधिक विषयों को सम्मिलित किया जाता है। मूलतः दोनों अध्ययनों की प्रकृति समान रूप से अंतर्दृष्टियों का प्रयोग करती है। दोनों अध्ययन समस्याओं के हल, सिद्धांतों के विकास और स्वयं की अंतर्दृष्टि विकसित करने के लिए अनेक अनुशासनों की अंतर्दृष्टियों और सिद्धांतों का सहारा लेते हैं। इन अध्ययनों में अध्येता समस्या के समाधान हेतु संस्कृति, भाषा तथा अनुशासन के बंधन को तोड़ व्यापक ज्ञान की और बढ़ता है। यह ध्यान रखा जाना चाहिए कि तुलनात्मक अध्ययन के अंतर्गत समस्या के *समाधान* हेतु अंतरानुशासनिक दृष्टि का प्रयोग आवश्यक है। इसी के साथ अंतरानुशासनिक अध्ययन विभिन्न अनुशासनों से प्राप्त ज्ञान की तुलना करके किया जाता है।

अंतरानुशासनिक अध्ययन तथा अनुवाद का अंतरसंबंध

अनुवाद मूलत: अनुप्रयुक्त भाषाविज्ञान का अंग है, किन्तु अब वह एक स्वतंत्र अध्ययन अनुशासन के रूप में देखा जाने लगा है। प्रयोगात्मकता और अध्ययन पद्धति की दृष्टि से

अनुवाद अध्ययन की प्रकृति अंतरानुशासनिक अध्ययन के निकट है। अनुवाद के सिद्धांतों को निर्मित करने और उन्हें समझने के लिए एकाधिक ज्ञानानुशासनों का सहारा लेना पड़ता है। जिस प्रकार अंतरानुशासनिक अध्ययन में एक से अधिक अनुशासन मिलकर एक नयी दृष्टि का निर्माण कराते हैं, उसी प्रकार अनुवाद अध्ययन की अंतर्दृष्टि भी एकाधिक अध्ययन अनुशासनों की दृष्टियों के समन्वित रूप से आकार ग्रहण करती है। अनुवाद एक अंतरानुशासनिक अनुशासन की तरह व्यापक समस्याओं के हल के लिए प्रयोग में लाया जाता है। यह उस सलाद की तरह है, जिसमें सभी फल आपस में मिल जाते हैं तथा अपना स्वाद एक दूसरे के साथ मिलाकर नमक के सहयोग से एक नया स्वाद बनाते हैं।

इस प्रकार स्पष्ट होता है कि अंतरानुशासनिक अध्ययन का मुख्य उद्देश्य है, ज्ञान का समन्वय और दो या दो से अधिक ज्ञानानुशासनों को साथ लेकर सोचने की पद्धति का विकास। ज्ञान के एकीकरण का अर्थ है किसी विशिष्ट समस्या की समझ या बौद्धिक प्रश्नों के उत्तर हेतु प्रासंगिक अनुशासनों की पहचान और उनके अनुशासनिक ज्ञान/अंतरदृष्टि का सम्मिश्रण कर वास्तविकता में किसी घटना पर परीक्षण किया जाए और उसका परिणाम साझा किया जाए। अंतरानुशासनिक अनुशासन का उपयोग उपलब्ध समस्यायों के संपूर्णता में हल ढूढ़ने के लिए किया जाता है। वर्तमान समय अंतरानुशासनिक अनुशासन का समय है। यह समाज में विद्यमान समस्याओं का अध्ययन परंपरागत अनुशासनों के पार जाकर अन्य अनुशासनों की विकसित और स्थापित अंतर्दृष्टियों की सहायता से करता है। आवश्यकतानुसार, एक ही समस्या को संपूर्णता में संबोधित करने के लिए, एक से अधिक अनुशासनों की अंतर्दृष्टियों का समन्वय करता है और इन अंतर्दृष्टियों को मिला कर एक नई अंतर्दृष्टि विकसित की जाती है। किसी एक अनुशासन के अध्ययन की अपेक्षा अंतर अनुशासनिक अध्ययन द्वारा ज्ञान के क्षेत्र में रूढ़ियों और पूर्वाग्रहों के निवारण की संभावना बहुत अधिक होती है।

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Consumer Attitude towards FMCG Products in Rural market

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Abstract

This research paper tries to explore and describe rural consumers perception and attitude towards the FMCG (Fast moving Consumer goods). The literature review concentrates on key areas of attitude towards FMCG.We have used secondary data and observations of people regarding perception towards FMCG. Following from these are the results and discussion that focus on key areas: perception and attitude towards FMCG.The researcher came to the conclusion that these elements are the most effective in capturing perception and attitude. The study concludes with a discussion of the main implications of the research and withforwarding of suggestions for further research.

Keywords:FMCG market,Attitude,rural consumer.

Introduction

Fastmoving consumer goods (FMCG) are the 4th largest sector in the Indian economy. There are three main segments in the sector – food and beverages which accounts for 19 per cent of the sector, healthcare which accounts for 31 per cent and household and personal care which accounts for the remaining 50 per cent.The fastmoving consumer goods sector is very important for Indian economy. This sector touches all aspects of human life. FMCG are now enhancing the opportunity, this is fact about consumer that their income is increasing and lifestyles are changing.

Rural India has become a massive consumer goods market with more than six hundred thousand villages and more than 70% of the population living in villages. In these rural markets, FMCG products have emerged as a major product category. Various researchers have found that rural and urban Indian consumers have different needs and wants. These differences have revealed a huge marketing potential for MNCs and other foreign investors, who try to explore rural regions for marketing opportunities. Thus, understanding rural consumer behaviour is very important for the marketers. This paper focused on the important factors that affect the rural purchase behaviour of FMCG products.Growing awareness, easier access, and changing lifestyles are the key growth drivers for the consumer market. The focus on agriculture, MSMEs, education, healthcare, infrastructure and tax rebate under the Union Budget 2019-20 is expected to directly impact the FMCG sector. These initiatives are expected to increase the disposable income in the hands of the common people, especially in the rural area, which will be beneficial for the sector.

Review of literature

Vibhuti (2014)analysed that the consumer behaviour plays an important role in marketing of fast moving consumer goods. He highlighted that in the present era of globalisation needs and wants of consumers change with time. Ganesh (2015)The author analysed that the consumers' perception towards brand loyalty of the FMCG product is awareness, knowledge, attitude for the brand. Thanigachalam (2014) analysed the importance of promotional offers, availability of

brands are important that companies must give it sufficient consideration before they plan and implement their marketing strategies. The FMCGs sector is a very dynamic sector in rural area.Garga (2009) observed that in Punjab, majority of rural respondent's preferred FMCG products in medium package sizes at medium price range and wanted products havingmore value for money. Anandan(2007) observed that the quality was the major driver to accord preference for a particular brand in washing soaps. Selvaraj(2007) observed that nearness was the most significant factor influencing consumers' purchase. He further observed that high price was another important element for the rural consumers.

Objectives of the study
- To understand the concept of FMCG and factors influencing buying decision.
- Examine attitude on the purchase behaviour of FMCG in rural consumers.
- To suggest strategies for effective marketing in rural markets.

Methodology
Exploratory research design is used for conducting this study. The objective of this study is toprovide brief overview of the attitude of rural consumer in FMCG Sector.The study is based on secondary data which is collected from thesis, reports,books,journals, periodicals and news papers.

Findings
The study provides deep understanding about the purchasing behaviour of rural consumers .Some of the findings of the study are as follows:
1. Growing income of rural households and high emphasis on improving the lifestyle has brought many products from urban to rural areas.
2. They have emerged as a new potential area to be focussed upon, they can't be ignored.
3. Price and trust on the sellers play an important role in purchasing of the product by ruralconsumers. The brand does not matter too much for the rural consumers; instead they look for value & price.
4. Retailer plays an influential role in the purchasing decision of the consumer.

Conclusion
It is concluded from the study that FMCG sector is growing at quick pace and shall continue to grow further. The future for the FMCG sector looks extremely encouraging. This is a complete paradigm shift for the marketers.This sector having undergone a structural change is all set to emerge stronger in future. Finally, it is clear from the study that rural markets are not mere extensions of the urban markets. They operate in a different and unique environment. They have importance of their own.It is imperative for a marketer to gain useful insight into the values, attitudes and motivations of rural consumers. The findings of this study indicate that price, brand name, quality, availability, packaging, and so forth were the important factors influencing the rural consumers' purchase decisions.
Suggestions
The women consumers who increasingly dominate the decision making and consumption of FMCG products have increasingly started looking for specialized products to offer customized solutions to their needs. This requires increased thrust on products' research and innovation.

The FMCG players need to concentrate on increased consumer awareness through advertisement campaigns, new brand advertisement, free samples etc.

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