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Defining Appreciative Inquiry

A Review of Research

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Abstract

Appreciative Inquiry involves, in a fundamental way, the art and practice of asking questions that strengthen a system's capacity to comprehend, anticipate, and heighten positive potential. Appreciative Inquiry, relatively a new concept, but a hopeful one, will be giving a steering to the organization's for their sustainable growth by concentrating on what is working and needs to be valued. This concept gives a fresh dimension to the strategic orientation of an organisation.

The purpose of the present article is to read the various definitions of Appreciative Inquiry proposed by different researchers and practitioners, employing content analysis methodology and establish areas of 'agreement' and to construct such a 'general' definition of Appreciative Inquiry. This article is divided into three sections. In the first section, content analysis methodology used on Appreciative Inquiry definitions is presented. The second section highlights the key words in various definitions of Appreciative Inquiry and tabulates the definitions through a categorization of 'substantive terms'. The last section discusses the results of research methodology followed by conclusion and limitations.

Keywords: *Appreciative Inquiry; Holistic Developmental Approach; Organizational Development; Decision Making.*

INTRODUCTION

Appreciative Inquiry has a potential to become a dominant tool in the area of strategic orientation of a company, because of its potential to transform the framework in which the process of decision making is done. This concept can make our decision making process more interesting and can satiate it with positive energies. Appreciative inquiry is an approach to be sought what is right in an organization in order to create a better future for it. Appreciative Inquiry (AI) was one of the first post-Lewinian Organization Development methods and probably catalyzed the subsequent proliferation of Dialogic OD methods (Bushe & Marshak, 2009) that operate outside the Lewinian paradigm.

Through this concept Organisations can take in all the positives from the environment. This concept advocates to shift from the rule of thumb decision making process, look for problems and try to find solutions. This will have a profound impact on the sustainability of an organization and therefore it will have significant impact on:

(a) Decision Making Process
(b) Change Management Approach
(c) Organisational Development
(d) Human Resource Development and Training
(e) Strategic Thinking and Orientation

Despite all the benefits and consequences of this approach there exist a diversity of definitions of appreciative inquiry. While there exists no universally accepted definition of appreciative inquiry various researchers have contributed to its discernment.

A review of current literature of appreciative inquiry many attempts by authors to in terms of what they perceive as its key components and conceptualizations. This divergence of sentiment can be ascribed to various reasons like

a) The concept is still in its infancy
b) Resistance to change

This lack of established common grounds for the 'basic' meaning of appreciative inquiry is the main purpose of this present article. The present article will be dissecting the diverse definitions of appreciative inquiry proposed by different researchers and practitioners, employing content analysis methodology, and establish areas of 'agreement' and to construct such a 'general' definition of appreciative inquiry in general perspective. This article is divided into three sections.

In the first section, content analysis methodology used on appreciative inquiry definitions is presented. The second section highlights the key words in several definitions of appreciative inquiry and tabulates the definitions through a categorization of 'substantive terms' (Zaltman et al., 1982).

The final section discusses about the outcomes of research methodology followed by conclusion and limitations.

CONTENT ANALYSIS – METHODOLOGY

Content analysis is an appropriate method when the phenomenon to be observed is communication rather than behaviour or physical objects, and it has produced useful results many times in marketing research (Kolbe and Burnett, 1991; Resnik and Stern, 1977; Stone et al., 1966). It is defined as an objective, systematic and quantitative description of the manifest content of a communication (Wang, 2001; Kimberly, 2002). It includes observation as well as

analysis. The unit of analysis may be words (different words or types of words in the message), characters (individuals or objects), themes (propositions), and space and time measures (length or duration of the message) or topics (subject of the message). Marketing research applications involve observing and analyzing the content or message of advertisements, messages, newspaper articles, etc. According to Kolbe and Burnett (1991):

> … content analysis is valuable in collecting data about communications when there are no theoretical underpinnings. Such a theoretical content analysis is useful in fostering future research and theory-building efforts because they collect information about a communication form.

So far, the attempts to define appreciative inquiry, within the appreciative inquiry literature, are the attempts to specify the concepts that form the essence of appreciative inquiry. From the literature, it is possible to pull up the definitions of appreciative inquiry. From the extracted definitions it may be possible to choose these key ideas and position them on some form of perceptual/ conceptual map, from which content analysis can be used to generate categorizations of 'similar' clusters.

In the present research, the 'communications universe' (Kassarjian, 1977) is specified as appreciative inquiry literature. The convenience sampling method has been adopted. Given these factors, the results obtained from this sample are sufficiently general to transfer to the population as a whole.

REVIEW OF DEFINITIONS

According to Cooperrider, D.L. & Whitney, D., 'Appreciative Inquiry is the cooperative search for the best in people, their organizations, and the world around them. It involves systematic discovery of what gives a system "life" when it is most effective and capable in economic, ecological, and human terms. AI involves the art and practice of asking questions that strengthen a system's capacity to heighten positive potential. It mobilizes inquiry through crafting an "unconditional positive question" often involving hundreds or sometimes thousands of people.'

According to White, T.H. (1996), 'Appreciative Inquiry focuses us on the positive aspects of our lives and leverages them to correct the negative. It's the opposite of "problem-solving".'

According to Watkins, J.M. & Bernard J. Mohr. (2001), 'Appreciative Inquiry is a theory and practice for approaching change from a holistic framework. Based on the belief that human systems are made and imagined by those who live and work within them, AI leads systems to move toward the generative and creative images that reside in their most positive core – their values, visions, achievements, and best practices. AI is both a world view and a practical process. In theory, AI is a perspective, a set of principles and beliefs about how human systems function, a departure from the past metaphor of human systems as machines. Appreciative Inquiry has an attendant set of core processes, practices, and even "models" that have emerged. In practice, AI can be used to co-create the transformative processes and practices appropriate to the culture of a particular organization. Grounded in the theory of "social constructionism", AI recognizes that human systems are constructions of the imagination and are, therefore, capable of change at the speed of imagination. Once organization members shift their perspective,

they can begin to invent their most desired future.'

According to Cooperrider, D.L. et al. (2001), 'Appreciative Inquiry deliberately seeks to discover people's exceptionality – their unique gifts, strengths, and qualities. It actively searches and recognizes people for their specialties – their essential contributions and achievements. And it is based on principles of equality of voice – everyone is asked to speak about their vision of the true, the good, and the possible. Appreciative Inquiry builds momentum and success because it believes in people. It really is an invitation to a positive revolution. Its goal is to discover in all human beings the exceptional and the essential. Its goal is to create organizations that are in full voice!'

According to Srivastva, S., et al. 'Appreciative Inquiry is a form of organizational study that selectively seeks to highlight what are referred to as "life-giving forces" (LGF's) of the organization's existence. These are the unique structure and processes of (an) organization that makes its very existence possible. LGF's may be ideas, beliefs, or values around which the organizing activity takes place.'

According to Cooperrider, David L; Whitney, Diana; and Stavros, Jacqueline M. (2003), 'AI is an exciting way to embrace organizational change. Its assumption is simple: Every organization has something that works right – things that give it life when it is most alive, effective, successful, and connected in healthy ways to its stakeholders and communities. AI begins by identifying what is positive and connecting to it in ways that heighten energy and vision for change.' '…AI recognizes that every organization is an open system that depends on its human capital to bring its vision and purpose to life.' '… the outcome of an AI initiative is a long-term positive change in the organization.' '…AI is important because it works to bring the whole organization together to build upon its positive core. AI encourages people to work together to promote a better understanding of the human system, the heartbeat of the organization.'

According to Cooperrider, David L, et al. (2000), AI involves, in a central way, the art and practice of asking questions that strengthen a system's capacity to apprehend, anticipate, and heighten positive potential. It centrally involves the mobilization of inquiry through the crafting of the 'unconditional positive question, often involving hundreds or sometimes thousands of people. …AI deliberately, in everything it does, seeks to work from accounts of the "positive change core" – and it assumes that every living system has many untapped and rich and inspiring accounts of the positive. Link the energy of this core directly to any change agenda and changes never thought possible are suddenly and democratically mobilized. …As people are brought together to listen carefully to the innovations and moments of organizational "life", sometimes in storytelling modes and sometimes in interpretive and analytic modes, a convergence zone is created where the future begins to be discerned in the form of visible patterns interwoven into the texture of the actual. … images of the future emerge out of grounded examples from an organization's positive past. …[This convergence zone facilitates] the collective repatterning of human systems.'

According to Bushe, Gervase (1998), 'Appreciative Inquiry is a form of action research that attempts to create new theories/ ideas/images that aide in the developmental change of a system (Cooperrider & Srivastva,

1987.) The key data collection innovation of appreciative inquiry is the collection of people's stories of something at its best…. these stories are collectively discussed in order to create new, generative ideas or images that aid in the developmental change of the collectivity discussing them."

According to Steinbach, John (2005), 'AI is intentional inquiry and directed conversation and story-telling that leads to a place of possibility. Possibility is fresh, new, and sacred. The story is the genesis of all that is human. Societies are stories, as are companies, schools, cities, families and individuals. There are bricks and mortar and flesh and bones, but all of it comes from a story. Even the flesh and bones of one person comes from a story of two people uniting to form another. I can think of many moments where groups reached a profound spot with AI and touched a sense of freedom. Usually one person would say something like, "From what we heard in these stories, we could..." and there follows a collective deep breath and then silence as people consider the new "we could". Possibility sits in the room as a space of silence and then thought fills the space. Where does the thought that enters at that time, which has a feeling of vitality and newness, come from? It does not come from the person who spoke because that person would not have developed that thought without the conversations that led to synapses firing in a certain way. The thought is not merely a product of the collective because an individual must form the thought. The thought comes out of relationship, conversation, and newly created images. This "thing called AI" is one of the finest ways to experience the power of language and to hone our skills with words, ideas, and stories. There are times when the possibility is so stunning the group has to sit in silence if just for a couple ticks before saying, "well, yes, maybe, why not, let's do it." There must be a gap that arises in the field of the known to entertain the unbridled possibility of novelty. There is a break in the routine story and supporting conversations so something new can creep in. This is the opening where novelty can arise. With no gap, we only have the billiard ball predictability of continuity. The openness to new ideas is not coerced. People don't have to force each other to listen to other's ideas and possibilities: minds are opened because the nature of the stories are so compelling and energetic.'

According to Hammond, Sue (1998), 'The traditional approach to change is to look for the problem, do a diagnosis, and find a solution. The primary focus is on what is wrong or broken; since we look for problems, we find them. By paying attention to problems, we emphasize and amplify them.

> …Appreciative Inquiry suggests that we look for what works in an organization. The tangible result of the inquiry process is a series of statements that describe where the organization wants to be, based on the high moments of where they have been. Because the statements are grounded in real experience and history, people know how to repeat their success.'

From all these definitions individual word-concepts have been taken in order to provide a much sharper focus on the problem at hand. Examining each definition produced a list of terms as demonstrated under:

(a) Best in People
(b) Asking Positive Questions
(c) Positive Potential
(d) Mobilizes Inquiry

e) Best Practices

f) Builds Momentum

g) Life Giving Forces

They are fully shown in Table 1 (content comparison of definitions of appreciative inquiry) with the help of 'dots (•)' for each conceptualization of the definitions given by each author that fall within each classification.

RESULTS AND CONCLUSIONS

The theory of Appreciative Inquiry was developed by David Cooperrider and Suresh Srivastva in a paper they published in 1986. David Cooperrider, the creator of appreciative inquiry, resisted writing a book on how to do AI until the turn of the millennium because he wanted people to focus on the philosophy behind this approach and not see it as a technique. The basic tenet of AI is that an organization will grow in whichever direction that people in the organization focus their attention. However, organisations, consultants, groups, people etc. are encouraged to customize appreciative inquiry approach to meet their needs, but the goal should remain the same: Help an organization, people, consultants, etc., build upon what they do best in a positive manner.

A common concern with the application is the possibility that a focus on positive stories and experiences will invalidate the negative organizational experiences of participants and repress potentially important and meaningful conversations that need to take place (Egan & Lancaster, 2005; Miller, Fitzgerald, Murrell, Preston & Ambekar, 2005; Pratt, 2002; Reason, 2000). Christine Oliver (Barge & Oliver, 2003; Fitzgerald, Oliver & Hoaxey, 2010; Oliver, 2005; 2005b) has provided a series of cogent arguments for thinking of appreciative inquiry as more than just

Table 1: Content Comparison of Definitions of Appreciative Inquiry

S.No.	*Reference*	*Best in People*	*Asking Positive Questions*	*Positive Potential*	*Mobilizes Inquiry*	*Best Practices*	*Builds Momentum*	*Life Giving Forces*	*Total*
1	Cooperrider, D.L. & Whitney, D.	✓	✓	✓	✓			✓	5
2	White, T.H. (1996)	✓	✓	✓		✓			2
3	Bernard J. Mohr. et al (2001)			✓		✓			2
4	Cooperrider, D.L. et al. (2001),	✓	✓	✓			✓		4
5	Srivastva et al.							✓	1
6	Whitney et al (2003)			✓			✓	✓	3
7	David L, et al. (2000)	✓	✓	✓			✓		4
8	Bushe, Gervase (1998)								0
9	Steinbach,John (2005)	✓							1
10	Hammond, Sue (1998)		✓		✓	✓	✓		4

studying 'the best of' and bringing greater reflexivity to AI practice.

The main objective of this research is to analyze the existing definitions of appreciative inquiry by using content analysis methodology and to put an effort to establish common ground for the 'basic' meaning of appreciative inquiry by giving a comprehensive definition for appreciative inquiry. The analysis of the existing appreciative inquiry definitions has given 7 fundamental 'conceptual categories' based on which these definitions have been built.

Of all the definitions collected, it can be argued that the definition presented by Cooperrider & Whitney is the 'best' in terms of its coverage of the underlying conceptualizations of appreciative inquiry:

'Appreciative Inquiry is the cooperative search for the best in people, their organizations, and the world around them. It involves systematic discovery of what gives a system "life" when it is most effective and capable in economic, ecological, and human terms. AI involves the art and practice of asking questions that strengthen a system's capacity to heighten positive potential. It mobilizes inquiry through crafting an "unconditional positive question" often involving hundreds or sometimes thousands of people.'

The definition of appreciative inquiry draws on a great variety of thoughts and its practices in various fields. Although, in the long run this may well prove to be its biggest strength, but in the short term, theory building is hindered by the lack of a shared understanding of key constructs. Every addition in the level of focus discloses a further layer of constructs to be defined in terms of their key concepts. This research methodology reduced appreciative inquiry literature to its key conceptualizations. Purely as a stimulus to promote further academic discussion, the author of the research propose a new definition of appreciative inquiry which may prove to be more comprehensive and relevant in both business and academic perspectives and is given below:

> 'Appreciative Inquiry in a central way includes art and practice of asking positive questions to mobilize inquiry about best practices among people so that a positive potential can build momentum to identifying the life giving forces to a system and thereby providing a way to embrace organizational change.'

LIMITATIONS AND FUTURE SCOPE OF THE STUDY

The study has contributed to the existing knowledge related to appreciative inquiry theory. It is hoped that more similar research can be conducted on the use of this important and emerging concept. Although the study has provided new insights into the conceptualisation of appreciative inquiry, the study suffers from various limitations. These limitations provide better direction for future researches in the area of appreciative inquiry. Despite all the efforts put into this study in explaining the concept of appreciative inquiry, definitions can be collected and separated into two broad categories including academic and industry to arrive at more conclusive results. Thereby, establishing areas of 'agreement' and to construct a 'general' definition of appreciative inquiry for both perspectives. Current research centres on definitions only from academic perspective. Future research is anticipated to close this gap by, if possible, collecting definitions from academia as well as industry. Ten definitions for this study have been collected from different sources of

previous literature. In this collection process some definitions within the sample literature may have been missed, which otherwise could have been included for final assessment. These limitations are inherent symptoms of the high level subjectivity in any qualitative research methodology. Furthermore, this study will also provide some research opportunities in the future studies by examining the definitions from various other models besides content analysis.

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Job Embeddedness

From Theory to Practice

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Abstract

Voluntary employee turnover is one of the most concerned areas both for academicians and practioners as far as human resource management (HRM) is concerned. Job embeddedness (JE) is an emerging concept in the field of employee turnover research which suggests some novel & stimulating ways to think about employee retention globally. JE adds uniquely to the prediction of employee turnover and holds a meaningful role in understanding voluntary employee turnover. However, despite the encouraging implications of the same, not much has been conversed about the practical efficacy of it. Thus the present paper while highlighting the contributions being made by JE to the extant turnover literature put the very concept on the tables of HR practitioners in order to encourage them to study implications of the same in their organizations and further develop strategies to foster it.

Keywords: *Job Embeddedness, Employee Turnover, Employee Retention, Human Resource Management.*

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INTRODUCTION

Employee retention remains an organizational challenge since more than five decades and has led to tremendous research

as to how valued employees can be kept from leaving the organization (Lee et al., 2004). However globalization and intermingling economies, have shifted the paradigm of human resource management. Traditional strategies of employee retention are no longer suitable to the changing expectations of the global talent pool (Cappelli, 2000). Continuous development and application of new and innovative human resource practices have become imperative for the organizations to remain competitive (Agarwala, 2003). Veteran managers today realize that hiring and retaining an employee is no longer the same (due to cutting throat competition, employee awareness and expectations from their employers, etc.) as it used to be and that employee retention has become a complex process. Hence in order to maintain a stable and sustainable workforce, organizations need to continuously explore, adapt and formulate strategies which (1) must be aligned with the overall organizational objectives; (2) are better suited to the skilled employee of today; and (3) are based on more recent turnover theories (E.g. Job Embeddedness).

Mitchell and his colleagues in 2001 proposed the construct of 'Job Embeddedness' (JE) and made a valuable addition to the pool of turnover theories. JE shifts the focus of turnover research from '*why employees leave*' to '*why employees stay*' in an organization. It measures the extent to which employees feel stuck, connected, attached or embedded in their jobs. According to Mitchell and his colleagues, 2001b (pp. 1104) '*Job embeddedness represents a broad constellation of influences on employee retention. The critical aspects of job embeddedness are (1) the extent to which people have links to other people or activities, (2) the extent to which their jobs and communities are similar to or fit with the other aspects in their life spaces, and, (3) the ease with which links can be broken-what they would give up if they left, especially if they had to physically move to other cities or homes.*'

The authors have labeled the above discussed aspects as links, fit and sacrifice, respectively and have emphasized their importance both on-the-job and off-the-job. Thus job embeddedness is a three-by-two matrix suggesting six dimensions: links, fit, and sacrifice associated with an individual's organization and with his or her community. Since the very inception, the construct has gained attention of researchers not only in the US but outside it too, probably due to its predictive power in the turnover research, as discussed further. Mitchell et al. (2001b) tested the embeddedness construct among employees in the grocery and hospital industries in the U.S. and the analysis supported that JE scale is a significant predictor of turnover, beyond traditional variables of job satisfaction, organizational commitment, perceived alternatives and job search. Since then, the construct is being studied by researchers across the world, who attempt to establish its predictive validity across national and cultural boundaries (E.g. Robinson et al., 2014; Ramesh and Gelfand, 2010; Tanova and Holtom, 2008). Furthermore, in an attempt to expand the utility of the construct, researchers have been studying the relationship of JE with other important organizational outcomes (E.g. Ng & Feldman, 2007; Harris, Wheeler & Kacmar, 2011; Ferreira & Coetzee, 2013; Ringl, 2013; etc.). Despite the encouraging implications of the measure in the field of employee turnover, not much has been conversed about the practical efficacy of the same. In a time, when keeping valued employees from leaving the organization has become requisite, it

makes sense to have a clearer understanding of the concept that holds good promise as far as employee retention is concerned. Thus, the paper endeavors to discuss the following aspects explicitly – the concept of job embeddedness, dimensions and measurement of job embeddedness, predictive validity and promising expansions of the same across nations and organizations. At the end we input the suggestions as to how organizations can implement a sound retention management program incorporating job embeddedness.

EVOLUTION OF JOB EMBEDDEDNESS

Evolution of job embeddedness lies in the history of turnover research. Long back, the most comfortable answer to the question of 'why people leave' may have been, because they aren't satisfied with their jobs and have some other place to go. Likewise, answer to 'why people stay' may plainly have been the opposite of the reason for leaving, that is, since they like their jobs and don't have any other place to go (Lee, Burch & Mitchell, 2014).

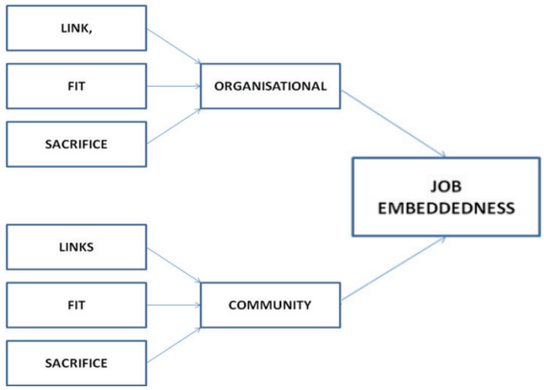
Established research on turnover goes back to 1958 when March and Simon put forward the first model of voluntary turnover and posited perceived ease of movement (presence of job alternatives) and desirability to leave one's job (level of job satisfaction) to predict employee's intentions to leave. Although, many a researchers followed thereafter and presented varied attitude driven models with job satisfaction and organizational commitment as most operationalized variables (e.g., Mobley, 1977; Steers & Mowday, 1981), the ability to predict voluntary turnover remained remarkably weak. Breaking away from the traditional theory of employee turnover, Lee et al. in 1996 came up with the unfolding model of voluntary turnover which emphasized that employee leaving an organization may not necessarily be dissatisfied with the employer and identified four different paths to turnover: (1) Leaving an unsatisfying job, which is same as the traditional turnover process discussed above. (2) Leaving for something better; it entails leaving for an attractive alternative and, may not necessarily involve dissatisfaction. (3) Following a plan; it refers to leaving a job in response to a script or plan already in place for e.g. employees who intend to quit if they or their spouse becomes pregnant, or if they get accepted into a particular degree program etc. (4) Leaving without a plan; which is all about impulsive action, typically in response to negative shocks such as being passed over for a promotion or having a family member suffer a catastrophic illness requiring extensive care.

Although varied theories prevailed, the focus of the researchers was majorly to understand as to '*why employees leave*', until Mitchell and his colleagues in 2001 came up with a new construct of Job Embeddedness and shifted the focus from '*why employees leave*' to '*why employees stay*' in an organization. They emphasized that understanding what makes employees stay may help organizations develop better retention strategies and help them bind their valuable assets to it.

CONCEPT AND DIMENSIONS OF JOB EMBEDDEDNESS

According to Harman et al., 2007 (p. 53), *"Job embeddedness describes a web of forces that cause people to feel they cannot leave their job. The critical components to job embeddedness include the extent to which people are linked with others or to activities, the extent to which their jobs and communities fit with other aspects of their lives,*

and the ease with which their respective links can be broken, that is, what they would sacrifice if they left? These three dimensions are identified as links, fit, and sacrifice, respectively, and are concerned with both on-job and off-the-job experiences. Links refers to formal and informal connections that a person has with other individuals and institutions. The more connected an individual is with the organization (e.g., belongs to work groups) and with the community (e.g., affiliated with local clubs, interest groups, or churches), the more embedded he or she is. Fit is the individual's perceived compatibility with the organization and with the community. The employee's personal values and career goals need to be congruent with the larger organizational culture; this congruence allows the employee to feel tied personally and professionally to the organization. In addition, individuals need to feel as though they and their family also fit with the community in which they live. Again, the better the fit, the more likely the person is to stay. Sacrifice refers to the perceived cost of leaving. These costs may be material or psychological. Leaving may entail giving up the advantages associated with tenure (e.g., big office, vacation time), as well as the personal losses such as companionship with colleagues or perks unique to the organization. Community sacrifices are relevant only if the individual needs to move to a new location. The loss of the sense of belonging to a community (including giving up such things as tickets to the local football team, the home inhabited for 20 years) can influence the community sacrifice dimension.' As proposed originally, the construct of job embeddedness is an aggregate formed of six dimensions (Mitchell, 2001b). The construct is causal in nature which means in a path diagram, causal arrows would go from individual items to the six dimensions and from dimensions to the overall construct (Law et al., 1998). In a more layman language, the construct doesn't mean that being embedded leads to better links, or better pay or better community fit rather they all lead a person to become more embedded. In addition, it is important to note that job embeddedness is a multi-dimensional aggregate of the two sub (i.e. on the job and off the job embeddedness) dimensions that might be instrumental in keeping someone at a job and not a unified construct.



MEASUREMENT OF JOB EMBEDDEDNESS

Job Embeddedness is comparatively a recent concept as far as research in turnover is concerned. Despite having encouraging implications, the construct needs further development and unanimity (Lee, Burch & Mitchell, 2014). Much of the research has focused on determining the relationship of Job Embeddedness with various organizational outcomes (e.g. Ringl, 2013), whereas attempt to discuss the conceptual and measurement issues has remained scanty (e.g. Lee, Burch & Mitchell, 2014). Zhang et al. 2012, in their review, stress on the need of better conceptual and measurement clarity of job embeddedness before attempting to analyze its relationship with other organizational outcomes.

Till date, measurement of job embeddedness

is done majorly through the means of questionnaire which involves either of the two – composite measure or global measure.

1. *Composite measure:* The original (composite) scale as developed by Mitchel et al. (2001b) comprises of 40 items, each of which describes one of the six dimensions of overall job embeddednees (Fit, Links and Sacrifice both On-the-job and Off-the-job). The questionnaire developed was used to assess the embeddedness level of employees of a regional grocery store and a community based hospital, chronbach alpha for which came out to be 0.85 and 0.87 respectively. Thereafter, attempts to develop the scale further mostly involve putting in or removing items from the unique Mitchel and colleagues' 40 item scale. E.g. Lee et al. (2004), revised the scale to contain 34 items; Holtom, Mitchell, Lee & Tid (2006) simplified the original measure further and retained only 21 items; whereas, Ramesh & Gelfand (2010), modified the original scale not just by deleting certain items, but also adding and introducing a new dimension of family embeddedness. The alpha reliability of this new dimension came out to be above 0.75.

   Although having advantage of theoretical richness because of inclusion of non-attitudinal and off-the-job components, Crossley et al. (2007) indicted the composite measure of having both theoretical as well as statistical limitations.

2. *Global measure:* Crossley et al. (2007) attempted to expand the theory and developed a new 7-item 'global' measure of JE that evaluates general attachment with the organization. It comprises of items as, 'I feel attached to this organization.' 'It would be difficult for me to leave this organization', and 'I am tightly connected to this organization'. The global measure doesn't differentiate between 'on' and 'off' the job factors. Also it does not differentiate between the three dimensions of links, fit, and sacrifice.

Comparison between 'Composite' & 'Global' Measure

Crossley et al. (2007) emphasize both theoretical and statistical advantage of their global measure over the original composite measure. They emphasize that the global measure permits the respondents to include details from their individual judgment rather than particular aspects whereas; the composite measure may not include parts which may be relevant to the respondent or include the ones which may be irrelevant. Further, whereas global measure captures the unique weightings which an individual places on different aspects when forming the summary perception, the final score of overall job embeddedness in the composite measure is an average of both job-related as well as community factors, which do not capture their unique weightings. On the other hand, composite measure boasts of having an advantage of theoretical richness and contribution as it overtly includes off-the-job and non attitudinal components, as compared to global measure, which assesses rather general reactions, that may mix attitudinal and emotional components (Lee, Burch & Mitchell, 2014).

In addition to theoretical differences, composite and global measures differentiate statistically too. Whereas former is a formative model, the latter is a better, reflective measurement model wherein the direction of causality flows from the latent

construct to the items. Reflective model has statistical superiority over the formative one as a number of statistical methods can be employed to analyze its properties like reliability analysis, EFA and SEM; unlike the formative model whose property analysis methods are comparatively less developed (Lee, Burch and Mitchell, 2014).

Summing up the above differences, it becomes difficult to conclude which of the two scales is better. While the composite scale has theoretical richness, it has statistical limitations over the global measure. Likewise, global measure doesn't differentiate between the work and non-work factors of job embeddedness. Thus, if a researcher aims to study the relationship between job embeddedness and its components with other organizational variables; composite measure is the one to be chosen. On the contrary if the model under observation includes latent constructs, better choice would be reflective construct.

PREDICTIVE VALIDITY OF JOB EMBEDDEDNESS AND PROMISING EXPANSIONS OF THE SAME ACROSS NATIONS AND ORGANIZATIONS

Predictive Validity of Job Embeddedness

The very first empirical result of job embeddedness was reported by Mitchell et al. (2001b). Taking two different samples one from grocery store (177) and another from hospital employees (208), the authors reported predictive validities of .24 and .25 respectively ($p < .01$ for both), with voluntary employee turnover. Further, with job satisfaction, commitment, job alternatives, job search behaviour and gender held constant, embeddedness explained incremental variance in turnover in both the samples. Though much of the previous research uses overall job embeddedness (e.g., Holtom & O'Neill 2004), successive researches separate it into its two major dimensions of organizational (i.e. on-the-job) and community (i.e., off-the-job) embeddedness (e.g., Lee et al., 2004 & Kraimer et al., 2012). Jiang et al. in 2012, conducted a meta analysis covering 65 independent samples (n = 42,907) and found that the corrected weighted average correlation of turnover with organizational embeddedness was _.19 (with a 95% confidence interval of _.27 to _.11) and that with community embeddedness was _.12 (with a 95% confidence internal of _.18 to _.06). Based on a meta-analytic regression, the authors reported that organizational and community embeddedness, job satisfaction, affective commitment, and job alternatives all added uniquely to the prediction of employee turnover. Thus, the evidence clearly shows that all of these variables, including both organizational and community embeddedness hold a meaningful role in understanding voluntary employee turnover. In other words, job embeddedness is a predictively valid construct.

Promising Expansions of Job Embeddedness Across Nations and Organizations

Tanova & Holtom, in 2008 investigated relationship of embeddedness with voluntary employee turnover in 4 European countries namely, Denmark, Finland, Italy, and Spain. After controlling for gender, age, income, higher education, job satisfaction, job search, and absenteeism, across the entire sample (n = 8,952), the authors found that both organizational and community

embeddedness validly predicted subsequent voluntary turnover. In Denmark (n = 1,571) and in Italy (n = 2,667), only organizational embeddedness predicted turnover, whereas in Finland (n = 1,797) and in Spain (n = 2849), both organizational and community embeddedness predicted turnover. This was the first systematic study which was conducted outside the US. Further, in 2010, Ramesh & Gelfand expanded the scope of job embeddedness theory and investigated whether the predictive validity of job embeddedness might generalize from an individualistic to a collectivist culture, namely, India, and whether the sub dimensions of embeddedness might be differentially predictive across cultures. They also introduced the construct of family embeddedness. Drawing samples from three call centers in the United States (n = 323) and three call centers in India (n = 474) and using numerous controls (like, organizational commitment, job satisfaction, job search, job alternatives, external prestige, country, years in area, gender, and age), the authors reported the predictive validity of job embeddedness in both the Indian and US contexts. Further, they found that the fit dimension of job embeddedness was a better predictor in the United States than in India, whereas the links dimension was a better predictor in India than in the United States. Finally, they showed that family embeddedness predicted turnover in both cultures over and above job embeddedness and controls.

When taken together, the above discussed papers expand our confidence in the predictive validity of job embeddedness across nations and cultures.

The unique predictive power of job embeddedness doesn't hold true just across nations and cultures but organizations too. In 2004, Leet et al. conducted their study in a big multi nationally operated bank and established that besides predicting who leaves job, job emeddedness also predicts in-role and extra-role performance. Additionally, Mallol, Holtom, & Lee (2007) conducted their study in banking firms and found that though levels of job embeddedness varied systematically between US born and non-US born employees (pre-dominantly Hispanic), the overall construct predicted voluntary turnover for both groups. Moving ahead, Ramesh & Gelfand (2010) establish the predictive validity of JE across the call centre industry both in US and India. Though much of the Job Embeddedness research has been conducted in private sector organizations, Jiang et al. 2012, in their meta analyses show that job embeddedness explains more variance in turnover intentions (_*R*2 _ .05, *p* _ .01) and actual turnover (_*R*2 _ .03, *p* _ .01) in public sector organizations. Thus, JE is predictively valid not only across national boundaries but organizations too.

INTEGRATING JOB EMBEDDEDNESS WITH ORGANIZATION'S EMPLOYEE RETENTION PROGRAM

Section discussed above establishes one's belief that although relatively novel, the concept of JE holds promising prospect in the study of employee retention.

Understanding Employee Turnover

But, before putting the topic of employee retention under lens, it is important to first understand some important distinctions of employee turnover. Employees leaving an organization may be due to many reasons but not all the turnovers have similar implications on the organization. Voluntary turnover is

one which is initiated by an employee and may incur losses to an organization. But not all voluntary turnovers affect an organization equally. Functional turnover is the exit of employees whose talent is easily replaceable or employees who are poor performers, and hence may not hurt an organization much. Whereas dysfunctional turnover is departure of employees who are either high performers or those with hard-to-replace skills; departure of women or minority group members that erode the diversity of company's workforce; or turnover rates which may lead to huge replacement costs, and hence draws the attention of organization towards itself (Allen, 2008). Moving ahead, is it possible for an organization to control all the dysfunctional turnovers? The answer is no. Howsoever heavily an organization invests; some of the individuals would still leave. Thus it narrows down the focus of organization's retention plan towards those employees whose hurting departure might be controlled or avoided by organization.

Why employee turnover is such a critical issue and why so much stress is laid on studying and understanding the underlying causes of the same? It is majorly for the following reasons. Firstly – (1) turnover is expensive, (2) turnover affects organization's performance, and (3) it may gradually turn out to be too complicated to handle. Secondly, veteran managers believe that by understanding the reasons behind why employees leave and the process of it, they may be able to manage it more effectively.

Retention Management Based on Traditional Turnover Theories

As discussed before in the paper, theory that prevailed traditionally was that certain specific turnover drivers (E.g. Job Characteristics, leadership, work environment, individual characteristics, etc.) affect the key attitudes of job satisfaction and organizational commitment which trigger the withdrawal process. Intentions to leave, job search behavior and availability of better alternatives may result in actual turnover if failed to be managed efficiently. Thus organizations strive to proactively manage retention by either monitoring & adjusting major facets pertaining to the work environment, which may affect an employee's wish to continue or leave; or keeping tabs on available opportunities in order to ensure that the positions remain competitive.

Furthermore, the unfolding model of turnover identifies four different paths to turnover: (1) leaving an unsatisfying job, (2) leaving for something better, (3) following a plan, and (4) leaving without a plan. (Lee & Mitchell, 1994)

In case of the first two paths, organizational turnover management techniques are similar to somewhat those discussed above. Leaving a job due to plan already in place means leaving a job in case of certain expected circumstances, e.g. pregnancy, higher education, relocation due to family responsibilities, etc. In this case organizations don't have much to do as far as retaining the employee is concerned. Leaving without a plan pertains to leaving a job due to *'Shock'* [Shocks lead the person to consider leaving his or her job. The shock can be internal or external to the individual, and it can be negative (e.g. a fight with the boss), positive (e.g. winning the lottery), or neutral (e.g. an unanticipated job offer). Additionally, the social and cognitive context in which the shock occurs provides the decision frame or frame of reference within which the employee interprets the meaning of the shock; Cho & Son, 2012; p. 52]. Now, organizations have

the capacity to manage employee turnover due to negative shocks by either minimizing the shocks or aiding employees in coming out of the shock by providing necessary support

Embedding Job Embeddedness in Organization's Retention Management Plan

Job Embeddedness shifted the focus of researchers from 'why employees leave' to 'why employees stay'. Job embeddedness is the extent of an employee's 'stuckness', or enmeshing, within a larger social system, and it results from numerous external (or contextual) forces—which are labeled links, fit, and sacrifice—in the organization and community that operate on a focal employee (Lee, Burch & Mitchell, 2014). Research has shown that the measure of job embeddedness improves the prediction of voluntary turnover over and above that accounted for by job satisfaction, organizational commitment, perceived alternatives, and job search (Mitchell et al., 2001b), and thus, lays emphasis on the inclusion of the same in the organization's retention management plan.

Taking cues from the Mitchell, Holtom & Lee (2001a) paper, the current section attempts to give suggestions as to how HR practitioners can embed their employees in order to retain organization's valued assets.

Embedding Employees by Building and Strengthening Links

Organizational links can be strengthened by proving mentors, designing work in teams and further fostering cohesiveness among those teams, or providing employee referrals. Whereas, encouraging and supporting community links; for example, through community service organizations can fortify community embeddedness. Research suggests higher the number of links between the person and the organization or community, the more she or he is bound to them (Mitchell et al., 2001b).

Embedding Employees by Building and Strengthening Organizational and Community Fit

According to Mitchell and his colleagues (2001b) pp. 1104; an employee's personal values, career goals, and plans for the future must fit with the larger corporate culture and the demands of his or her immediate job (job knowledge, skills, and abilities). In addition, a person will consider how well he or she fits the community and surrounding environment. By providing realistic information about the company and the job during recruitment, incorporating job and organizational fit into employee selection and providing clear socialization and communication about the enterprise's values and culture; organizations can enhance employees' organizational fit. Further community fit can be encouraged by recruiting locally when feasible, providing detailed information regarding the community at the time of selection process, and trying to build ties between company and the community (e.g. by sponsoring local events). Organizations must strive to promote employees fit with the organization and community as the better the fit, the higher the likelihood that an employee will feel professionally and personally tied to an organization.

Embedding employees by building and strengthening organizational and community sacrifice

Given below are few strategies through

which organizations can endeavor to embed employees by fortifying sacrifice. Tying financial incentives to tenure. Providing unique incentives that might be hard to find elsewhere (such as sabbaticals) may foster organizational sacrifice. Furthermore encouraging home ownership (for instance, by providing home-buying assistance) and developing career paths that do not require relocation, may foster community sacrifice.

Thus, given above are a few strategies by which organizations can attempt to integrate job embeddedness in their retention management program.

CONCLUSION

As the present research states, JE is an important concept that warrants attention of HR professionals globally. Contributions being made by Job Embeddedness, to the extant turnover literature, have encouraged organizations to implement practices that would promote job embeddedness and on the same side aid organizations in retaining their most valuable assets. Managing retention can be quite challenging. It requires good understanding of the entire process, i.e. analysing the ongoing strategies and approaches, putting them into practice and ultimately learning from the outcomes. But the intense need of handling the issue of employee turnover makes '*it well worth the effort*' (Allen, 2016).

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Automation in IT Industry and its HR Fallout

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Abstract

The article has tried to highlight the impact of automation on human resource in the present scenario in IT industry and has also attracted attention towards the legal challenges organisations may face due to shift towards digital era. The findings suggest that automation is taking away jobs in the IT industry and also impacting its profitability and sustainability. Automation on one hand is providing ample opportunities in the business world but also giving a sign of unexpected challenges for HR professionals where they have to balance both employees' personal goals on one hand and organisational goals on other keeping the legal provisions into consideration.

Keywords: *Automation, IT Industry, Unionization, HR Professional, Layoff.*

INTRODUCTION

India's Information Technology (IT) Industry accounts for approximately 67 percent of the US$ 124-130 billion market employing more than 10 million workforces. It standalone as world's largest sourcing destination. It is expected to grow at a rate of 12-14 percent inflating its current revenue to reach US$350 billion by year 2025. As per the Accenture's Platform Readiness Index, India ranks among top five countries in terms of

digitalization maturity and scaling up digital platforms by 2021.

IT industry has led the economic transformation of Indian economy and transformed its image in the global world. India's ability to provide its IT services at low-cost remains its mainstay Unique Selling Proposition (USP) in the global sourcing market and maintain its cost competitiveness and gaining prominence in terms of Intellectual Capital with numerous global IT players setting up their innovation centres in India. IT has penetrated in each every field naming from healthcare, banking and security firms to manufacturing and many more.

The Indian IT and ITES is broadly classified into four segments namely IT services, Business Process Management (BPM), software products and engineering services and hardware. IT industry is expanding its wings various other fields like engineering and computer science with significant demand in the education industry. Even rising startups such as Flipkart, Snapdeal, etc., expanding Indian start up ecosystem has put use of IT to new heights.

DEFINING AUTOMATION

Automation is all about making use of machine and technology more in the work processes by removing or reducing the human involvement to minimal or zero. IT automation is using AI (Artificial Intelligence) or the machine language disparate systems in a way that they get regulated on their own or self-acting. Most large IT services companies have been investing in automation of processes in their traditional businesses like business process outsourcing (BPO) and application and infrastructure management, which means fewer engineers, will be required at the lower end of the pyramid. Across almost every service, we see the impact as eliminating between 30% and 80% of the full time equivalent working in the Indian services industry. We believe that it will take at least 10 years for the industry to reach the upper bounds of this range, and this adoption will shrink existing legacy book of business 3% or more this year, IT automation has some limitations. In the security and risk management arena, automated systems can make errors, stemming from a weakness in human-level pattern recognition and language comprehension. An automated system is not the same thing as an intelligent system; it does not learn from past experiences. For instance, an email spam filter is an example of an automated IT process. Occasionally, valid emails end up in the spam folder and unwanted spam email gets past the filter and into a user's inbox.

'An example of IT automation in practice might be as simple as the integration of a form into a PDF that is automatically routed to the correct recipients, or as complex as automated provisioning of an offsite backup.'

EFFECT OF AUTOMATION ON HR, NUMBER AND PROFILES

Automation is impacting the job market very intensely and showing its effects on various organisations and is now clearly visible across the prevailing sectors. On one hand automation is helping the organisations to improve upon their systems and bring in more efficiency and helping the organisations stay in tuned with the changing technology and others variables to remain ahead of their competitors and stay alive and improve their operating margins.

While on the other side it is revealing its black face, by taking away the jobs of the people as

companies are moving towards adopting the new technology available with no doubt that they machines are learning faster than men and replacing them in many field ranging from manufacturing to back office operations. As automation is growing the need of human element is becoming minimal in the organisations due to its cost effectiveness and increased performance with minimum time involvement. With due credit to automation the big corporate giants like Cognizant lay off 6000-10000 employees, Infosys lay off 9000 employees, Tech Mahindra sacks 1000 employees, with Wipro 600 and many more following the suit and pruning its workforce year on year wherein Cisco announced a reducing its global workforce by 7% with IBM planning to downsize by 5000 job cuts by 2025 and intent to reinvest in priority area such as internet of things and cloud computing. It is quite evident from their hiring practices in the present scenario.

As per the views of the IT Sector expert, Mohan Das Pai around 20 crore middle-class youth would be having no jobs or fewer jobs by 2025 blaming improved technology and rising automation.

IT Service industry is witnessing its slowest growth rate of the decade and is struggling to battle the challenges of automation, technology shifts with rising protectionism in its major markets like US wherein Newly elected US President Donald Trump odd policy against outsourcing of jobs and blocking the entry of highly qualified professionals and by forming stringent visa norms and putting more emphasis on the IT players to hire locally rather than outsourcing talent.

Owing to the mounted pressure the companies had reduced the campus hiring and is moving the people in different verticals and doing redeploying whose job has becoming redundant due to automation.

For instance, Infosys has reduced its hiring by 60%, where they hired only 6320 people in year 2016-17, as against 17,857 in its previous year. It had deployed automation more for the repetitive tasks done by the engineers.

The mid to senior level employees are also getting affected who are in the centre of reskilling and restructuring conversations flowing across the sectors. India's IT sector has 1.4 million mid-rung people holding experience of nearly about 8-12 years with salary packages ranging from Rs 12 lakh to Rs 18 lakh per year. The upcoming change bought in by automation involves a great human cost and will prove to be a worst hit and big blow to the people employed in the IT sector.

WILL MACHINES REPLACE JOBS? WHO WILL BE AFFECTED?

As per research findings of People strong human resources (HR) solutions firm that by 2021, automation can take away up to quarter of the people's jobs. Similar, findings are reported by the World Employment and Social Outlook report, 2017 that unemployment in India can rise up to 17.8 million 2017 in comparison to 17.7 million in 2016 and 18 million a year later.

REASONS OF LAYOFF

Machine learning and Artificial intelligence which previously required expensive computing machines are now embarking upon the lowering of the cost prices motivating the companies to invest and reap benefits of the same.

During the last decade, the technology in this industry is witnessing/experiencing major changes. One of them is automation in processes. On one hand automation improves quality, efficiency, cost and errors. There is another aspect of automation which deals with number of people employed in this industry. Automation as the word speaks, replaces many of the manual processes and thus the number of jobs in this industry. As IT/ITES industry employs a major chunk of engineers, the industry is witnessing a discernable shift in the employment patterns. Low tech and low skill jobs have particularly disappeared from the horizon and there is a new demand for professionals with skills in AI (Artificial Intelligence) and complicated processes. It is possible for the some of the professional to upgrade their skills, but large numbers are unable to cope with the ongoing changes.

Traditionally, IT & ITES companies have been focusing on employees' perks and benefits, since retention has been a major issue. All the HR policies and actions are oriented towards retention. Due to the shortage of IT professionals, some of the marginally qualified persons have been with the industry and have grown to senior positions. Such individuals do not have adequate educational background and requisite skills to cope with the changed demands of work. Also, with many of the jobs being sucked with in automation whirlwind, the companies are at a loss, how to deal with such senior persons who have become redundant. HR fraternity in IT/ITES has no experience to deal with such turmoil. Layoffs, retrenchments and closure are unfamiliar words for such HR people. There has been no union activity in IT/ITES domain.

UNIONIZATION IN IT INDUSTRY AND LEGAL POSITION

In India, the labour laws provide great amount of protection to 'workmen'. Workmen are defined in Industrial Disputes Act 1947, as a person who broadly speaking, has no managerial role in his job description. It does not matter what designation or the title the persons holds. Till the time the person performs non-managerial role, i.e. does not have any subordinates whose work he has to supervise or is not required to take managerial decisions, the person can be classified as a workman. An example in this regard is a highly skilled and handsomely paid airline pilot. They do not have any managerial role and thus have been classified as a workman in various judicial pronouncements. So the airline pilots have formed unions to collectively negotiate with airline managements. They also claim protection under the law available to workmen. Similarly, IT professionals do highly skilled programming work but do not perform managerial functions. Therefore in terms of Industrial Dispute Act, 1947 majority of the employees in IT/ITES industry can easily be graded as workmen as they are highly skilled individuals with practically no managerial role. The unions across the country are watching this situation with great interest as they find a good breeding ground for expanding their area of influence. Any change in work conditions of the employees will attract Section 9A of Industrial Dispute Act, 1947. This in broad way affects the economic viability of the sector. As the automation increases, the job losses will mount resulting in dissatisfaction among the employees. We may witness many labour related disputes/litigations in the near future which were not prevalent in IT/ITES industry till recently. As the lay-offs due to

automation increase and there is shrinkage in jobs, the unemployed or laid off workers are likely to group together and form unions to negotiate with managements. It is also feared that the workers groups my solicit assistance from trade unions linked to political parties. Some such trade unions are known for their violent manner of pressing demands. The harmony which is prevalent in IT/ITES industry may get de-stabilized.

IS IT INDUSTRY HR PROFESSIONALS READY TO MEET THE CHALLENGE OF AUTOMATION?

There is no likelihood that situation will go back in foreseeable future. Firstly, the industry has to find its own solutions which can be done with help of other stakeholders. The industry could convert this challenge into an opportunity and look for untapped markets and try to augment business. Secondly, as the cost and efficiency of the service will improve. It will provide incentives to other sectors to use IT services at lower cost. Thirdly, the industry could re-negotiate the salaries with surplus employees and explain the limitation in continuing their employment.

Thus such employees can be reemployed in new roles at prevailing market prices. In this exercise, communication with employees and other stakeholders will be a key to success. The industry could also approach government to bring in reforms in labour laws by amending definition of workmen and reducing the risk due to workmen definition.

CONCLUSION

The HR professionals need to relook into the jobs and has to redesign them to match the expectations and align with the changing contours of the corporate world. As the world is moving in the digital era which is revolutionizing the business by breaking the traditional norms and entering into arena of opportunities along with unforeseen challenges provided by automation. HR has to deal with it owing great responsibility wherein on one hand they have to protect the livelihood of their employees by ensuring business sustainability and employer brand.

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Measurement of Service Quality

An Empirical Study of Offline Mode of Tourism

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Abstract

Purpose: *Service quality has been regarded as having the potential of not only delivering strategic benefits, but also enhancing operational efficiency and profitability of any concern. For the success and recovery of any industry, provision of high quality customer service is necessary. Therefore, an attempt in the current study has been made to develop the model in order to study the factors motivating to use offline mode of booking.*

Database and Research Methodology: *Primary source, i.e. Questionnaire was used to collect the data. Factor Analysis was applied to analyze the collected data.*

Findings: *Eight factors have been identified from the analysis, i.e. Customized Services, Empathy, Responsiveness, Reliability, Expertise, Convenient, Tangibility and Valuable Guidance. Further Confirmatory Factor Analysis (CFA) was applied in order to validate the model. Results revealed that all the indicators had adequate item reliability.*

Limitations: *Demographic variables, psychological variables, etc., may influence customers' decision making process for using offline tourism. Impact of these variables has not been examined in the current study. Further study can be*

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conducted to check the impact of demographic and psychological variables on customer satisfaction. Moreover, same study might be designed longitudinally so as to see if tourist satisfaction with traditional service quality varies with changes in time. Such study would help the tourism companies to understand the long-held customer perceptions of traditional service quality in tourism sector.

Implications: *The study is helpful for tourism service providers to understand those factors which are perceived important by tourists while they use offline mode of booking, so that they can offer them customized services. Moreover, results depict that 'Empathy' is an important dimension from tourists' point of view. Thus, the study can help tourism service providers to understand this dimension in a better way to win the trust and confidence of customers. Current study will also enable the managers of travel agencies to identify their strengths and weaknesses and consequently help them in investing the available resources in the critical dimensions.*

Keywords: *Tourism, Service Quality, Tourists, Offline, Factor Analysis*

INTRODUCTION

The contribution of tourism sector to the economic development of India has been recognized widely due to its contribution to the balance of payment and employment. Tourism sector is the second largest foreign exchange earner in India (WTTC India, 2012). But, Indian government very lately noticed a crucial role of tourism expansion for economic development. In 2002, Ministry of Tourism (MoT), India paid considerable attention by developing campaigns for the promotion of tourism sector including 'Incredible India' campaign. Nowadays India is one of the most important countries as far as international tourism is concerned. The Indian diversity attracts tourists from far and near as no other country in the world offers such wide choice of destinations like India. Moreover, tourism service providers in India are providing various offers in form of different packages with high service quality.

Therefore, in today's ultra competitive environment, service quality is the core index of all marketing activities. For the success and survival of any industry, provision of high quality customer service is necessary to meet the requirements of customers (Kumari and Rani, 2011). Any service to be provided to the customers can be differentiated by the service provider from the rest of the service providers if it poses some unique selling proposition. The service quality is the comparison of perceived service (what customer feels about the service) with the expected service (what is the performance of the offered service). The customers perceive the service quality to be high if it is perfect on his expectation and it leads to their satisfaction with the related service (Santos, 2003). Hence, it is necessary to identify and prioritize the customers' expectations for service quality and incorporate these expectations into a service process for improving quality.

There are number of different definitions as to what is meant by service quality. In service literature, service quality is defined based on consumers' assessment. Parsuraman et al. (1985 and 1988) posited and operationalised service quality as a difference between consumer expectations of 'what they want' and their perceptions of 'what they get'.

Issues of Service Quality Measurement across Different Regions

Service quality has been regarded as having the potential of not only delivering strategic

Table 1: Service Quality Measurement across Different Regions

Author (Year)	*Areas*	*Dimensions*
Wang and Tang (2003)	Customer-perceived service quality	Reliability, Responsiveness, Assurance, Tangibility and Empathy
Park et al., (2008)	Travel service quality	Willingness to use, Information/content, Responsiveness, Fulfillment and Security/Privacy
Lin (2010)	Travel agencies	Information content, Information quality and Functionality
Hongxiu (2009)	Travel agencies	*Online company's perspective:* Ease of use, Experience, Privacy, Responsiveness, Empathy, Reliability and System availability Customer's perspective: Experience and Trust
Alanezi et al., (2010)	Government sector	Reliability, Responsiveness, Security/Privacy, Personalization, Information and Ease of use
Tsang et al., (2010)	Travel sites	Information quality, Content, Fulfillment, Responsiveness, Safety and Security
Roostika (2011)	Mobile service quality	Content quality, Device quality, Interaction quality, Privacy quality, Connection quality, Contextual quality and Customer quality

Source: Compiled from different studies.

benefits, but also enhancing operational efficiency and profitability (Zeithaml et al., 2000). For the success and revitalization of any industry, provision of high quality customer service is necessary to meet requirements of the customers (Rani and Kumari, 2011).

There are several studies on service quality measurement in a variety of contexts – e.g., banking sector (Cronin and Taylor 1992), healthcare services (Carman 1990), B2B services (Gounaris, 2005), advertising sector (Quester and Romaniuk, 1997), airline services (Sultan et al., 2000), retailing (Mehta et al., 2000), hospitality (Saleh and Ryan, 1991), tour operating sector (Hudson et al., 2004), library services (Cook and Thompson, 2001), public recreation programs (Crompton and Mackay, 1989), accounting services (Bojanic, 1991), department stores (Finn and Lamb, 1991 and Teas, 1993), higher education (Boulding et al., l993 and Ford et al., 1993), public sector services (Brysland and Curry, 2001) and public transport services (Perez et al, 2007). Some of the reviewed studies related to the issues of service quality measurement across different contexts are given in Table 1.

THEORETICAL BACKGROUND

Service quality in tourism and other sectors have been discussed by many researchers, some of them are as in Table 2.

NEED OF THE STUDY

Tourism sector is changing with the passage of time due to improved customer services. Therefore, travel service providers are motivated to deliver quality travel services that aim at achieving benefit and competitive advantages as well as increasing market share (Turban et al., 2002). Some of the researchers have developed various scales in service quality. However, the contents of their service quality constructs were brief and ambiguous and the proposed conceptual framework was not verified either. Moreover, they did

Table 2: Studies on Service Quality in Tourism and Other Sectors

Author	*Country*	*Research Objectives*	*Variables*	*Methodology*	*Significant Factors*
Yu et al., 2001	Taiwan	To assess perceptions of service quality among customers	Responsiveness, reliability, assurance, tangibility and empathy	Factor Analysis	Reliability, responsiveness, and assurance
Tsaur et al., 2004	Taiwan	To examine the relationship of service quality and tourists' satisfaction in hotel sector	Factors of service quality, employee empowerment and service behaviour	Descriptive Analysis, Factor Analysis and Regression Analysis	Employee empowerment
Kouthouris and Alexandris, 2005	Greece	To investigate the relationship between service quality, customer satisfaction and behaviour intention	Consistency, receptiveness, reassurance, fulfillment and compassion	Descriptive Analysis	Consistency, receptiveness and reassurance
Park et al., 2007	China	To examine the important factors affecting Shanghai residents' selection of a travel agency for domestic tours	Tour security, safety, credibility of the travel agency, interactive ability, guest satisfaction, service quality, tour facility estimation, travel agency image and service characteristics	Factor Analysis	Tour security and safety
Prabhakaran et al., 2008	India	To study the service quality perceptions of domestic as well as foreign tourists in the service quality of tourism sector	Tangibility, responsiveness, reliability, service product, assurance and service responsibility	Structural Equation Modelling	Tangibility influences the domestic tourists and Responsiveness influences the foreign tourists
Filiz, 2009	Turkey	To measure the customer satisfaction in the travel agency	Tangibility, reliability, responsiveness, security, empathy and assurance	Factor Analysis, Regression Analysis and t-Test	All
Al-Rousan et al., 2010	Jordon	To examine the impact of tourism service quality dimension in the Jordanian five star hotels	Empathy, reliability, responsiveness, assurance and tangibility	Factor Analysis	Empathy, Reliability and Tangibility
Quintela et al., 2010	Portugal	To analyze the impact of service quality on client satisfaction	Dependably, employee's willingness to help the customers, capacity to provide individualized attention, quality / price ratio, lodging and leisure	Importance Performance Analysis	Dependably, employee's willingness to help the customers

Author	*Country*	*Research Objectives*	*Variables*	*Methodology*	*Significant Factors*
Khattab and Aldehayyat, 2011	Jordon	To measure hotels' service quality performance from the customer perspective	Tangibility, responsiveness, empathy, assurance and reliability	Factor Analysis	Empathy and tangibility
Arash and Nassibeh, (2011)	Taiwan	To examine the perceptions of tourists towards service quality	Dependability, receptiveness and guarantee	Regression Analysis	Receptive and guarantee
Hafeez and Muhammad, 2012	Pakistan	To study the impact of service quality, customer satisfaction and loyalty programs	Service quality, customer satisfaction and loyalty programs	Correlation Analysis and ANOVA	Customer loyalty
Khalil, 2012	Pakistan	To check the impact of serviced quality on customer satisfaction	Reliability, tangibility, responsiveness, assurance and empathy	Regression Analysis, Factor Analysis and Descriptive Analysis	Tangibility, responsiveness, assurance and empathy
Jusoh et al., 2013	Melaka	To study the gap between expectation and satisfaction level of tourists	Heritage elements, infrastructure and supporting elements	Factor Analysis And Gap Analysis	Heritage elements and infrastructure
Kariru and Aloo, 2014	Kenya	To investigate hotel guests' perceptions of service quality	Tangibility, reliability, assurance, responsiveness and empathy	Paired Sample t Test	Reliability, assurance, responsiveness
Selvakumar, 2015	India	To examine the impact of service quality on customer of Indian banks	Responsiveness, Assurance, Tangibility, Empathy and Reliability	Correlation and Regression	All
Kondasani and Panda, 2016	–	To analyze how perceived service quality and customer satisfaction lead to loyalty towards healthcare service providers	Tangibility, Responsiveness, Reliability, Service product, Assurance and Service Responsibility	Descriptive statistics, factor analysis, regression and correlation	Service Product and Service Responsibility
Rahim, 2017	Nigeria	To investigates the relationship among service quality, customer satisfaction and loyalty	Satisfaction and Loyalty	Correlation and Regression	Perceived service quality does influence passenger satisfaction,
Narteh, 2018	Ghana	The purpose of this paper is to integrate the SERVQUAL	tangibles, reliability, assurance, empathy and price	Structural equation modeling.	Reliability and Price

Sources: Adapted from Different Studies

not perform further research in regard to scale development. However, whether or not their scales would be sufficiently effective in capturing the travel service attributes is questionable. Moreover, some other dimensions may be applicable in case of offline tourism. Based on the above reasons, instead of merely using readymade versions of scale, there is a need to explore tourism sector-specific attributes and develop a suitable quality measurement for travel agencies. The primary purpose of this study is therefore to identify the components of offline travel service quality, thus to develop and verify a measurement instrument. Consequently, current study is going to shed light on the same issue.

OBJECTIVES OF THE STUDY

The specific objectives of the current study are as follows:

1. To study the factors motivating the use of offline tourism.
2. To develop and validate an instrument for measuring service quality in tourism sector in case of offline tourism.

DATA BASE AND RESEARCH METHODOLOGY

The current study is based on primary data. For the data collection, a questionnaire was developed based on SERVQUAL scale and review of literature. The questionnaire comprised of two parts. First part comprised of questions that addressed and gathered information related to respondents' personal information. Part second was comprised of questions that addressed and gathered information on the respondents' behaviour for booking their trips through offline mode of booking. These attributes were measured on a seven-point rating scale, ranging from 1 (strongly disagree) to 7 (strongly agree), where respondents were requested to indicate the extent to which each attribute influences their evaluation for choosing offline tourism to book their journeys. Before final survey, questionnaire was purified with the help of two steps. Firstly content/face validity was examined through the panel of experts. These experts were the members of travel and tourism institute and some travel agents also. Moreover, a pilot survey was also conducted to check the reliability of the data. Some items were dropped after taking the advice from experts and after conducting the pilot survey.

Total 500 questionnaires were distributed among respondents in the three major cities of Punjab, i.e. Ludhiana, Jalandhar and Amritsar as they represent three major region of Punjab. Moreover, Ludhiana and Jalandhar were selected due to Business Tourism and Amritsar was selected due to Religious Tourism. Data was collected through convenience cum judgement sampling. Only those respondents were contacted who have used offline mode of booking tourism related activities at least once in their life.

Sample Characteristics

As far as the demographic profile of the respondents is concerned, the sample comprised of variety of respondents belonging to different economic and professional background. It can be seen from Table 3 that more male respondents participated in survey (55.8%) than female (44.2%) respondents. Furthermore sample population formed the majority (44.7%) in the age group of 30-40 years of age. The next largest category comprised the respondents from 40-50 years of age (23.7%).

The next largest category was made up of those who are less than 30 years of age (22.9%). Furthermore, respondents falling in the age category of above 50 are just 8.8%.

Table 3: Demographic Profile of Respondents

Particulars		*Frequency*	*Percent*
Gender	Male	266	55.8
	Female	211	44.2
	Total	477	100.0
Age (Yrs)	Less than 30	109	22.9
	30-40	213	44.7
	40-50	113	23.7
	Above 50	42	8.8
	Total	477	100.0
Marital Status	Married	290	60.8
	Single	183	38.4
	Divorcee	4	0.8
	Total	477	100.0
Education Level	Matriculation	159	33.33
	Graduation	245	51.4
	Post Graduation	66	13.8
	Any other	7	1.5
	Total	477	100.0
Occupation	Student	99	20.8
	Businessman	149	31.2
	Service	150	31.4
	Retired	41	8.6
	Housewife	27	5.7
	Others	11	2.3
	Total	477	100.0
Monthly Income (Rs.)	Less than 20,000	73	15.3
	20,000-40,000	264	55.3
	40,000-60,000	110	23.1
	More than Rs 60,000	30	6.3
	Total	477	100.0

Source: Compiled through Survey.

With regard to marital status of the sample, then it is clear from Table 3 that almost 60.8% respondents are married and 38.4% are unmarried whereas 0.8% respondents are divorcee. As far as respondents' occupation is concerned, then Table 3 explains that majority of the respondents belong to service category (31.4%), followed by businessmen (31.2%), students (20.8%), retired (8.6%) and housewives (5.7%) and other (2.3%).As far as education level is concerned then Table 3 depicts that 51.4% of the respondents are graduates followed by matriculates (33.33%). The next largest category comprised of those respondents who are post graduate (13.8%). As per income categorization, Table 3 shows that 55.3% respondents are falling in the income category of Rs 20,000-40,000 followed by 23.1% who belongs to income category of Rs 40,000-60,000. Though just 15.3% are falling in the income category of less than Rs 20,000 yet 6.3% are falling in the income category of above Rs 60,000 income group.

FACTORS AFFECTING THE CHOICE FOR USING TRADITIONAL MODES OF TOURISM

Reliability Analysis for Traditional Tourism

By reviewing the old studies and SERVQUAL scale, a list of 46 statements was framed for traditional service quality in tourism sector. The questionnaire was refined with the help of two steps. Firstly content validity was examined through a group of experts (Ko and Pastore, 2005). These experts were managers of travel agencies and two academicians from tourism institutes. This process resulted in the elimination of 2 items, leaving a pool of 44 items for further analysis. Further, step was to identify those items which have low relationship with the scale. Factor Analysis can be applied if the scale is reliable; it is

verified through Cronbach alpha. The value of Cronbach alpha varies from 0 to 1. But, satisfactory value is required to be more than 0.6 for scale to be reliable (Malhotra, 2006).

Therefore, Cronbach alpha was calculated and the initial value came 0.608. 11 items indentified with low correlation were deleted from the scale thus leaving 33 items for further analysis. After the elimination of these 11 items, Cronbach alpha increased from 0.608 to 0.784 shown in Table 4. Further 33 items were used to carry Factor Analysis.

Table 4: Reliability Statistics

Cronbach's Alpha	*No. of Items*
.784	33

Source: Calculated through SPSS.

Following examining the reliability of the scale, appropriateness of the data was verified with the help of KMO and Bartlett test of sphericity. Kaiser (1974) recommended that value of KMO greater than 0.5 is acceptable. KMO is 0.775 in the current study (Table 5) meaning hereby that sample is fit to run Factor Analysis. Bartlett test of sphericity (Bartlett, 1950) also confirm that sample is adequate to run Factor Analysis. Table 5 indicates that data is appropriate for Factor Analysis.

Table 5: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.775
Bartlett's Test of Sphericity	Approx. Chi-Square	8596.957
	df	561
	Sig.	.000

Source: Calculated through SPSS

Principal Component Analysis

Principal Component Analysis help to reduce variables into fix number of factors. Variables with equal or greater than 0.45 factors loading were considered only. It reduced 33 statements (considered in the study) to 8 factors with 70.632% (Table 6) variance in the data.

Summarized findings of Factor Analysis for Factors motivating tourists to use E-tourism have been shown in Table 7.

As shown in Table 7, Factor 1 was named as 'Customized Services' which consisted of six items namely 'TTAs provide facility of tailor made services to the customers (.842)', 'Customers have to bear cost of commission while booking from TTAs (.837)', 'Limited quantity of services are available on TTAs (.837)', 'TTAs satisfies the needs of impulsive buyers (.831)' and 'TTAs provide cheaper services for accommodation for their regular customers (.754)'. This factor elucidated 10.388% of variation in data with Eigen value of 4.528**.** Travel agents are knowledgeable and active in the tourism industry. They provide different categories of services. These results are in accordance with the results of Abdullah and Razario, 2009 as they found it one of the important factors for quality of services in order to satisfy customers. The results are supported by the results of Prabhkaran, 2008; Mcquilken et al., 2000 and Desia and Patel, 2013. The second factor 'Empathy/Human Touch' hold 10.106% of variation in the data with Eigen value of 3.568. It contained five statements namely 'Staff of TTAs give individual attention to the customers (.884)', 'TTAs maintain friendly and courteous relationship with their customers (.856)', 'TTAs offer a human touch while delivering services to the customers (.821)', 'TTAs operating hours are convenient to all its customers (.802)' and 'TTAs provide the best value for customers' money spent (.657)'. The lack of personal relationship can be responsible for shifting of

Table 6: Total Variance Explained

Component	*Initial Eigen Values*			*Extraction Sums of Squared Loadings*			*Rotation Sums of Squared Loadings*		
	Total	*% of Variance*	*Cumulative %*	*Total*	*% of Variance*	*Cumulative %*	*Total*	*% of Variance*	*Cumulative %*
1	4.528	13.720	13.720	4.528	13.720	13.720	3.428	10.388	10.388
2	3.568	10.813	24.533	3.568	10.813	24.533	3.335	10.106	20.494
3	3.423	10.371	34.904	3.423	10.371	34.904	3.187	9.656	30.151
4	2.961	8.973	43.877	2.961	8.973	43.877	2.856	8.656	38.807
5	2.789	8.453	52.330	2.789	8.453	52.330	2.843	8.615	47.421
6	2.344	7.104	59.435	2.344	7.104	59.435	2.811	8.519	55.940
7	2.205	6.681	66.116	2.205	6.681	66.116	2.462	7.462	63.402
8	1.490	4.516	70.632	1.490	4.516	70.632	2.386	7.230	70.632
9	.829	2.513	73.145						
10	.749	2.269	75.415						
11	.653	1.980	77.394						
12	.621	1.883	79.277						
13	.592	1.794	81.071						
14	.560	1.696	82.767						
15	.486	1.474	84.241						
16	.465	1.409	85.650						
17	.449	1.360	87.010						
18	.406	1.230	88.240						
19	.400	1.211	89.451						
20	.367	1.112	90.563						
21	.342	1.035	91.598						
22	.309	.935	92.533						
23	.292	.886	93.420						
24	.284	.862	94.282						
25	.263	.798	95.080						
26	.248	.752	95.832						
27	.233	.705	96.537						
28	.228	.692	97.229						
29	.210	.638	97.866						
30	.192	.581	98.447						
31	.185	.560	99.007						
32	.178	.538	99.545						
33	.150	.455	100.000						

Source: Calculated through SPSS.

tourists from one tourism provider to other tourism service provider. Using the services of a travel agent means receiving the services face to face. Travel agents help to find the vacation plan that is suitable for tourists as per their requirements. Travel agents offer 'personal

Table 7: Factors Motivating Tourists to Use E-tourism

Sr. No.	*Factor Name (Variance Explained %)*	*Eigen Value*	*Cronbach Alpha*	*Loading*	*Statements Included in the Factor*
F_1	Service Characteristics (10.388)	4.528	.843	.842	TTAs provide facility of tailor made services to the customers
				.837	Customers have to bear cost of commission while booking from TTAs
				.837	Limited quantity of services are available on TTAs
				.831	TTAs satisfies the needs of impulsive buyers
				.754	TTAs provide cheaper services for accommodation as they are their regular customers
F_2	Empathy (10.106)	3.568	.869	.884	Staff of TTAs give individual attention to the customers
				.856	TTAs maintain friendly and courteous relationship with their customers
				.821	TTAs offer a human touch while delivering services to the customers
				.802	TTAs' operating hours are convenient to all its customers
				.657	TTAs provide the best value for customers' money spent
F_3	Responsiveness (9.656)	3.423	.843	.844	TTAs help in cancellation of trip
				.832	The staff of TTAs provides its service at the time, when they promises to do so
				.829	Staff of TTAs give prompt service to the customers
				.772	TTAs do not share personal information of their customers
				.658	Staff of TTAs tells the customers exactly when the services will be performed
F_4	Reliability (8.656)	2.961	.852	.881	TTAs have ability to understand the customers' requirements in a better way
				.836	TTAs are reliable sources of information related to tour
				.819	The behaviour of staff of TTAs instils confidence in you
				.768	Customers feel safe in their transactions with TTAs
F_5	Expertise (8.615)	2.789	.849	.863	TTAs manage catering and lodging hospitality
				.843	TTAs provide facility of escort and guides services
				.774	Finding right type of service is not easy through TTAs
				.728	The staff of TTAs insists on error free records
F_6	Convenient (8.519)	2.344	.800	.868	TTAs are good option when time is short
				.861	TTAs save time of botheration of exploring tourism websites
				.793	Customers do not bother about documentation when they book through TTAs
				.670	Prices can easily be compared through TTAs for different packages
F_7	Tangibility (7.462)	2.205	.879	.907	TTAs maintain the profile of their regular customers as per their preferences in order to provide better services
				.886	TTAs desk employees are neat and clean
				.885	Materials associated with the service (such as pamphlets or statements) are visually appealing in the office of TTAs
F_8	Valuable Guidance (7.230)	1.490	.861	.903	TTAs provide rates of currencies of different countries
				.897	TTAs provide information related to atmosphere
				.846	TTAs help in picking up the best travel insurance to the travelers

Source: compiled from the results of SPSS.

touch" to the tourists during travel planning. They offer help and advice that a website cannot provide. The findings are alike to the findings of Prabhkaran, 2008; Mcquilken et al., 2000; Mohamed, 2007; Lin 2009; Markovic and Raspor; 2010, Rousan et al., 2010 and Desia and Patel, 2013.

The third factor 'Responsiveness' accounted for 9.656% of variation, with Eigen value of 3.423. It comprised of five statements like 'TTAs help in cancellation of trip (.844)', 'The staff of TTAs offer its service at the time, when they promises to do so (.832)', 'Staff of TTAs give prompt service to the customers (.829)', 'TTAs do not share personal information of their customers (.772)' and 'Staff of TTAs tells the customers exactly when the services will be performed (.658)'. The agent serves as the tourists' advocate in the event something inadvertently goes wrong. Travel agents are knowledgeable and active in the industry. Many researchers found it one of the imperative dimensions in service quality (Kouthouris and Alexandris 2005; Mohamed, 2007; Lin, 2010; Markovic and Raspor, 2010 and Rousan et al., 2010).

The fourth factor 'Reliability' is responsible for four items and accounted for 8.656% variation in data, with an Eigen value of 2.961. These four items are 'TTAs have ability to understand the customers' requirements in a better way (.881)', 'TTAs are reliable sources of information related to tour (.836)', 'The behaviour of staff of TTAs instills confidence in you (.819)' and 'Customers feel safe in their transactions with TTAs (.768)'. These findings are similar to the findings of Mcquilken et al., 2000; Kouthouris & alexandris, 2005 and Desia and Patel, 2013. The fifth factor 'Expertise' indicates how travel agents prove its trustworthiness towards its customers. How effectively and efficiently they manage and handle the needs of the tourists. This dimension explains 8.615% of total variance and 2.789 Eigen value. The items such as 'TTAs manage catering and lodging hospitality (.863)', 'TTAs provide facility of escort and guides services (.843)', 'Finding right type of service is not easy through TTAs (.774)' and 'The staff of TTAs insists on error free records (.728)' have been loaded on this factor. Travel agents being experts help in finding out the right services, at the best price and as per the needs of tourists. If tourists have any problems during journey, travel agent is always there to assist the tourists. These results are supported by the results of Mcquilken et al., 2000 and Desia and Patel, 2013.

The sixth factor 'Convenient' accounted for 8.519% variation in the data and with Eigen value of 2.344. Four statements have been encumbered on current dimension such as 'TTA is the best option when time is short (.868)', 'TTAs save time of botheration of exploring tourism websites (.861)', 'Customers do not bother about documentation when they book through TTAs (.793)' and 'Prices can easily be compared through TTAs for different packages (.670)'. Travel agents can save time and money of tourists by handling all aspects of trip related activities, i.e. hotels, car rental, airlines reservations, etc. Travel agents also offer one-stop shopping for all travel arrangements.

The seventh factor 'Tangibility' explained 7.462% variation with Eigen value of 2.205. Three items have been loaded on this dimension such as 'TTAs maintain the profile of their regular customers as per their preferences in order to provide better services (.907)', 'TTAs desk employees are neat and clean (.886)' and 'Materials associated with the service (such as pamphlets or statements) are visually appealing in the office of TTAs

(.885)'. These results are supported by the results of Prabhkaran, 2008; Mcquilken et al., 2000 and Desia & Patel, 2013. Eighth and last factor was named as "Valuable Guidance" with Eigen value of 1.490 and total variance of 7.230%. It comprised of three items, i.e. 'TTAs provide rates of currencies of different countries (.903)', 'TTAs provide information related to atmosphere (.897)' and 'TTAs help in picking up the best travel insurance to the travelers (.846)'. Tourists can discuss their problems with travel agents which can occur before and after journey. They provide valuable guidance to the tourists.

Confirmatory Factor Analysis for Traditional Tourism

CFA was employed further to confirm the factors and their loadings. CFA using

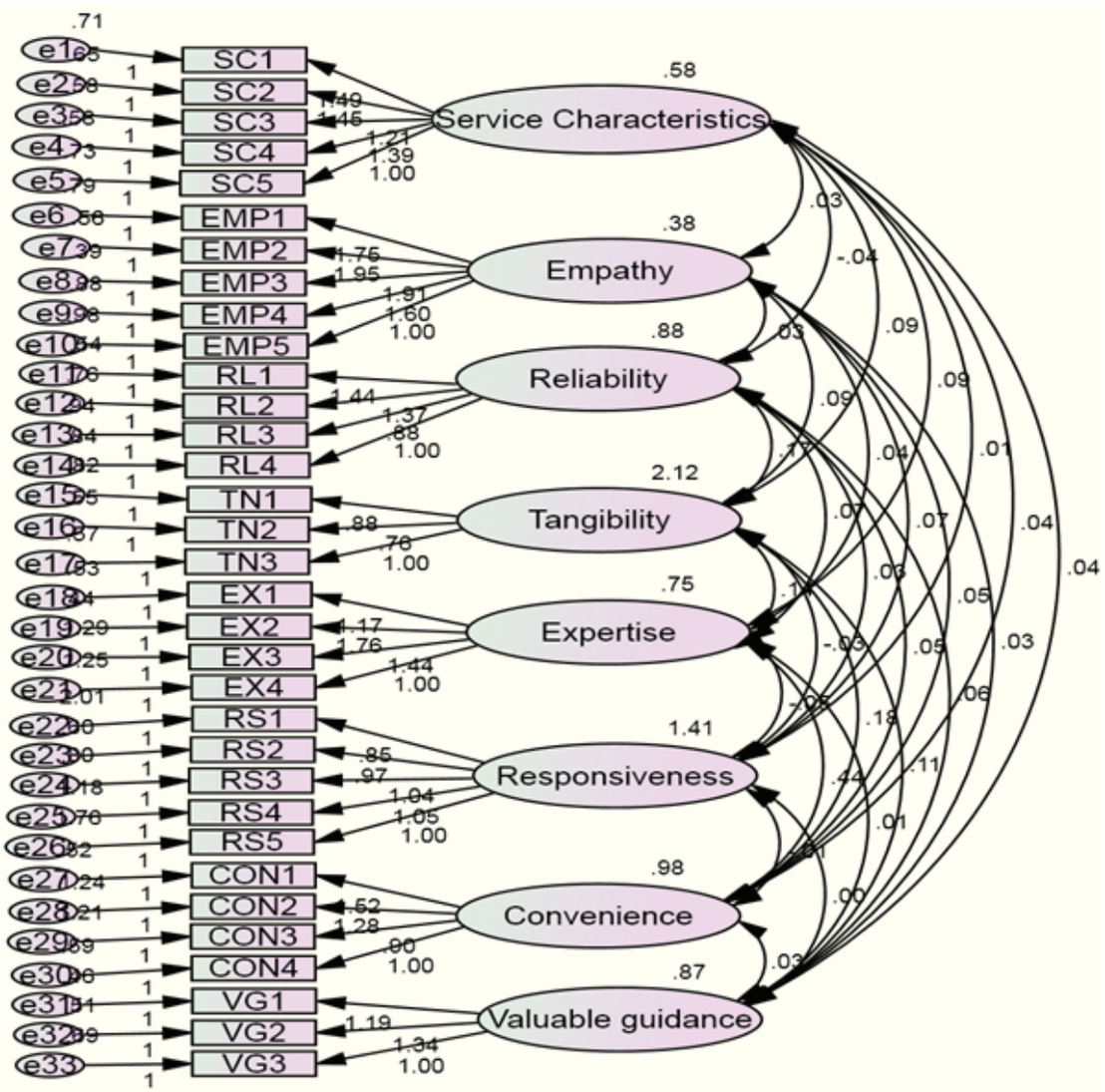

Figure 1: Measurement Model for Factors Motivating the Tourists for using Traditional Tourism

Source: AMOS.

AMOS 18.0 was carried out to confirm the factors and their loadings. Measurement model for factors motivating the tourists for using traditional tourism has been shown in Figure 1.

Model Fit

Model fit is a tool of goodness of a model. It also shows whether data is fit to run CFA or not. AMOS output provided in Table 8 shows a χ^2 of 1303.132 with 566 df. The CMIN/DF ratio is 2.580, which is within the recommended range of less than 5, which is indicator of good fit of model for sample (Carmines and McIver, 1981). The GFI is 0.862 and AGFI is 0.835. RMSEA is 0.058, which falls within the cutoff value of 0.06 (Hu and Bentler, 1999). TLI is 0.898 while the CFI is 0.910. The Bentler-Bonett NFI is 0.862 and Bollen's IFI is 0.911. The values for fit indices have been shown in Table 9 and either they exceed the recommended level of 0.90 or acceptable value of greater than 0.80, showing fitness of model.

Composite Reliability and Average Variance Extracted (AVE)

According to Hair et al., 1998, 'Composite reliability is a measure of the internal consistency of the construct indicators, which depicts the degree to which the items indicate the common unobserved construct.'

Scale Validation

After examining internal consistency of the scale, the validity of the instrument has to be assessed.

Convergent Validity

According to Netemeyer et al., 2003, 'A measure is said to possess convergent validity if independent measures of the same construct converge, or are highly correlated.' As per Anderson and Gerbing, 1988, 'Convergent validity can be evaluated from the measurement model by determining whether each indicator's estimated pattern coefficient on its posited underlying factor is significant or not.' As shown in Table 9 standardized factor loadings for all items is near to/above 0.5 (Hair et al., 1998), which supports the convergent validity. According to Fornell and Larcker (1981), 'Convergent validity of the construct is also demonstrated when the average variance extracted is above 0.50.' Table 9 shows that the value for AVEs for all the dimensions is greater than 0.50, which further supports the convergent validity of the measures.

Discriminant Validity

Brown et al., 1993 say, 'Discriminant validity refers to the extent to which measures of theoretically unrelated constructs do not correlate highly with one another.' Values of AVE were compared with squared correlation between two constructs in order to determine the discriminant validity. Results for discriminant validity have been shown in Table 10.

Thus in order to study the factors the users to use traditional mode of tourism, EFA and CFA have been applied. While using offline mode of tourism, tourists found

Table 8: Index of Fit

Index of Fit	*Chi-Square(df)*	*CMIN/DF*	*GFI*	*A GFI*	*NFI*	*IFI*	*TLI*	*CFI*	*RMSEA*
Value	1303.132	2.580	.862	.835	.862	.911	.898	.910	.058

Source: Calculated through AMOS.

Table 9: Parameter Estimates, Average Variance Extracted and Composite Reliability

Latent Variables	*Item Label*	*Standardized Factor Loadings*	*CR*	*AVE*
Customized Services	SC1	.803	0.881	0.599
	SC2	.807		
	SC3	.772		
	SC4	.812		
	SC5	.666		
Empathy	EMP1	.772	0.870	0.580
	EMP2	.849		
	EMP3	.882		
	EMP4	.724		
	EMP5	.529		
Responsiveness	RS1	.582	0.853	0.540
	RS2	.831		
	RS4	.755		
	RS5	.667		
Reliability	RL1	.878	0.854	0.597
	RL2	.827		
	RL3	.651		
	RL4	.715		
Expertise	EX1	.814	0.858	0.606
	EX2	.916		
	EX3	.739		
	EX4	.613		
Convenient	CON1	.901	0.854	0.598
	CON2	.751		
	CON3	.629		
	CON4	.788		
Tangibility	TN1	.818	0.883	0.717
	TN2	.833		
	TN3	.887		
Valuable Guidance	VG1	.853	0.864	0.680
	VG2	.869		
	VG3	.746		

Source: Calculated through AMOS.

some important factors to motivate them to use it such as Convenient, Empathy, Responsiveness, Reliability, Tangibility, Valuable Guidance and Expertise. Further, Confirmatory factor analysis was applied on collected data from 477 tourists. Results revealed that all the indicators had adequate item reliability. All the model fit indices were above the recommended criteria. Reliability was assessed using coefficient alpha, composite reliability and average variance extracted and all the values obtained were

Table 10: Discriminant Analysis

	AVE	*Customized Services*	*Empathy*	*Reliability*	*Tangibility*	*Expertise*	*Responsiveness*	*Convenient*	*Valuable Guidance*
Customized Services	.599	0.774							
Empathy	.580	0.072	0.761						
Reliability	.547	-0.055	0.051	0.773					
Tangibility	.597	0.080	0.103	0.122	0.847				
Expertise	.606	0.132	0.070	0.083	0.110	0.778			
Responsiveness	.598	0.006	0.092	0.027	-0.016	-0.050	0.735		
Convenient	.717	0.048	0.077	0.051	0.125	0.517	-0.011	0.773	
Valuable Guidance	.680	0.060	0.052	0.068	0.080	0.017	-0.002	0.033	0.824

Source: Calculated through AMOS.

above the accepted range, thus establishing the reliability of the constructs. Convergent and discriminate validity was established for all the eight constructs for the model.

IMPLICATIONS AND RECOMMENDATIONS OF THE STUDY

- The study is helpful for tourism service providers to understand those factors which are perceived important by tourists while they use offline mode of booking, so that they can offer them customized services.
- Moreover, results depict that "Empathy" is an important dimension from tourists' point of view. Thus, the study can help tourism service providers to understand this dimension in a better way to win the trust and confidence of customers.
- Current study will also enable the managers of travel agencies to identify their strengths and weaknesses and consequently help them in investing the available resources in the critical dimensions.
- Travel agents should provide their services effectively to take the benefit of their advantageous position than online mode of booking. Travel agents should provide tailor made services in order to satisfy their customers. Therefore, travel managers are advised to train their employees so that they can offer personalized services to the tourists amongst which offering security and safety during tour activities should be highly focused.
- The travel agencies should compile different kinds of services in form of tour packages to match different customers' demand. Employees of travel agencies should be more responsive in settling the queries of tourists.

LIMITATIONS AND SCOPE FOR FURTHER RESEARCH

- Demographic variables, psychological variables etc. may influence customers' decision making process for using offline tourism. Impact of these variables has not been examined in the current study. Further study can be conducted to check the impact of demographic and psychological variables on customer satisfaction.
- The same study might be designed

longitudinally so as to see if tourist satisfaction with traditional service quality varies with changes in time. Such study would help the tourism companies to understand the long-held customer perceptions of traditional service quality in tourism sector.

- Further, researcher may empirically examine the proposed model and observe the relationships among antecedents of customer loyalty.
- Another future research area might be the focus on the relationship between customers' behavioral intentions and their repeat purchase behavior in the tourism industry.
- Future study could consider to what extent the measures proposed in this study are valid in different service industries and what modifications need to be made in the scale items across different samples and contexts.

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Service Quality of Online Shopping Portals

A Review of Literature

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Abstract

The evolution of technology had left a strong impact on virtually every business and personal aspect of our lives. From privacy to responsibility issues, the impact of technology on business is only limited to imagination. Online shopping is the process whereby consumers directly buy goods or services from a seller in real-time, without an intermediary service, over the Internet. It is a form of electronic commerce. The sale or purchase transaction is completed electronically and interactively on real-time biases. A very good example of companies dealing in such type of business is Amazon.com for buying new books. The paper discusses various factors on the basis of literature review which are affecting the service quality of online shopping portals. The first important parameter studied was Services and schemes provided by the online shopping portals. Another important factor influencing the Service Quality of Online Shopping Portals is the buying motives of the online buyers. The next part of the paper discusses the satisfaction level of online buyers towards quality of services. Last but an important parameter discussed in the paper is services expected and services received from online shopping portals.

Keywords: *Service Quality, Online Shopping Portals, B2B, Electronic Commerce.*

INTRODUCTION

Online shopping is one of the most interesting topics of research these days and a vast number of studies have been carried out on its different aspects from the perspective of consumers as well as of online sellers. Online shopping is the process in which the consumers purchase products or services over the Internet also known as online shop, e-shop, e-store, internet shop, web shop or online store. The same can also be seen as electronic commerce application used for business-to business electronic commerce (B2B) or business-to consumer electronic commerce (B2C) and is popular mainly because of its speed and ease of use. Online applications are becoming increasingly popular in our daily life that we are habitual in using them on day without we use them. In particular, the emergence and spread of electronic commerce (EC) have deeply affected the behavior of both retailers and consumers.

Not only has this, over the years the Internet become a great source for bargain hunters for a number of reasons. There are many great buys online, price comparison companies that help the customers to pierce down to the best prices, shipping and tax advantages which are mostly free, and the convenience of not having to go outside home and shop. Online stores are usually available 24 hours a day, as almost every potential consumer is having Internet access both at work as well as home. Internet is also available these days at many organizations such as internet cafes and schools. Due to increase in the number of households having computers and internet access has led to this widespread acceptance of B2C commerce. The dissemination of e-commerce is found to be quite high in the developing economies of Asia. During the past three decades, a number of researchers have sought to discover the attributes of the services, which contribute most significantly to relevant quality assessments. The dimensions of the service quality: (1) access; (2) communication; (3) competence; (4) courtesy; (5) credibility; (6) reliability; (7) responsiveness; (8) security; (9) tangibles; and (10) understanding the customer; (Parasuraman, et al 1985). Thus it is important to understand the psyche of the online shoppers to give them maximum satisfaction as numerous advantages and benefits like shopping in casuals sitting at home, to convenience for elderly and disabled, wide choice, avoidance of up selling or impulse buying, better prices, more and more people prefer online shopping over conventional shopping these days. The following section discusses the prior studies in the domain of marketing management are concerned, for the understanding of consumer purchasing behaviour.

LITERATURE REVIEW

Several past studies revealed the dissimilarity of shopping in the traditional shopping channel and online shopping channels. Bauer (1967) in his research named "Risk taking and information handling in consumer behaviour" introduced the concept of perceived risk to consumer behaviour research. He suggested, that Consumer behaviour involves risk in the sense that any action of a consumer, while buying may produce results that cannot be anticipated with anything approximating certainty, and some of which are likely to be unpleasant.

However, Chisnall (1995) in his book named 'Consumer behaviour' points out that human need and motives are inextricably linked and that the relationship between them is so close that it becomes difficult to identify the precise

difference to characterize them. People may buy new coats because it protects them against the weather, but in reality the need may be to follow the latest fashion trend. Baty and Lee (1995) in their research, 'Inter Shop: enhancing the vendor/customer dialectic in electronic shopping' found that in order to respond to the customers' desire for control and convenience, web stores should design an efficient system of dialect to enable consumers to identify what they need, learn more about it and quickly make a purchase decision.

Bhatnagar, Misra and Rao (2000) in their research namely, 'On risk, convenience, and Internet shopping behaviour' identified two predominant types of risk: product category risk and financial risk. Product category risk focuses on the product itself and is allied with the customers' belief as to whether the product functions according to their expectations. Financial risk corresponds to the Internet as a safe purchasing medium for customers. It is involved in the transaction whether there might be a risk of losing money via credit card fraud.

Abel (2003) in his research presents the findings of his studies that addressed e-commerce design and associated customer behaviour. The innovation of e-commerce has affected the marketplace through the facilitation of the exchange of goods and services. Not only this, but also human mind set, in terms of response to the mechanisms of online services. Researcher had identified and hypothesized on relevant subject matters ranging from web usability, advertising channels and similar factors affecting online buying behaviour. Though researcher were focused on the significant aspects of online buying behaviour, further studies are interrelated and interdependent, even to the extent of telling parameters upon which e-commerce, in terms of future design and research, could be built.

Bala subramanian, Konana and Menon (2003) in their research, 'Customer satisfaction in virtual environments: A study of online investing' found that in business environment, some conventional service quality parameters that determine customer satisfaction, such as the physical appearance of facilities, employees and equipment, and employee responsiveness and empathy are unobservable. On the other hand, trust plays a central role in enhancing customer satisfaction. Model trust, as an endogenously formed variable, ultimately impacts customer satisfaction and elucidates the linkages between trust and other factors affecting the performance of the online service provider and to the service environment.

Smith and Rupp (2003) in their research named, 'Strategic online customer decision making: leveraging the transformational power of the Internet', examined and identified the factors in their work that affect the behaviour of consumers. The researchers identified these issues as the marketing effort, socio-cultural influence, emotional parameters, the psychological factors and privacy parameters, to the experience, the before purchase and after purchase decisions. They also show that consumers are affected by various psychological factors, such as perception, motivation, personality, attitudes and emotions. Kraeuter (2003) through his research 'Towards a pattern language for consumer trust in electronic commerce', claimed that consumers are skeptical or suspicious about the functional mechanisms of e-commerce. Specifically, talking about the transparent processes and effects, the quality of many products that are offered online. The analyses revealed

that the role of consumer trust as a base for the diffusion and acceptance of electronic commerce. The functional perspective trust is seen as distinct but potentially coexisting mechanism for reducing the uncertainty and complexity of transactions and relationships in electronic markets. The research focuses on conditions of ecommerce transactions that are relevant for the formation of trust problems. Drawing on the theory of information, two types of uncertainty are described namely system-dependent and transaction-specific uncertainty. Finally different activities and instruments are described and categorized that Internet firms can use to establish and maintain trust.

Balasubramanian, Konana and Menon (2003) through their research, 'Customer satisfaction in virtual environments: A study of online investing', concluded that several firms are moving to make virtual interfaces their primary, or even single, points of customer contact. In this environment, some traditional service quality dimensions that determine customer satisfaction, such as the physical appearance of facilities, employees, equipment, employees' responsiveness and empathy are unobservable. Whereas, trust plays a central role in enhancing customer satisfaction. The researchers claimed trust, as an endogenously formed parameter that ultimately impacts customer satisfaction. The researchers further explained the linkages between trust and other parameters related to the performance of the online service provider and to the service environment. The model is validated using two samples comprising online investors of a large online broker, and members of the American Association of Individual Investors (AAII). The findings of the study suggested that perceived trustworthiness of an online broker is one of the most important factor to investors' satisfaction, and that perceived environmental security and perceived operational competence impact the formation of trust.

Nina Koski (2004) in her research paper named 'Impulse buying on the internet: encouraging and discouraging factors', found that inclination for buying increases when there are offerings for sale or promotion of the product. Marketing schemes may be announced online or through direct marketing of massage. The buyers respond to advertising by purchasing more and more products. Monsuwe and Dellaert (2004) in their research named 'What drives consumers to shop online? A literature review'. made a comparison of the traditional way of shopping and online shopping and the study showed that shopping online is more convenient as compared to the traditional ones. It was principally concluded that the internet allows for more information both in terms of variety and cost comparison which can be collected in minimum of the effort. Customer convenience and time factor for shopping by the consumer were also some of the important factors which boosted the online shopping.

Yang, Jun and Peterson (2004) in their research named 'Taking the pulse of Internet pharmacies' put forward a reliable and valid means of measuring online service quality based on a broad conceptual framework by integrating the theory and conceptualization in customer service quality. According to the researchers, information systems quality, and product portfolio management, into online service quality are significant factors affecting service quality. An ethnographic substance analysis of customer reviews of online banking services were employed to identify salient online service quality dimensions. The literature review most cited online service

quality attributes, along with and personal interview results were utilized to develop the survey questionnaire. A Web-based survey was undertaken to test the online service quality model. A confirmatory factor analysis pointed out six key online service quality dimensions: reliability, responsiveness, and competence, ease of use, security, and product portfolio. This research includes a lot of managerial and theoretical implications of online service quality model.

Bauer, Hammer schmidt and Falk (2004) in their research analysed internet-banking described that in the internet economy, the business model of web portals had spread rapidly over the last few years. In spite of this, unfortunately, there have been very few scholarly investigations into the services and characteristics that change a website into a portal as well as into the dimensions that determine the customer's evaluation of the portal's service quality. The authors validate a model for the construct of web portal quality based on certain dimensions. Some of these were security and trust, basic services quality, cross-buying services quality, added value, transaction support and responsiveness. These parameters were further classified into three service categories namely core services, additional services, and problem-solving services. These parameters which have been found as the determinants of consumer's quality perception in the internet, provides financial institutions a promising starting point for establishing an effective quality management for their e-businesses.

Parasuraman (2005) in his research named 'ES-QUAL a multiple-item scale for assessing electronic service quality' used conceptual framework as a theoretical foundation, constructs, refines, and tests a multiple-item scale for guaging the service quality delivered by web sites on which customers shop online. Two stages of empirical data collection revealed that two separate scales were required for capturing electronic service quality. The basic scale developed in the research is an item scale of four dimensions namely efficiency, fulfillment, system availability, and privacy. The second scale, E-Rec S-QUAL, is salient only to those customers who had unique encounters with the websites and contains 11 items in three dimensions: responsiveness, compensation, and contact. Both these scales shows good psychometric properties based on findings from a variety of reliability and validity tests and build on the research already conducted on the topic. The research also discussed the managerial implications stemming from the empirical findings of the study.

Changchit, Douthit, and Hoffmeyer (2005) conducted a study namely, 'Online shopping; Company business management' to identify the parameters that influence the online shoppers when they make the decision to purchase from a website. It was found that the achievement of the business depends on the ability of the online website to attract and retain the customers. It was also interestingly found that consumers gave more importance to factors such as better utility of their time, access to different type of product information through internet but gave lesser importance to low prices

Kim and Park (2005) in the study named 'A consumer shopping channel extension model: attitude shift toward the online store' with a purpose of examining the consumer shopping channel extension focused on attitude shift from offline to online store with a theoretical approach. The sample consisted of students in a large US Midwestern university and structural equation modeling was employed to

test hypotheses. Modified theory of planned behavior in the online retailing environment was used in the research. The results of the study showed that attitude toward the offline store were a significant predictor of attitude toward the online store. Also it was observed that the search intention for product information via the online store was the strongest predictor of consumer's purchase intention via the online store. The same was found to be a mediating variable between predictor variables and purchase intention. The research offered a theoretical framework to understand and predict the consumer shopping behavior in the multichannel retailing setting. The research also contributed to the academia by expanding the theory of planned behavior and online pre purchase intentions model.

Further the same authors collated through an online survey, using U.S. samples, that consumer's positive attitudes as well as willingness to search for pre-purchase information leads to a strong possibility of online shopping. They also stressed that online shoppers are required to have computer skills in order to use the Internet for shopping. Hence, those who are uncomfortable with using the computer are likely do their shopping at the traditional store, modern shop, or discount store.

Bauer, Falk and Schmidt (2006) in their research named 'A Conceptual Framework For Creating Customer Satisfaction in E-Retailing in Malaysia', persuaded that the existing e-service quality scales mainly focus on e-shopping behaviour which does not include hedonic quality aspects. As a result, these scales do not completely cover all aspects of consumer's quality evaluation. In order to integrate both utilitarian and hedonic e-service quality elements, transaction process model was applied to electronic service encounters. Based on the experiment general framework discussing all stages of the electronic service delivery process, the researchers develop a transaction process-based scale for measuring service quality.

Exploratory and confirmatory factor analysis was done and the researchers identified five quality dimensions: functionality/ design, enjoyment, process, reliability and responsiveness. All extracted dimensions of eTransQual revelled a significant positive impact on important outcome variables like perceived value and customer satisfaction. Other than this, enjoyment is a dominant parameter that affects both relationship duration and repurchases intention as major drivers of customer lifetime value. As a result, the conceptual and empirical evidence to integrate both utilitarian and hedonic e-service quality parameters into one measurement scale.

Allred, Smith and Swinyard (2006) in their research namely 'E-shopping lovers and fearful conservatives: A market segmentation analysis' classified internet users into holiday shopper and non-shopper segments. They also classified them into demographic, psychographic, and computer use characteristics of each segment. The data was picked up from a national US sample of online internet users. Six important segments were identified in the data. Three of these segments characterize customers who resist online shopping, even though they were engage in other online activities. Other than these security issues and technological incompetence typically prevent these users from engaging in electronic exchange.

Three of the segments describe active e-shoppers who are driven by a unique desire to socialize, reduce their inconvenience, and increase value. The data come from

structured questionnaires administered and collected electronically through the internet. The focus was also placed on holiday gift buying as holiday shopping is very significant to e-retailers, results are very interesting, but might not be indicative of other shopping periods.

It is important for e-retailers to understand those things that motivate and inhibit customer online shopping for being successful. Service, value, and online ambiance should be carefully customized to meet the desires and expectations of each customer type. The study was a replication and extension of earlier online studies which were summarized in the reviewed literature.

Hsuehen (2006) in his research namely, "An empirical study of web site quality, customer value, and customer satisfaction based on e-shop", investigated the relationships among website quality, customer value, and customer. The study concluded that web-customer satisfaction can be classified into two distinctive attributes. These are web information quality referred as 'the customers' perception in quality of information presented on a website' and the second one is web system quality also known as 'the customers' perception of website's performance in information retrieval and delivery.'

According to a survey conducted by MasterCard Worldwide in the year 2008 on 5037 respondents across 10 markets: Australia, China, Hong Kong, India, Japan, Singapore, South Korea, Thailand, UAE and South Africa, the study revealed that Online shopping in the Asia-Pacific region is increasing at an annual rate of 23.3 percent with the region's new markets such as China and India fuelling this growth. MasterCard Worldwide published its latest Insights Report, namely, 'Online Shopping in Asia/Pacific—Patterns, Trends and Future Growth', which shows that in India the average frequency of online purchases has already increased to 2.9 in fourth quarter of 2008, up from 2.6 during the same quarter in 2007. The study also showed that the Asia-Pacific region was found to be an active region for online shopping. Three fourth of the consumers intend to make a purchase in the next six months. The research also highlighted the increase in shoppers in the fast-growing markets of China and India. The rising population specifically in the domain of upper-middle income urban elites is likely to boost the online shopping markets in China and India which is backed by a paid pace of urbanization, robust economic expansion and rising spending power.

Vijay and Balaji (2009) in their study named 'Online shopping in India: findings from a consumer research', revealed that consumers, all over the world, are more and more shifting from the crowded stores to the one-click online shopping format. However, despite the convenience offered, online shopping is far from being the most preferred form of shopping in India. The study was based on a survey, which was carried out on 150 internet users. This included both users and non-users of online shopping for understanding why some customers purchase online while others do not. The results of the study clearly suggested that convenience and saving of time drive Indian consumers to shop online; whereas security and privacy concerns dissuade them from doing so.

Nielsen (2009) in his research conducted a primary study through survey for his TV channel covering 38 markets and over 21,100 respondents across the globe. The results of the study revealed that more Indians are

taking to shopping online and confirmed that an upward trend in online shopping across the world. A important observation of this study was that India beat the global counterparts in number of purchases per month, with an average of 5.2 purchases against the global average of 4.9.

Koo and Lee (2011) in their study named "Inter-relationships among dominance, energetic and tense arousal, and pleasure, and differences in their impacts under online vs. offline environment" proposed that there is a relationship among dominance, energetic and tense arousal, pleasure and their impact on intention. The results from a primary study based survey of 406 consumers delineated that dominance has a significant positive and/or negative effect on both energetic and tense arousal. On the other hand it was observed that it has no impact on pleasure and intention under both offline and online environment. Effect of dominance on tense arousal was not statistically important in an online shopping environment. Whereas, both energetic and tense arousal had a positive and/or negative impact on pleasure.

Riquelme and Román (2014) in their work named 'The influence of consumers' cognitive and psychographic traits on perceived deception: A comparison between online and offline retailing contexts' examined the effects of individual's cognitive traits and risk aversion on perceived trick are more relevant when customers shop online than when they purchase from traditional stores. Conversely, psychographic characteristics play a more important role in explaining perceived deception in the conventional shopping context as compared to the online channel.

Many studies have been conducted on several aspects of online shopping but no study has been conducted on the service quality of the online shopping portals, to fill the research gap this study was undertaken.

SERVICES AND SCHEMES PROVIDED BY THE ONLINE SHOPPING PORTALS

Academic research has identified a number of criteria that customers use in evaluating Web sites in general and service quality delivery through Web sites in particular. Some of these include information availability and content, ease of use or usability, privacy/security, graphic style, and fulfilment. A number of studies have examined various aspects of these criteria and are reviewed below. It is important to note that when consumers purchasing items online, customers are typically goal oriented and that entertainment-related criteria associated with online use in general (such as flow and other experiential aspects) are not relevant when the context is purchase.

Zeithaml, Parasuraman and Malhotra (2002) in their study named, 'Service quality delivery through web sites: A critical review of extant knowledge', delineated from their research that measurement of service quality delivery through web sites is in its initial stages. The overwhelming widely held amount of measurement scales have been developed in business, either by individual companies or by consulting firms which sell the scales to businesses. The published scholarly literature in domain is very less in terms of articles dealing directly with measuring the different ways in which the customers assess electronic service quality.

Some measures of e-SQ are informal and include only a few factors. Rice (1997), for instance, surveyed visitors to 87 Web sites to find out factors that would induce

revisit. His measures included good content or information provided by the website, which was the primary driver of revisit, and enjoyable experience on the first visit, which was the next, most important driver.

In a more comprehensive framework, Liu and Arnett (2000) in their research 'Exploring the factors associated with Web site success in the context of electronic commerce' surveyed webmasters for Fortune 1000 companies to find out the factors critical to web site success with consumers. Five factors or dimensions which were measured and found to be the important ones were first, quality of information consists of relevant, accurate, timely, customized, complete information which was presented. Service, the second most important factor, involves quick response, assurance, empathy, and follow-up. Third, system use includes security, correct transaction, and customer control on transaction, order-tracking facility, and privacy. The Fourth factor, playfulness perceived by consumers is determined by customers' sense of enjoyment, interactivity, attractive features, and enabling customer concentration. Finally, design of the Web site system/interface involves organized hyperlinks, adapted search functions, speed of access, and ease of correcting errors.

In an another study examining Internet pharmacies, Yang, Peterson, and Huang (2001) identified and measured six dimensions of consumer perceptions of service quality namely ease of use, which includes user friendliness, loading/ transaction speed, search capability, and easy navigation. The second one being content contained on the Web site, specifically information that matches the needs of the consumer. The other parameters were accuracy of content, timeliness of response, aesthetics, involving attractiveness of the site and catalogue pictures and privacy.

The measurement of e-SQ in these research studies was rather found to be random, to the extent that the scales and dimensions used to measure service quality have not been empirically validated. Several dimensions and measures used were picked out from studies on service quality in the physical retail arena. Many of them have also been derived from human-computer interface literature. This has lead to the extractaction of comprehensive dimensionality of e-SQ.

Bauer, Falk and Hammerschmidt (2006) in their research named 'eTransQual: A transaction process-based approach for capturing service quality in online shopping', through their research confirmed that existing e-service quality scales generally focus on goal-oriented e-shopping behaviour excluding hedonic quality aspects. As a consequence, these scales do not completely cover every aspects of consumer's quality evaluation. In order to integrate both utilitarian and hedonic e-service quality elements, the authors generally apply a transaction process model to electronic service encounters. This general framework was used as a base in capturing all stages of the electronic service delivery process. The researchers developed a transaction process-based scale for measuring service quality. The researchers conducted exploratory and confirmatory factor analysis to identify five discriminant quality dimensions. These are named as functionality/ design, enjoyment, process, reliability and responsiveness.

All these extracted parameters of eTransQual show a significant positive effect on important outcome variables like perceived value and customer satisfaction. Moreover, enjoyment is one of the most important factor in influencing both relationship duration and repurchase intention as major drivers

of customer lifetime value. The research presented a conceptual and empirical evidence for the need to put together both utilitarian and hedonic e-service quality elements into one measurement scale.

Cristobal, Flavian and Guinalıu (2007) through their research named 'Perceived e-service quality (PeSQ) Measurement validation and effects on consumer satisfaction and web site loyalty' developed a multiple-item scale for measuring e-service quality. In addition to it they also wanted to study the impact of perceived quality on consumer satisfaction levels and the level of web site loyalty. First, the authors gathered the list of main attributes of the concepts examined, with special attention being paid to the multi-dimensional nature of the variables and the relationships between them.

This was followed by testing of the validation processes of the measuring instruments. The validation process of scales recommended that perceived quality is a multidimensional construct: web design, customer service, assurance and order management; that perceived quality influences on satisfaction; and that satisfaction influences on consumer loyalty. Moreover, no differences in these results were observed if the total sample were separated between buyers and information searchers.

The practical implications as observed by the researchers were, first, the authors recommended a need to develop user-friendly web sites which simplify consumer purchasing and searching, thus creating a suitable framework for the generation of higher satisfaction and loyalty levels. Second, implication the web site manager should enhance service loyalty, customer sensitivity, customized service and a quick response to complaints. Third, the web site should have enough security levels in communications and meet data protection requirements related to the privacy. Lastly, requirement of correct product delivery and product manipulation or service is recommended.

The author concluded that most relevant studies about perceived quality in the internet are focused on web design aspects. Also, the existing literature regarding internet consumer behaviour does not completely analyse profits generated by higher perceived quality in terms of user satisfaction and loyalty.

Kalyanaraman & Sundar (2006) from their research namely, 'The psychological appeal of personalized content in web portals: does customization affect attitudes and behavior?', concluded that internet technology has made possible the widespread dissemination of individualized media messages, but the knowledge about the same in public domain is very little about their psychological import. A research, with three levels of customization (low, medium, high) was designed to examine whether greater levels of personalized content produce more positive attitudes. The result of the study not only confirms this hypothesis but also reveal the intermediate role played by users' perceptions of relevance, involvement, interactivity, and novelty of portal content. It was also observed that, customization has behavioral impact in that it affects users' browsing activity. The researchers concluded, that customization is a psychologically significant variable and has the potential to impact not only attitudes but also behaviors through various mechanisms. There are various implications related to the same which are worth discussing.

Assuming that perceived interactivity mediates the relationship, the appeal of

customization may go beyond simply attracting initial attention and support build loyalty to specific portals. Here the promise of an evolving relationship encourages the customer to revisit customized sites (Sundar, 2004 'Theorizing interactivity's effects') and consciously choose them to other sites, repeatedly. These considerations prompt a more dynamic conceptualization of personalization, whereby portals not only provide customized information but also anticipate users' interests and requirements, and proactively service such needs.

Various researchers have a thought that the ability to dynamically accommodate to users is the essence of customization (e.g., Katz & Associates, 2002; Rayport & Jaworski, 2001 'Cases in e-Commerce'; Shankar, 2001 Interpretive consumer research: two more contributions to theory and practice). Empirical investigation of this facet of personalization may offer further insights into the mediating role of interactivity by taking care of user involvement and engagement with the portal (see Sundar et al., 2003). Of course, there are potential downsides to this as well. The ability to anticipate users' wants and offer personalized information is relied on the message practice of combined filtering systems. One caution with these systems is the element of prejudice that is involved when offering personalized information. That is, the process of offering customized services is relied not on explicit user preferences but it's based on the assumption that users will unavoidably want those features that the interface offers them. Under such conditions, it may actually lead to reduced perceptions of interactivity, relevance, or involvement. Obviously, such effects can best be removed via careful testing.

Moraga, Calero and Piattini (2006) named 'Comparing different quality models for portals', in their research presented a brief overview of some proposals of portal quality models and carried out a comparative study with the objective of establishing the main differences between them, along with their common aspects. The study compared the different portal quality models, and analyzed their main characteristics specially, the different dimensions which have been proposed in each model. The findings reveled several similarities as well as differences established among the portal quality models. For instance, the dimensions present in every model are navigation, representation, personalization and intrinsic data quality. The study presented a comparison which tried to determine such aspects which were important for the quality of a web portal as well as it also told which proposal is the wider one. The study also delineated what dimensions must be added to it in order to consider all the parameters related to web portal quality. The research work tried to obtain a portal quality model applicable to a portal in order to know its quality level. The model could also be used in case of having a low level of quality for a given dimension, giving various important guidelines for improving the weak aspects.

BUYING MOTIVES OF THE ONLINE BUYERS

Li and Zhang (2002) in their study named, "Consumer online shopping attitudes and behavior: An assessment of research" claimed from their research that electronic commerce has become one of the important characteristics in the Internet era. According to UCLA Centre for Communication Policy

(2001), online shopping has become the third most popular Internet activity, immediately following usage for e-mail /instant messaging and web browsing. It is even more popular than looking out entertainment information and news, two commonly undertaken activities when considering the various activities done by internet users, when online. On segmentation of users into avid versus less experienced internet users, the experienced users' use internet for shopping at an average 20 online purchases an year, as compared to only four annual purchases for new users.

The process consisted of five separate steps similar to those associated with traditional shopping behaviour (Liang and Lai 2000 'Electronic store design and consumer choice: an empirical study'). In the representative online shopping process, when potential customer feels a need for some merchandise or service, they go to the Internet and look for need based information. However, rather than searching actively, at times the consumers are attracted by information about products or services related to the required need. They then test alternatives and pick the one that best fits their criteria for meeting the felt need. In the end, a transaction is completed and post-sales services are provided. Online shopping attitude refers to consumers' psychological state in terms of buying on the Internet.

There have been intensive researches on online shopping attitudes and behaviour in recent years. Most of them have attempted to find out factors influencing or causal to online shopping attitudes and behaviour. The researchers seem to take different perspectives and focus on various parameters in different ways. For example, Case, Burns, and Dick (2001, p.873)in their study named 'Drivers of on-line purchasing among US university students', suggested that internet knowledge, income, and education level are extremely powerful factors of Internet purchases among university students according to a research of U.S. undergraduate and management students. Ho and Wu (1999) ion their study named 'Antecedents of customer satisfaction on the Internet: an empirical study of online shopping', discover that there was a positive relationships between online shopping behaviour and five categories of parameters, which include e-stores logistical support, product characteristics, websites technological characteristics, information characteristics, and webpage presentation.

Schubert and Selz (1999) in their research named 'Web assessment-measuring the effectiveness of electronic commerce sites going beyond traditional marketing paradigms', examined the significant quality factors of electronic commerce sites in terms of information, agreement, and settlement phases. They also reviewed those characteristics related to e-commerce community. These studies seem to have made significant contributions to our knowledge of the dynamics of online shopping field. However, there is a lack of consistent understanding of the effect of relevant factors on online attitudes and behaviour and an inconsistent identification of related independent and dependent variables. Thus, making the comparisons of different studies difficult. Not only this prospect of synthesizing and integrating the empirical literature in this area elusive.

Gummerus, Liljander, Pura and Riel (2004) the study named 'Customer loyalty to content-based web sites: the case of an online health-care service', emphasised that past e-service research has largely focused on customer responses to online retailers. This study sheds light on the factors affecting customer loyalty

to a content-based service. Content-based service providers need to build a faithful customer base in order to attract advertisers and sponsors. Distrust has been one of the most important reasons for consumers avoiding online services involving financial exchanges, but trust seems to be equally significant to exchanges that need divulging sensitive information, such as health issues. Results of the study delineate that loyalty to the health site is satisfaction-driven. Trust is the most important antecedent of satisfaction. Need realization, responsiveness, security and technical functionality of the Web site seem to influence trust the most?

Service quality and customer satisfaction, which are believed to be the important drivers of most loyal behaviour, have been extensively studied in a traditional service context (e.g. Parasuraman et al., 1988, 'Servqual'; Anderson et al. ('Customer satisfaction, market share, and profitability: Findings from Sweden'), 1994; Zeithaml et al., 1996study named 'The behavioral consequences of service quality'), but research concerning the impact of e-service quality and resulting satisfaction is still in its childhood. Some quality assessment methods have been improvised for Web sites with purchase features (e.g. Donthu, 2001; Wolfinbarger and Gilly, 2002 'eTailQ: dimensionalizing, measuring and predicting retail quality'), but little attention has been given to content-based online services. Since the service offering and consequently also consumer test of content-based service providers' Web sites separate significantly from those of Web merchants, specific research is needed.

Trust has been identified as the explanation to understanding the relationship between consumers and online firms, but the precise role and significance of trust in the development of behavioural intentions for online service providers have still remained unclear. Trust, customers' willingness to rely on a service provider (Moorman et al., 1992 in research namely 'Relationships between providers and users of market research: the dynamics of trust within and between organizations'), reduced apparent risk of using a service (Gambetta, 2000, Can we trust trust. Trust: Making and breaking cooperative relations). It can therefore be considered a consequence of positive testing of online services and an antecedent of customer loyalty. Customers are unwilling to link with online services when self-belief in the competence and honesty of the provider is lacking. The distance between the service provider and customers and absence of face-to-face contact appear to make security issues and trust essential in online interactions. In an online context, trust is generally been related to the security of financial transactions. Its potential significance for content-based services, mostly not involving financial transactions, also needs to be verified.

Pavlou and Gefen (2004) named 'Building effective online marketplaces with institution-based trust' Institution-based trust is a buyer's thinking that effective third-party institutional mechanisms are in place to make possible transaction success. The research integrates sociological and economic theories about institution- based trust to hypothesise that the perceived effectiveness of three IT-enabled institutional mechanisms specially feedback systems, third-party escrow services, and credit card guarantees engender buyer trust in the community of online auction sellers. Trust in the marketplace mediator that provides the overarching institutional context also builds buyer's trust in the market of sellers. In addition, buyers' trust

in the market facilitates online transactions by decreasing perceived risk. Data collected from 274 buyers in Amazon's online sale marketplace provide support for the available structural model. Longitudinal data which was collected revealed transaction intentions are correlated with actual and self-reported buyer behaviour. The study concluded that the perceived effectiveness of institutional mechanisms encompasses both weak as well as strong systems. These mechanisms provoke trust, not only in a few reputable sellers, but also in the entire market, which contributes to an effective online marketplace. The results of the study thus help explain why online marketplaces are proliferating.

Shergill and Chen (2005) from their research 'Web-Based Shopping: Consumers 'attitudes Towards Online Shopping in New Zealand" concluded that the growing use of Internet in New Zealand provided a growing prospect for E-marketers. If E-marketers know the factors affecting online buyers' behaviour, and the associations between these factors and the type of online buyers, then they can improve their marketing strategies to convert potential customers into active ones, while holding the existent online customers. This research focuses on factors which online buyers believe while shopping online. It also investigates how different types of online buyers perceive websites differently. This research found that website design, reliability/fulfilment, customer service and security/privacy are the four dominant parameters which influence consumer perceptions of online purchasing. The four types of online buyers; i.e. trial, occasional, frequent and regular online buyers feel about the mentioned website factors differently. These customers have different tests of website design and website reliability/ fulfilment but similar evaluations of website security/privacy issues, which mean that security/privacy issues are significant to most online buyers. The significant discrepancy in the way online purchasers perceived website design and website reliability accounts for the difference in online purchase variations.

Ruchi Nayyar (2010) in a case analysis named 'Impact of Changing Demographic Profiles of Indian Customers on their Internet Shopping Behaviour' the study of website factors on online shopping behaviour found that online shoppers perceive different factors such as website design, fulfilment or reliability, security and consumer service affecting online purchase activity differently.

Gupta (2010) in the study named 'The relationship between trusting beliefs and web site loyalty: the moderating role of consumer motives and flow', found the impact of changing demographics profile of Indian customers on internet shopping behaviour. The study concluded that demographic profiles of online users, i.e. gender, age and education have significant relationship to web shopping in the current Indian scenario. However, it won't be very late for these differences to disappear keeping into account drastic changing social habits and growing technological developments.

Shrivastava and Lanjewar (2011) did research ontopic, 'A Business Intelligence Model for Indian Consumers' Behaviour with respect to Motivation' and concluded that online buying, and from there research concluded that the rate of diffusion and adoption of the online buying amongst consumers is still relatively low in India. For solving the aforesaid problem an empirical study of online buying behaviour was undertaken. Based on the review of literature four predominant psychographic parameters were found out namely attitude,

motivation, personality and trust were studied with respect to online buying. The online buying decision process model which was based on all the four parameters was designed after statistical analysis. These models were incorporated with business intelligence, knowledge management and data mining to design behavioural business intelligence framework with a cohesive view of online buyer behaviour.

Durmaz (2011) in a study entitled 'Impact of cultural factors on online shopping behaviour', found that while buying goods and services, culture, beliefs and traditions take significant position, while the environment, friends and social groups stated 48.6%. In this case the impact of cultural factors means a lot.

Wells et al. (2011) in their research named 'Online Impulse Buying: Understanding the Interplay between Consumer Impulsiveness and Website Quality', studied Online impulse buying for understanding the interplay between consumer impulsiveness and website quality which was focused on the direct relationships between the website and online impulse buying. The study found and suggested a model which considered the direct influence of website quality on the urge to buy impulsively.

Dahiya (2012) in the study named 'Impact of demographic factors of consumers on online shopping behaviour: A study of consumers in India', tried to find out the Impact of demographic factors of consumers on online shopping behaviour. The study found that online shopping is a recent occurrence in the field of e-Business and is absolutely going to be the future of shopping in the world. Several companies are running their on-line portals to sell their products/services on-line.

SATISFACTION LEVEL OF ONLINE BUYERS TOWARDS QUALITY OF SERVICES

In this section a review of academic literature on e-service quality and customer satisfaction with online services is presented. The section illustrates some of the research issues performed with respect to an online job-search service, or so-called job board.

Liljander, Riel and Pura (2001) concluded from their study named 'Customer loyalty to content-based web sites: the case of an online health-care service' based on the interviews and the online survey that customers of this job board perceived the services to be adequate or good, but not excellent. To improve customer satisfaction the job board would have to raise the variety and quantity of job postings, but also to take responsibility for the content of the postings. Recruiting companies may need help with formulating applications that comprise of all the information that applicants need for effective and customised job searches. Furthermore, the company should conduct a more detailed investigation of the additional services to detect sources of dissatisfaction and find out what customers desire from this type of services in order to observe them as value adding.

Shankar, Smith and Rangaswamy (2002) in their study 'Customer satisfaction and loyalty in online and offline environments' addressed questions that are the levels of customer satisfaction and loyalty for the similar service different when customers prefer the service online versus offline. Also the researchers were also interested to find out what were the various factors that might explain these differences. Next area of interest to the researchers is the relationship between customer satisfaction and loyalty in the online setting different

from that in the offline settings. The researchers proposed a conceptual framework and develop hypotheses about the effects of the online medium on consumer satisfaction and loyalty and on the relationships between satisfaction and loyalty. The researchers tested the hypotheses through a concurrent equation model using data sets of both online and offline customers of the lodging industry. The results are however counterintuitive because they show that the levels of customer satisfaction for a service chosen online is similar when it is chosen offline, loyalty to the service provider is greater when the service is chosen online than offline.

In addition, to the above facts is that the relationship between overall fulfilment and loyalty is stronger in case of online customer than in offline customer and there is a positive but reciprocal relationship between loyalty and satisfaction online. These results of the study recommend that, contrary to popular doubts, the online medium could help a company build a loyal customer base. One way of doing this would be to focus directly on loyalty-building ways, such as encouraging replicate purchases by providing well-designed online links to various products and services.

Hsu (2008) through his study named 'Who are ethnocentric? Examining consumer ethnocentrism in Chinese societies', proposed an index for online customer satisfaction, which was taken from an American Customer Satisfaction Index (ACSI). Since online shopping is a different sought of experience from traditional shopping in many ways, a new index for measuring electronic-customer satisfaction index (e-CSI) was required. The study is one of the initial attempts towards integrating satisfaction literature to offer an index for online contexts.

The e-CSI model was earlier tested with reference to one month study of Taiwan's largest online retailer (PChome Online) where it significantly predict customer loyalty and overall consumer satisfaction. The present research found that the satisfaction score of PChome Online is similar to the average for the online retail industry in ACSI. This model also allowed the online retailer to appreciate the specific factors that significantly affects overall customer satisfaction by reading the causal relation-ship in the e-CSI model and the strategic management map. The researchers used partial least squares (PLS) method to test the theoretical model and to derive the e-CSI score.

SERVICES EXPECTED AND SERVICES RECEIVED FROM ONLINE SHOPPING PORTALS

Ahn, Ryu, and Han (2005) in the article 'The impact of the online and offline features on the user acceptance of Internet shopping malls' through their research concluded that Internet shopping mall had the dual nature of Web-based application system and traditional shopping mall. This paper explores online and offline characteristics of Internet shopping malls and their associations with the acceptance behaviours of customers. The results from a survey of 932 users portrayed that the technology acceptance model (TAM) is valid in forecasting the acceptance of the Internet shopping malls and that online and offline features have optimistic effects on the user acceptance. Both online and offline features have positive effects on the usefulness, attitude, and intention to buy rather than either online or offline features separately. The study provides a domain-specific, integrative approach in testing the

quality and background of user acceptance for Internet shopping malls.

Kim Jai- and Son (2009) in their work namely, 'A consumer shopping channel extension model: Attitude shift toward the online store' , Sustained website traffic through consumers' patronage at the post-adoption stages is the method to the survival of an online service provider. Although a company's survival depends much on repeated use or reorder of the product. The survival of the firm is influenced by a variety of other behavioural aspects that include word-of-mouth, willingness to pay and attention to alternatives. Whereas, post- adoption research had recently paid attention to again and again use of online methods of buying. The information systems field still lacks a systematic investigation into other behavioural outcomes that exceed only usage. In an endeavour to extend the horizons of post-adoption studies, the researchers developed and tested a model that explains post- adoption behaviour in the context of online services. A dual model of relationship maintenance in consumer behaviour research was drawn and it was proposed that a conceptual frame- work to study and explain online consumer behaviour. In particular, the model predicted by the researcher have two contrasting mechanisms, that is, dedication and constraint, are the significant parameters of post-adoption phenomena. On empirical testing, the proposed dual model through the data collected from 510 users of online portals. The conclusions drawn from structural equation modelling analysis indicate that, the dedication and constraint based mechanisms simultaneously, determine online consumer behaviour. In general, the research suggests that it is essential in examining the complex nature of post-adoption mechanism to take into account the interplay of the dedication and constraint based systems.

Tejinderpal Singh and Manpreet Kaur (2012) in their research named 'Internet banking: content analysis of selected Indian public and private sector banks' online portals', through their research concluded that Advancement in technology has played a significant role in the distribution strategy of commercial banks. Banks distribute their products and services through a variety of channels such as internet banking, automated teller machines, mobile banking, phone banking, TV baking, etc. Internet banking has attracted a lot amount of interest of researchers in the past times. Earlier research studies had focused on the perception about online service quality, adoption of internet banking, impact of information technology in banking, etc. based on consumers' opinion.

However, on the other side, an in depth analysis of bank's online portal without going close to the consumer may also provide meaningful insight about the online portals specifically when compared with other banks' online portals. The present study, considered two leading banks, one each from public and private sector. Content analysis technique was used to study the features of selected banks websites. It was found that selected banks' online portals differ on different features such as accounts information, fund transfer, online requests and general information. The research concluded that including the good feature of other online portal would help them to make their sites more secure, informative and user friendly.

CONCLUSION

Though online shopping is very common outside India, its growth in Indian Market,

which is a large and strategic consumer market, is still not in line with the global trends. The potential growth of on-line shopping has triggered the idea of conducting a study on on-line shopping in India. Specifically, if we talk about the buying behavior of people in Punjab which still follow traditional off line buying. The results of various studies have revealed that on-line shopping in India is significantly affected by various demographic actors like age, gender, marital status, family size and income.

The results of the present study could be further used by the researchers and practitioners for conducting future studies in the similar area. Realizing the importance of E-commerce, companies would like to discover more business opportunities and to bring back more customers. As such, it is very significant to understand consumers 'E-commerce acceptance behaviour and their online shopping behaviour. This is believed to be different from their behaviour in the traditional shopping environment. Thus, there is a need for the theory of consumer online shopping behaviour.

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Pedestrian Accident Prediction Modeling

A Review of Recent Studies

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Abstract

Over 1.2 million people die each year on roads, and between 20 and 50 million suffer non-fatal injuries. In most of the developing countries this epidemic of road accident injuries is still increasing. Road traffic accidents are a major but ignored worldwide problem, requiring intensive efforts for effective prevention. Of all the systems that people have to deal with on a daily basis, road transport is the most complex and the most dangerous. A broad approach is required for improving road safety and reducing the death toll on their roads. In the similar course in this study an attempt has been made to figure out frequent elements which are accountable for accident study in India to develop methods which would provide solution for the same, based on the earlier literature. The studies conducted and stated in the past ten years along with their outcomes and approaches adopted have been reported in this paper. The researchers have also tried to tabulate important explanatory variables and significant.

Although researchers are assuming new methods and many independent variables are being tried into accident prediction modelling but still the outcomes are not decisive.There is a scarcity of studies, which has so far tried to predict accidents by injury severity in India. Comparative influence of variables and effectiveness of different

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modelling techniques also needs to be tested for different data sets.

Keywords: *Road Accidents, Pedestrian Safety, Accident Prediction Model.*

INTRODUCTION

National Highways (NH) and State Highways (SH) comprises of more than 70% of the entire traffic. Pedestrian Safety has become a foremost concern on these highways. The problem is particularly grave when NH and SH pass through rural areas and small cities. The traffic and activities of local people about the highway is the main source of congestion at daytime and turn into a bottleneck for fast moving through traffic. At night when the traffic volume is low, these roads become a safety threat for pedestrian as well as road user. Traffic Calming practices has arisen mainly as a society's reaction to concern for pedestrian road safety. It is well recognized by the researchers that variations in the speed, direction, and size of the vehicles generally govern the severity of road accidents. There is much less variation in direction and vehicle mass. Traffic Calming Practices have played a significant role in attaining safety by ensuring little driving speeds between different road users. The total information from different countries indicates that speed limit, signs and other visual measures alone are not always adequate to aware the drivers about an suitable speed. But when combines with other physical speed calming measures, noteworthy effects can be witnessed. Though, this is not for India as we have a much more diverse fusion of road traffic.

ROAD SAFETY SCENARIO

Daily number of people met with fatal and serious accidents on our roads. Lots of people every year will spend long time in hospitals after severe accidents and several people will never be capable to live their normal life again. Road accidents constitute a main public health crisis, and are forecast to upsurge if road safety is not addressed effectively.

Over 1.2 million people met with fatal accidents every year on roads, and about 50 million suffer injuries. A broad attitude in improving road safety and dropping the death rate on the roads is essential. Developing and under developing countries have higher road traffic fatality rates than developed countries. More than 90% of the fatalities on the roads occur in underdeveloped countries containing only 48% of the total registered vehicles in the world.

The financial cost of road traffic accidents is huge. It is estimated that about US$ 500 billion is consumed on road traffic accidents with under developed and developing countries. For every person killed, injured or disabled by a road accident there are numerous others deeply affected by these accidents. Numerous families are driven into poverty by the expenditures of continued medical care or the loss of a family lone bread-earner.

LITERATURE REVIEW

Road safety is a problem all over the world. Each year millions of people die or get severely injured in traffic accidents. The majority of accidents occur in urban areas. The reason for this is the constant interaction between vehicles and pedestrian. Accidents come with a great cost for the victim and for the society. Speed plays a central role in traffic safety, more and more traffic researchers come to that conclusions. The reason for strong influence of speed on traffic safety is the many negative effect that speed produces. The present

section presents the past studies related to the study.

Liyanage and Rengarasu[1] mentioned that as per WHO report more than 1.3 million people die each year in traffic accidents and disable millions of people annually worldwide. According to traffic offenses details for the first six months of year 2010, there were around 270,000 traffic accidents in Sri Lanka. In recent years, increased attention has been directed at traffic based accident severity prediction. This problem needs a greater attention than what it is getting now. There are very few researches and studies have been done to arrange a proper planning and analysis system in this case. Thus the requirement for proper planning and prediction system for accident analysis has risen up. The main aim of this study is to work out accident prediction models based on traffic police report data. These models correlate accidents, as a dependent variable, with probable reasons of accidents that are associated to accident occurrence such as: time, day, road geometry, light condition, year of driver license provision and vehicle type as independent categorical variables.

Count data models Poisson and Negative-Binomial models along with a non-parametric decision-tree model were developed. Out of those models, the best models were chosen. Considering the results of Negative Binomial model, the important variables causes the accidents are experience of the driver (year of driver license issue), vehicle type, light condition and time of the accident. Moreover, decision tree results show that, road geometry with straight roads contributing to the highest number of accidents. This could be due to the possibility that, when road is straight, drivers would tend to ride at high speeds.

As per (Kibar, Celik et al., 2013) accidents in Turkey have been growing every year. The main objective for their study is to explore the issues cause accidents and to develop an accident prediction model which contains relationships between these factors causing accidents. The probable number of accidents at divided highways can be predicted and appropriate actions can be defined to prevent accidents. The method of generalized linear models was applied to the collected accident data. This model shows that the vehicle kilometres of travel, number of pedestrian crossing the road and average speed of vehicles are noteworthy variables for road accidents.

Singh and Suman (2012) found that rapid growth of population and economy has favored in incredible increase of vehicles on Indian roads. This is one of the prime reasons accountable for accidents. Few works have been carried out on statistical investigation of accidents predominantly on National Highways. Accidental data collected from the Police Stations from 2000-2010 was used for analysis. The collected data was investigated to assess the influencing factors on accident rate. Heavy vehicles were involved in maximum number of accidents on the particular stretches under study. It is assessed that heavy vehicles contributed to almost 48% accidents followed by 2-wheelers 16%, cars 12% and buses 10%. There is no definite trend for monthly variation in accident but the accidents in month of January and July are usually higher. Accident rates increases with traffic volume. The developed model for accident prediction represents that the number of accidents enhances with AADT and there is a decreases in accidents with enhancement in road condition.

Pei, Wong et al. (2012) studied the outcome of exposure and speed on accidents in Hong

Kong. Results showed a positive correlation between speed and accident risk.

Mustakim, Yusof et al. (2008) established accident predictive models based on the data collected on at rural roads. The result confirmed that the current number of major accesses, with no traffic light, speed, AADT, growth rate of car and are the possible contributors of increased accident rates on rural roads.

Lord and Mannering (2010) predicted that due to increase in automobile transportation around the world, bicyclists, pedestrians, and motorcyclists would become more vulnerable to accidents, especially in countries where traffic laws are not enforced properly. The research discussed the potential countermeasures for refining pedestrian safety on roads.

Odeleye (2002) from his study very firmly established that the massive restoration of zebra crossing on all important roads in Lagos recently is appropriate and advisable. It was, however, perceived that the vulnerable road users are unaware of the need for safety measure on the roads.

Fabian, Gota et al. (2010) acclaimed that in the age of rapid motorization, the pedestrian left far behind. Huge investments are directed towards building infrastructure for motorized modes, while little or no planning is provided to non-motorized modes of travel such as walking and cycling, which have been the traditional modes of travel. Increased urban sprawl, improved economic conditions and neglect of pedestrian facilities have all led to increase in the number of motorized vehicles, which have resulted in our cities with high levels of pollution, congestion, road accidents, social inequality, poor mobility, and deterioration of quality of life. Asian cities are set to explode with over 55% of population projected to live in them by 2030. This poses a huge challenge to the concept of sustainability and livability.

Mitesh, Girija et al. (2010) studied the road traffic accidents on selected highways and town/village roads of Sabarkantha district, Gujarat was conducted for the period of one year (from January 2002 to December 2002), during this period, total 512 event of road traffic accidents were recorded in the district, It is observed that the Pedestrian accident (37.78%) dominates overall the other types of accidents. Among the 193 events of Pedestrian accident, 158 (81.87%) were non-fatal and 35 (18.13%) fatal. The maximum number of events (62.69%) took place during daytime and 37.31% of events took place during dark hours. Analysis also shows that highest number of events (35.23%) took place on town/village roads.

Sharma and Iyer (2011) used Head Injury Criteria (HIC) prediction for pedestrian impact analyses during early stages of vehicle development is a challenge for designers and Computer Aided Engineering (CAE) analysts because of minimal geometry information for the hood. This research proposes a HIC prediction tool based on statistical analysis of simulation data from an initial CAE simulation. The HIC prediction tool will be used for pedestrian head impacts on hoods to aid in hood design and under hood components packaging which comprehends pedestrian protection variables. Pedestrian impact HIC performance is a function of various contributing factors like hood thickness, material, deformation space, and also proximity to attachment locations. These parameters have been studied separately and then checked for their combined sensitivity to HIC. With shortened development time,

said tools may enable more robust analytical prediction.

Mohan (2011) discussed that WHO released a global status report on road safety: time for action in July 2009. He analyzed the data reported by Asian countries. The report demonstrates that a few high income countries have unreliable statistics, and on the other hand a few low income countries are able set up good data collection systems. Therefore, all countries should be able to set up reasonable data reporting systems given the right policies. Overall and road user specific fatality rates do not have a high correlation with country income levels. The reasons for this are not known. In the absence of more reliable data and identification of risk factors for each country, it is not possible to give very specific country based countermeasures for road safety. It would be adequate at present to focus on measures that have international validity and are known not to have negative side-effects.

Ott, Wiechel et al. (2012) examined of head injuries in the Pedestrian Crash Data Study (PCDS) indicates that many pedestrian head injuries are induced by a combination of head translation and rotation. The Simulated Injury Monitor (SIMon) is a computer algorithm that calculates both translational and rotational motion parameters relatable head injury. The objective of this study was to examine how effectively HIC and three SIMon correlates predict the presence of either their associated head injury or any serious head injury in pedestrian collisions.

Kawabe, Asai et al. (2012) studied the Pedestrian crashes are the most frequent cause of traffic-related fatalities worldwide. The high number of pedestrian accidents justifies more active research work on passive and active safety technology intended to mitigate pedestrian injuries. Post-impact pedestrian kinematics is complex and depends on various factors such as impact speed, height of the pedestrian, front-end profile of the striking vehicle and pedestrian posture, among others.

Jayalakshmi, Sangakavi et al. studied an active safety systems hold great potential for reducing accident frequency and severity by warning the driver and/or exerting automatic vehicle control ahead of crashes. The research presents a novel active pedestrian safety system that combines sensing, situation analysis, decision making, and vehicle control. The sensing component is based on stereo vision, and it fuses the following two complementary approaches for added robustness: (1) motion-based object detection, and (2) pedestrian recognition. The highlight of the system is its ability to decide, within a split second, whether it will perform automatic braking or evasive steering and reliably execute this maneuver at relatively high vehicle speed (up to 50 km/h). The researchers obtained a significant benefit in detection performance and improved lateral velocity estimation by the fusion of motion-based object detection and pedestrian recognition.

Sharma and Landge (2012) studied that pedestrians are one of the Vulnerable Road User, have become more susceptible to traffic crashes with the rapid growth of motor vehicles in India. In terms of pedestrian crashes on a worldwide scale over 4, 00,000 pedestrians are killed every year and over 10,000 pedestrians are killed on Indian roads. To date, only limited research has been undertaken to develop the accident prediction model for pedestrian accidents. The research focuses on pedestrian crash prediction model on Indian Rural Highway (NH-6). Accident data collected between 2005-09 over a stretch of

100 km of road length are used for modeling. The Negative Binomial method was used to model the frequency of accident occurrence. The Akaike Information Criterion (AIC) is used to measure the relative goodness of fit. The candidate set of explanatory variables are: Total Traffic volume (AADT), Lane width (LW), Shoulder width (SW), and access density (AD). It is observed that access density, Shoulder width and Lane width have significant impact on pedestrian safety.

Singh and Suman (2012) selected a stretch of NH-77 from Hajipur to Muzaffarpur. The accidental data was collected for last eleven years, 2000-2010 from the Police Stations where FIR was lodged. The collected data were analyzed to evaluate the effect of influencing parameters on accident rate. Heavy vehicles like truck are involved in maximum number of accidents on the selected stretch. It was estimated that a heavy vehicles is involved in almost 48% accidents followed by two-wheelers 16%, car 12% and bus10%. There was no definite trend for monthly variation in accident on a study section but the accidents in month of July and January are generally higher. Accident rate in terms of number of accidents per km-year increases with traffic volume. But the accidents rate in terms of number of accident per million-vehicle kilometer-year (MVKY) decreases with increase in traffic volume. Accident rate per MVKY increases during the study year, whereas both injury and fatality rate per MVKY show a declining trend over the study period. The developed model for accident prediction represents that the number of accidents per-km-year increases with AADT and decreases with improvement in road condition.

Milton and Mannering (1996) from their study the use of accident severities in safety programming has been often limited to the locational assessment of accident fatalities, with little or no emphasis being placed on the full severity distribution of accidents. Using accident data from Washington State, a Logit model is projected. In this model volume related variables such as ADT per lane, truck percentage, interchanges per mile and weather effects were best modeled as random-parameters—while roadway characteristics such as the number of horizontal curves, number of grade per mile and pavement friction are best modeled as fixed parameters. The study showed mixed Logit model as a practical tool in highway safety program.

Abdel-Aty and Wang (2006) established that accident prediction models (APMs) have been widely used in ranking of accident sites with the aim of recognizing accident black spots. Before this study black spots had been achieved by using a univariate count data or a multivariate count data model for modeling the number of accidents at different severity levels concurrently. Therefore, the two-stage mixed multivariate model is an encouraging tool in predicting accident frequency according to their severity levels.

McComas, MacKay et al. (2002) confirmed that about Sixty percent of pedestrian accidents involved children under the age of 10 years and mainly due to the children not crossing intersections properly. The reason of this research study was to evaluate a virtual reality (VR) program that was intended to educate children about how to cross intersections safely.

In India safety strategies must emphasis on issue regarding safety of VRUs, especially Pedestrians, constitutes to about 40% of total road users and their interaction with traffic is highly inevitable due to mixed

traffic situation in India. The situation even deteriorates due to more technically advanced vehicle introduced day by day and drivers have little or no traffic training to handle these vehicles, using comparatively very less roadways and enforcement administration structures. Developed nations such as the U.S., Canada, and Australia, etc., have done

Table 1: Choice of Explanatory Variable and the Key Findings in the Literature

Sr. No.	*Explanatory Variable*	*Reported Studies*	*Key Findings*
1	Traffic Vol. (AADT)	Chikkakrishna, Parida et al. (2013)	Accidents/km-year increases with AADT
		Chikkakrishna, Parida et al. (2013)	Occurrence of crashes increases with traffic volume
		Prajapati and Tiwari (2013)	The mid-blocks with heavy traffic have highest traffic crash risk
		Dinu and Veeraragavan (2011); Desai, Minesh et al. (2010)	Captures daily variability in traffic vol. and significantly affects accident rates.
2	Percentage of Trucks	Singh and Dhattarwal (2004); Singh and Suman (2012)	Heavy vehicles were found involved in 38.9% to 48% accidents respectively.
		Sharma and Iyer (2011)	Every 2% rise in heavy veh. traffic may increase motorcycle accidents by 28%.
			Percentage of heavy vehicles in traffic have significant impact on safety of motorcyclists
		Chennaiah, Dinu et al. (2007)	Fatal and major accidents have positive association with heavy commercial vehicles.
		Dinu and Veeraragavan (2011)	Proportion of trucks was found major cause of accidents during night-time.
	% of cars	Srinivas et al. (2007)	Fatal and major accidents have negative relationship with % of non-motorized vehicles and cars
	% of 2-wheelers	Dinu and Veeraragavan (2011)	Increase in motorized two-wheelers resulted in more day time accidents.
3	Road Length	Dinu and Veeraragavan (2011)	Increase in length of highway segment resulted in an increase in accidents.
4	Speed and its variance	Landge et al. (2006)	Identified positive relationships between speed and fatality rate.
		Landge (2013); Sharma et al. (2014)	Speed variance is significant for safety of motorcyclists and high speed cars.
		Landge (2013);	Positive correlation between accidents and speed
		Robert et al. (2007); Rokade et al. (2010)	Observed a negative correlation between number of accidents and speed.
5	Road/lane width	Sharma and Landge (2013, 2012)	Addition of 1 m lane width may reduce the pedestrian accidents by 50% and heavy vehicle accidents by 30%.
		Jacob and Anjaneyulu (2013)	Increased carriageway width beyond certain limit, results in higher speeds and higher unsafe overtaking manoeuvre resulting accidents.
		Srinivas et al. (2007)	Presence of wider lane increases the likelihood for accident

Sr. No.	*Explanatory Variable*	*Reported Studies*	*Key Findings*
		Prajapati and Tiwari (2013)	Roads with broader road width and more number of lanes enhances the risk of fatal accidents for pedestrians and bicyclists
6	Shoulder width and type	Jacob and Anjaneyulu (2013)	Influence of shoulder width on accidents is twice as that of carriageway width and reduction in shoulder width produces more injury crashes than fatal crashes
		Sharma et al. (2013); Sharma and Landge (2012, 2013); Sharma et al. (2014)	1 m extra shoulder may reduce pedestrian accidents by 50% and motorcycle accidents by 24% and additional 0.25 m shoulder on either side of road reduce heavy vehicle accidents by 25%. Shoulder width deficiency has significant influence on accidents of high speed cars.
		Fletcher et al. (2006)	Shoulder width up to 1.5 m reduces the accidents by 28% but a further increase reduces the rate of reduction, but a marked decrease in accidents was indicated at 3 m or more width.
		Padmanaban et al. (2010)	24% occurred due to insufficient shoulder width.
7	Road with median	Jayachandran and Anantharajan (1994)	% of road with median was negatively correlated with number of accidents.
		Prajapati and Tiwari (2013)	Urban road Segments with medians have higher risk compared to those without medians.
8	Drive way density/ minor access/ median openings	Rajaraman (2009)	U-turns close to services were black spots for accidents involving trucks
		Sharma and Landge, (2013, 2012); Sharma et al. (2014)	Access density has significant influence on accidents of high speed cars. Each added access point/km of road length may enhance heavy vehicle accidents by about 60% and pedestrian accidents by 80%.
		Chikkakrishna et al. (2013)	Probability of occurrence of crashes increases with Access Roads and Median opening
		Prajapati and Tiwari (2013)	On urban mid blocks risk reduces as number of junctions increase
		Padmanaban et al. (2010)	34% of front-rear collisions occurred at gaps in medians/ junctions
9	Road marking	Fletcher et al. (2006)	Sections with good road marking have a lower accident rate than those with fair and poor markings.
10	Road Side friction	Fletcher et al. (2006)	Accidents were less at low or medium side friction but a large jump in accidents was observed for high side friction.
11	Road and shoulder condition	Fletcher et al. (2006)	An increase of 65% in fatal and 28% in severe injury accidents on pavements with poor condition.
		Singh and Suman (2012)	Number of accidents per-km-year decreases with improvement in road condition.
		Jacob and Anjaneyulu (2013)	Shoulder condition is positively correlated with accidents.
13	No. of curves and gradients	Jacob and Anjaneyulu (2013)	23% increase in Accident rate for each additional curve but increase after certain number reduces accidents.
		Hills et al. (2002)	Accident rates increase on steeper gradients.

Table 2: Summary of Existing Models Applied to Indian Conditions

Sr. No.	*Model Type*	*References*	*Strength vs Limitation*
1	Models based on Smeed's Formula	Valli 2005 Ponnaluri 2012 and Vijya, 2013	Macro-models, correlate number of accidents in a road network with the population of the area and number of vehicles. But these models provide no cause-effect relationship for various accident related factors and therefore suggest no guideline for safety improvements on a particular road. Therefore, very limited applications.
2	Multiple Linear Regression Models	Desai and Patel, 2011; Rokade et al., 2010; Singh and Suman, 2012	Model development and interpretation is very simple. But the assumption of normal distribution of accidents is not correct.
3	Baseline Models	Fletcher et al., 2006	Simple Models, use only one-two explanatory variables, effect of other variables incorporated through AMFs, flexibility in defining baseline conditions. The problem with this model is that a small sample size can affect the robustness and statistical power of the model. Model may become biased, when the sample mean value is very low
4	Poisson model	Fletcher et al., 2006; Hills et al., 2002; Jacob and Anjaneyulu, 2013;	Basic prediction model; easy to predict, better represents the actual process of accident occurrence. Poisson Model can not manage over and under-dispersion as it assumes mean is equal to variance
5	Negative binomial model	Landge et al., 2006; Robert et al., 2007; Sharma and Landge, 2012; Lord, 2006	Probably most widely used model, Easy estimation, can handle over dispersion of data, but cannot handle under-dispersion; influenced by low sample mean and small sample size
6	Zero-inflated Poisson and negative binomial	Sharma et al., 2013; Sharma and Landge, 2013; Jacob and Anjaneyulu, 2013	Manages data having a great number of zero-accident observations. Can create theoretical discrepancies; can be influenced small sample size,
7	Poisson-Weibull Bayesian models	Chikkakrishna et al., 2013	Can be used for different kinds of data, can handle over dispersion of data, reported inferior than NB models.
8	Random-parameters models	Dinu and Veeraragavan, 2011	More effectively handle fixed parameter models in accounting for undetected heterogeneity Complex procedure; not always improve predictive competence
9	Hierarchical/ Multilevel Models	Fletcher et al., 2006, Lord and Mannering, 2010	Simple, sound, non-parametric method and assumptions based on distributions of the accident data are not required. Can manage temporal, spatial and other correlations Poorly estimated coefficients and wrong inferences if the possible classified structure of the data is not considered, correlation outcomes can be hard to understand
10	Back Propagation Neural Network Model	Sikka 2014, Xie 2007	Non parametric approach; better statistical fit than traditional models Complex approximation procedure; may not be transferable to other datasets; may not have interpretable parameters

advancement in the area of pedestrian safety in recent years. India is undergoing growth in terms of motorization and now the time has come to begin addressing pedestrian's safety necessities to a larger magnitude.

FURTHER STUDY IN THE LINE OF RESEARCH

From the literature review it can be very clearly seen that it's very important to study and find out the contributing factors and further remove them so that Road accidents fall. The basic factors which are extracted from the review of literature, that cause pedestrian accidents are driver condition, vehicle condition, road condition, road users other than the motorist such as bicyclist, rickshaw, and stray animals, etc. The basic purpose of study is to reduce the pedestrians' accidents on Indian Roads. There is a dire need to study non-urban sections of highways in India to identify the significant factors of pedestrian accidents on Indian roads and to develop a predictive model for the same. The study would also assess the traffic safety of Indian roads and recommend suitable improvement.

The data used for this study will be collected over a number of non-urban sections of roads in Haryana. Further a detailed data Collection of accident along with causes from record of traffic police, FIRs, NHAI, PWDs, toll booths and other concerned agencies will be rigorously collected. This data will be categorised and analyzed to determine the various significant factors leading to pedestrian accidents on Indian roads. Using Factor analysis the most critical factors leading to pedestrian accidents would be derived. Further multiple linear regressions would be used to develop quantitative relationship between the various significant variables. Suitable suggestions can be suggested on the bases of prediction model to reduce the high number of pedestrian accidents in the study area.

SOURCE OF DATA FOR THE STUDY

Three different data collection techniques were applied during this project.

For traffic volume data on roads NHAI and State agencies will be contacted and their traffic count registers were obtained. Though the traffic volume data is collected in every 6 months on various counting points but the registers supplied were not updated and there are Gaps which need to be supplemented by traffic volume counts on the identified sections. The FIR data of vehicle accidents was collected from various police headquarters and police stations. This will be a significant source of data. The data of spot speeds will be collected by using radar gun. Road Geometrics will be checked for roads under study (Table 2).

CONCLUSION

The research paper presents an exhaustive review on pedestrian safety while delineating critical factors why this study is necessary. This study also offers the blueprint of an empirical study based on statistical tools and technique and multi vitiate analysis to figure out the most important factors with their factor loading which will help the researcher to exactly know the important factors leading to accidents and devise scientific methods to prevent them.

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Affective, Continuance and Normative Commitment Among Knowledge Based Workforce

Its Relationship and Impact on ITES Industry

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Abstract

There is positive relationship between commitment and type of employee. The result shows high affective and normative among knowledge workers. Using structural equation model, we find a strong relationship between affective, normative and continuance among middle management. The sample was collected from IT and ITES industry of National Capital Region, total 50 managers of technical process. The study reflects high level of emotional attachment among knowledge workers as compared to need to or ought to.

Keywords: *Loyalty, Emotions, IT Industry, Engagement and Psychological Contract.*

BACKGROUND

Be loyal to the company, and the company will be loyal to you, a mutual relationship as reflected in reserach (Mowday, Porter, & Steers, 1982), obviously understates the complexity involved in a person's attitude and behaviour towards employer. Organizational commitment has been defined as a

psychological state that binds an employee to an organization, thereby reducing the incidence of turnover (Allen & Meyer, 1990), and as a mindset that takes different forms and binds an individual to a course of action that is of relevance to a particular target (Meyer & Herscovitch, 2001). Mowday, Porter & Steers (1982) outlined the distinction between attitudinal commitment, a mindset in which individuals consider the congruency of their goals and values with those of their employing organizations, and behavioural commitment, the process by which individuals past behaviour in an organization binds them to the organization. In multidimensional model of organisational commitment, it has been conceived that attitudinal and behavioural commitment, were complementary and integral.

With almost every industry struggling with employee retention, there seems to be heavy need in understanding that every job has two contracts- one employment contract and second psychological contract. Employment contract defines the norms of job, exchange of pay for service and documentation of essentials whereas psychological contract sets commitment, satisfaction and stability in the job. Psychological contract remain different for each individuals who starts evolving after joining, leaves a deep impression in decision making and eventually if worked out well by employee and employer fetches long association in terms of commitment and retention. The contract is an intangible contact with different meaning to different employees. In case there is a negative relationship between affective, normative and continuance commitment, a member intends to voluntarily leave whereas in case of high relationship between affective, normative and continuance commitment, a candidate intends to continue. Therefore, low affective, normative and continuance commitment increases the likelihood to exit while high between affective, normative and continuance commitment increases the likelihood to stay, in the organisation.

INTRODUCTION

Organisational Commitment is an attachment employee feels towards an organization. It may be measured by the degree to which an individual is ready to adopt organizational values and goals. It may be measured by the degree to which an employee fulfils his/her job responsibilities. And it may also be measured by behaviour observed in the workplace.

Meyer and Allen's (1991) three-component model of commitment was created to argue that commitment has three different components that correspond with different psychological states.*Affective commitment* represents emotional attachment to an organization. If one hashigh level of affective commitment, he or she enjoy relationship with organization and likely to stay because his or her own emotional connect to the workplace. *Continuance commitment* represents degree which onebelieves that leaving the organization would be costly. His or her decision to stay was need based on cost benefit analysis, the day cost increases they may leave. *Normative commitment* represents degree to which one has self belief, that staying in the organisation is right thing to do. The decision making was on the basis of positioning and strong feeling for organisation to stay. The three components have significant effect on retention, work performance, and member well being. The difference between affective commitment and continuance commitment is that employees high in affective commitment stay with the

organization because they want to, while employees high in continuance commitment stay because they have to (Meyer et al., 1989).

Table 1: Three Components of Commitment

Component	*Meaning*	*Behaviour*	*Consequence*
Affective	Want to stay	Emotional	Citizenship behaviour
Continuance	Must stay	Need	Employee engagement
Normative	Ought to stay	Feeling	Job Satisfaction

Knowledge based work can be differentiated from other forms of work by its emphasis on 'non-routine' problem solving that requires a combination of convergent, divergent, and creative thinking. Knowledge Based Workforce directly connects to the concept of human capital wherein the nature of work involves more technical know-how. In India, generally Information Technology (IT) and Information Technology enabled services (ITES) both are considered into knowledge based industry. This industry is primarily service oriented, wherein the creation and retention of knowledge in terms of manpower is wealth.

LITERATURE REVIEW

OC was defined by great number of researchers, but the first time Becker (1960) defined it as the availability of each individual to engage in a consistent and continuous way into organization's activities. Another approach was proposed by Steers (1977), according to whom OC represents a powerful identification of each individual to the organization and his implication in its activities. Hofstede (1980) found that affective commitment was the most desirable form of commitment but ethnocentric and normative commitments might be better predictors than affective commitment in collectivist cultures that emphasize strong social ties (and obligations) and in cultures characterized by uncertainty avoidance where loyalty was considered a virtue. Wiener (1982) observed the presence of personal sacrifice and lack of alternatives for the development of OC. Allen & Meyer (1990) explained that Organizational commitment could be described as a psychological state that keeps the individual in the organization. This definition only indicates a forceful binding of an individual to an organisation and may be as a result of some contractual bindings. Researchers have also identified a third dimension of organizational commitment, which they describe as normative commitment. This form of commitment concerns a feeling of (moral) obligation to remain in the organization. Later on Morrow (1993) sustains that OC is the psychological and emotional attachment of individuals to the organization. Similar to the above definition by Researchers also defined commitment as a force that binds an individual to a course of action of relevance to one or more goals. However, Narteh B (2009) also particularly defined employee commitment as a felt state of employees' attachment to their organizations, including their willingness to internalize the values of the organization and abide by the rules and regulations therein. The importance of the employee's commitment for reaching the highest grade of quality of services was emphasized by the theorists and also by the practitioners (Heskett et al., 1994; Larson & Sasser, 2000). Later, Greenberg and Baron (2000) define OC as 'the measure in which an individual identifies itself and is implicated in the organization or the extent in which the individual is willing to leave' (Greenberg &

Baron, 2000). Even so, the most representative definition of OC was enunciated by Porter et al. (1974) who say that OC is 'the strength of an individual's identification with and involvement in a particular organization', and it is characterized by three factors: 'the belief in and acceptance of organizational goals and values; a willingness to exert effort; Employees' Organizational Commitment Challenges maintain membership of the organization' (Porter et al., 1974).

Most of the studies conducted on organizational commitment have focused on private sector organizations. Few studies have examined public sector employees (for exceptions see Balfour and Wechsler, 1996; Goulet and Frank, 2002). Comparative studies of both sectors have consistently demonstrated that private sector employees exhibit greater organizational commitment than public sector employees. Then later it was argued by Buchanan (1974), who found that public sector managers were less committed than private sector managers. He argued that broad public sector agencies goals lead to weak performance-outcome link. Therefore, managers in the public sector identify less with organizational goals as compared to private sector.

Many factors influence employee commitment. These include commitment to the manager, occupation, profession, or career (Meyer & Allen, 1997).Research also found that commitment was significantly related to trust, job involvement, and job satisfaction. Angle & Perry (1981) uncovered a relationship between commitment and turnover. Wiener & Vardi (1980) reported positive correlations between commitment and job performance. Research has also linked organizational commitment to leadership behaviors that are relations-oriented and task-oriented. Jermier & Berkes (1979) discovered that employees who were allowed to participate in decision-making had higher levels of commitment to the organization. DeCotiis & Summers (1987) found that when employees were treated with consideration, they displayed greater levels of commitment. Bycio, Hackett, & Allen (1995) reported positive correlations between the leadership behaviours of charisma, intellectual stimulation, individualized consideration, and contingent reward and affective, continuance, and normative commitment. Concerning withdrawal behaviours, research has focused primarily on the direct effects of job satisfaction and commitment, with results being, for the most part, weak to moderate (Hackett, 1989; Mayer and Schoorman, 1992; Terborg et al., 1982). impacts of employee engagement on organizational commitment, Schaufeli and Salanova (2007) studied work engagement and found that when engagement level increases the level of organizational commitment increases as well and, moreover, enhances job satisfaction, higher performance and reveals a greater demonstration of personal ideas, higher attendance and lower turnover rates, improved health and security, proactive behavior and learning motivation. Several studies have suggested that committed employees perform better than non-committed ones.

Sinha (1977) in a survey of Indian organizations found that a large percentage of studies on OC considered commitment of managers to be one of the important issues facing organizations. Punekar and Haribabu (1978) noted that adequate study has not been done on value orientation and suggested that commitment was basically a value orientation of the individual or group and comprises of values namely 'performance value' and 'discipline value'. Organizational

identification and generalized values of loyalty and duty are viewed as immediate determinants. Thus commitment can be influenced by both personal dispositions and organizational interventions. He also identified three qualitatively different types of loyalty like 'blind loyalty', 'moral obligation', and 'balanced commitment'. Becker and Billings (1993) discussed OC in terms of four dominant profiles – 'locally committed', 'globally committed', 'committed' and 'uncommitted'. Newman and Krzystofiak (1993) studied the negative impact of mergers/acquisitions and found in part to be because of misinformation. Cameron (1994) studied the effects of lay-off and downsizing on OC and found that the results were based on the perception of the fairness of lay off. McCaul et al. (1995) found that the OC could be conceptualized as employee's global attitude towards the organization.

OBJECTIVE OF THE STUDY

- To identify most important component of three-factor model of Organisational Commitment Behaviour among knowledge based employees.
- To identify relationship among each component and model it with reference to knowledge based employees in Information Technology Enabled Services (ITES) industry.

RESEARCH MODEL AND HYPOTHESIS

On the basis of objective defined above, we further elaborate an associations between affective, normative and continuance commitment behaviour among knowledge workers. We draw a research model that emerges from the above literature review. Figure 1 shows that Knowledge based employees build a positive association with commitment behaviours and all types of commitment are closely associated with each other.

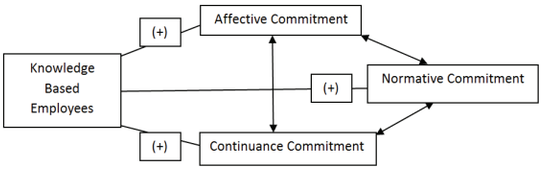

Figure 1: Association between Three Commitment Behaviours and Knowledge Based Employee in ITES Industry

Research has found a consistent positive association between affective and normative commitment (Meyer & Allen, 1997; Meyer et al., 1989), few authors further argued that although affective and normative commitment are positively associated, this does not mean that continuance commitment is redundant. Continuance commitment, however, can also refer to the material sacrifices of leaving the job. People may have, for example benefits, which make them to believe that they are in the organization because they need to do so. These beliefs, however, can be attenuated by factors that can change individuals' attitudes (Meyer & Allen, 1997).

H_1: There is a strong association between affective and normative than continuance for knowledge based employees.

Few researchers have found that normative commitment has weak associations with several variables that usually does notcorrelate strong with affective commitment (e.g. distributive justice), which in turns reflects some discriminant validity of the normative commitment scale. However, normative commitment seems to capture something different that affective commitment, and

thus, may be affected by other factors that can influence the two other types of commitment to the organization (Allen & Meyer, 1990).

H_2: There is a strong association between affective and continuance than normative for knowledge based employees.

According to Allen and Meyer (1990), affective, continuance, and normative commitment refer to different dimensions of the same phenomenon. Affective commitment refers to the employees' identification with, involvement in, and emotional attachment to the organization. Continuance commitment refers to the employees' recognition of the costs associated with leaving the organization. Normative commitment refers to the employees' sense of loyalty or moral obligation toward the organization. Solinger et al., (2008), nevertheless, argue that such three dimensions may be different types of commitment rather than dimensions of the same construct. Because affective, continuance, and normative commitment are conceptually different, it is not that surprising that they predict different behaviours (Solinger et al., 2008).

H_3: There is a positive relationship among affective, normative and continuance commitment behaviour of employees at middle level management.

RESEARCH METHODOLOGY

The research design is a non-experimental cross-sectional field study using survey methodology. The technique of sample collection was judgemental. 50 employees working into various profiles of ITES industry were chosen.The sample was from Noida at middle level management. On an average, number of experience by each employee is 10 years, maximum to 16 years and minimum of 5 years. The sample was heterogeneous in age, gender, type of work and experience.The questionnaire was easy and understandable, handed over to each respondent with the prior permission, during office hours. The originalsurvey contained 35 items, on a scale of a seven point agreement-disagreement Likert format, with 1 = stronglydisagree and 7 = strongly agree.

MEASURES

Organizational commitment. In this study, affective, continuance and normative organizationalcommitment are measured using Allen and Meyer's (1990) scale. This scale consists of 8 items for each one of the organizational commitment dimensions. Weused these scales because previous studies report high reliability estimates (usually alldimensions' Cronbach's alpha > 0.7) and there is reasonable evidence of their construct validity. In sum, the survey contained 24 questions but only 19 were used togauge organizational commitment, as 6 were not much suitable to ITES Industry.

RESULTS AND FINDINGS

In our results also the KMO and Barlett Test is adequate enough to proceed further with the test. On all dimension, Cronbach's alpha > 0.7, exactly .713 which is represent reasonable strength in construct.

Table 2: KMO and Barlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.713
Bartlett's Test of Sphericity	Approx. Chi-Square	651.866
	df	171
	Sig.	.000

Table 3: Extraction Method: Principal Component Analysis

Total Variance Explained						
Component	*Initial Eigenvalues*			*Extraction Sums of Squared Loadings*		
	Total	*% of Variance*	*Cumulative %*	*Total*	*% of Variance*	*Cumulative %*
1	6.904	36.339	36.339	6.904	36.339	36.339
2	2.487	13.090	49.428	2.487	13.090	49.428
3	2.186	11.504	60.932	2.186	11.504	60.932
4	1.441	7.582	68.514	1.441	7.582	68.514
5	1.171	6.163	74.677	1.171	6.163	74.677
6	.862	4.537	79.214			
7	.788	4.146	83.361			
8	.651	3.426	86.787			
9	.532	2.800	89.587			
10	.409	2.151	91.738			
11	.364	1.917	93.655			
12	.273	1.436	95.091			
13	.229	1.206	96.297			
14	.215	1.129	97.426			
15	.178	.935	98.361			
16	.097	.510	98.871			
17	.095	.500	99.371			
18	.067	.354	99.725			
19	.052	.275	100.000			

The total variance is explained with 5 components with 74.6% of total extraction.

Table 4: Extraction Method: Principal Component Analysis

Component Matrix[a]					
	Component				
	1	*2*	*3*	*4*	*5*
Family					.800
Emotion	.633				
Meaning	.597	.552			
Belongingness	.625	.506			
Loyalty	.724				
Proud		.577			
Happy	.621	.504			
Real	.625			.564	
Position line up	.588		.677		
Disrupt life					
Costly	.652				
Necessity					
Sacrifice	.647				
No obligation	.741				
Do not feel	.675				
Guilty	.691				
My loyalty	.685		-.572		
Obligation	.693				
Great deal	.536				
a. 5 components extracted.					

The component matrix explains five major components (Table 4) within which 19 factors are explained. These factors basically include family, loyalty and no obligation at highest level followed by sacrifice, guilty and obligation. To establish relationship between variables, factorisation through data reduction

was done, which in turn merged 19 factors into 5. In order to establish a SEM model, the data is always processed through principal component matrix as the data is consolidated and reduced.

Further to test hypotheses, Structural equation Modelling is used as a tool. The CMIN/DF is 2.727, which shows that the factors are in well fitted in model.The variables are showing appositive relationship with each other. As shown in Figure 1, the relationship among factors can be only studied only on the basis of their goodness of model fit index.

Table 5: Goodness of Model Fit Index

CMIN

Model	*NPAR*	*CMIN*	*DF*	*P*	*CMIN / DF*
Default model	66	569.953	209	.000	2.727
Saturated model	275	.000	0		
Independence model	44	1004.383	231	.000	4.348

Table 6: Shows the Quantum of Relationship between Each Commitment

Result 1: Correlations: (Group number 1 - Default model)

			Estimate
Normative	<-->	Affective	.723
Normative	<-->	Continuance	.778
Affective	<-->	Continuance	.670

Hypothesis 1 predicts a strong association between affective and normative commitment for knowledge based employee. In knowledge based industry the division of labour is always on the basis of specialisation which ensures an individual interest.

Hypothesis 2 predicts a strong association between affective and continuance for knowledge based employees. The hypothesis holds true. In knowledge based industry, the jobs are generally project based wherein the intensity of commitment is higher than routine hobs, because an individual role is integral for over all completion of the project.

Table 7: Shows the Association between All Three Commitments

Result 2 : Covariance: (Group number 1 – Default model)

			Estimate	*S.E.*	*C.R.*	*P*	*Label*
Normative	<->	Affective	.723	.068	10.625	***	
Normative	<->	Continuance	.778	.058	13.329	***	
Affective	<->	Continuance	.670	.078	8.582	***	

Hypothesis 3 predicts a strong association between all three types of commitment. At middle management level, their co exists a strong connect between – affective, normative and continuance. The close relationship among all is evident from Table 6, where in P value is significant.

DISCUSSION

In explaining the significance of organizational commitment, Meyer & Allen (1997) refer to Morrow & McElroy's (1993) and developed a framework that was designed to measure three different types of organizational commitment:

(a) Affective commitment refers to employees' emotional attachment, identification with, and involvement in the organization. Employees with a strong affective commitment stay with the organization because they want to.

(b) Continuance commitment refers to employees' assessment of whether the costs of leaving the organization are greater than the costs of staying. Employees who perceive that the costs of leaving the organization are greater than the costs of staying remain because they need to.

(c) Normative commitment refers to employees' feelings of obligation to the organization. Employees with high levels of normative commitment stay with

the organization because they feel they ought to.

According to the results, relationship between affective and normative vis-à-vis affective and continuance has strong association. In a way it reflects that ITES industry create opportunities for employees to involve and participate. Reports have also proved that IT and ITES industry have also taken many innovative practices and initiatives to keep up the employees' higher motivation to stay. In other words, higher the attachment of employee longer is the stay with organisation. Also there is a strong association between normative and continuance, which reflects the strong and firm policy framework of organisation which intends to build a long term association of employee to the firm, which in turn helps retention. To summarise, knowledge based employees are highly retained by employee engagement initiatives by the company and their policies. So the organisation which establishes a strong strategic orientation with employee friendly practices has proved to be one of the factors of employee retention and commitment.

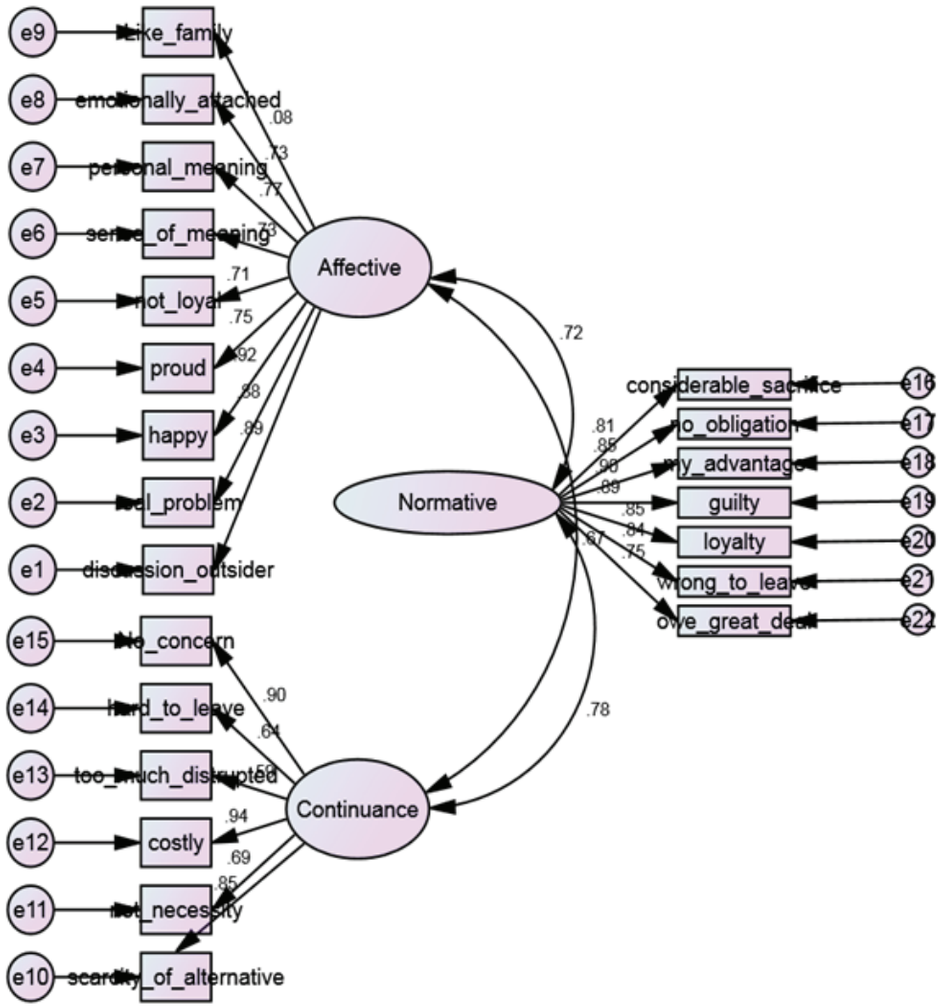

Figure 2: Structural Equation Model of Knowledge Workers in ITES industry

FUTURE RESEARCH

The study can be further extended to other industries as well. IT and ITES industry has its own constraint as the types of work is very specialised and non routine wherein generally the ownership is high, so it can be further tested and studied in reference to regular and routine task as well. Commitment entails many factors, which can also be taken into consideration, while doing future researches. The study covers only middle management employees, thus leaves a huge scope for studies into other level of management.

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Construction of Optimal Portfolio Using Sharpe's Single Index Model and Markowitz Model

An Empirical Study on Nifty 50 Stock

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Abstract

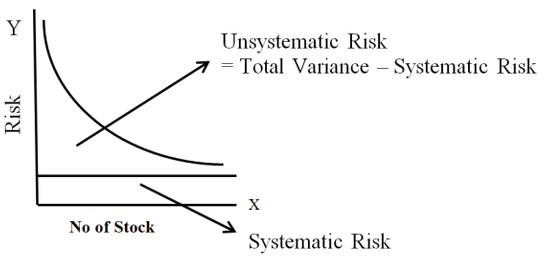
The main focus of this research is to construct an optimal portfolio in Indian Market with the help of Sharpe Single index model. The construction of an optimal portfolio has become increasing challenging in recent years, as investors expect to maximize return and minimize risk from their respective investment therefor a good combination of portfolio will give maximum return for a particular level of risk. An investor need to have proper knowledge of security analysis and portfolio theory for making corrective investment decision. In 1950, Markowitz who was considered the father of modern portfolio theory, mainly because he is the first person who gave a mathematical model for portfolio optimization and diversification. Modern portfolio theory (MPT) is a theory of finance that attempts to maximize portfolio expected return for a given amount of risk, or minimize the risk for a given level of expected return. Markowitz theory advise investors to invest in multiple securities rather than pulling all eggs in one basket. In order to overcome the Markowitz Model, William Sharpe, tried to

simplify the process of data inputs and reaching a solution, by developing a simplified variant of the Markowitz model. In the Sharpe's model, the desirability of any securities inclusion in the portfolio is directly related to its excess return-to-beta ratio. The proposed method formulates a unique cut off point (Cut off rate of return) and selects stocks having excess of their expected return over risk free rate of return surpassing this cut-off point. Then they are ranked from highest to lowest order and then the Percentage of investment in each of the selected security is then decided on the basis of respective weights assigned to each security. In this research, all 50 stocks of NSE NIFTY 50 Index are taken into consideration and & Weekly data of all these stock for the period of September 14,2016 to September 15.2017 have been considered which further converted into annually. Further the proportion of investment of each 50 stock in the optimal portfolio was also calculated and along with risk and return of the selected stock are also been calculated with the help of Markowitz Model This study gains more importance as stocks included in Nifty 50 represent majority of market capitalisation of NSE. The Nifty 50 hold about 62.9% of the market capitalization of the stocks listed on NSE.

Keywords: *Markowitz Theory, Sharpe's Single Index Model, Optimal Portfolio, Cut Off Rate, Excess Return-to-Beta Ratio, Percentage of Investment, NSE NIFTY 50 Index, Market Capitalization.*

INTRODUCTION

Portfolio is the combination of securities such as stocks, bonds and money market instruments. The process of blending together the broad asset so as to obtain optimum return with minimum risk if called portfolio construction. Investment in more than one security has been discussed always in portfolio management, which includes the security evaluation and the optimal portfolio. To make wise decisions in investment, there is a need for knowledge on security analysis and portfolio management. An investor is always risk-averse so they aim at attaining maximum return with minimum risk. Many investors hold the assets in order to reduce the risk. For this purpose, investor has to construct a portfolio of assets which is an efficient portfolio (minimum risk for a given expected return) which comprises of different classes of assets (stocks). In the year 1950, Markowitz Model state that in order to obtain benefit investors must invest in more than one securities, i.e. diversification help to reduce the risk. The Markowitz Model is based on several assumptions (1) Investors estimate risk on variability of return, (2) Investors are based on expected return and variance of return, (3) If we diversified, Risk will be decreased or reduced. Analyst have the opinion that if more and more portfolio is added, unsystematic risk can be reduced.



In Markowitz Model, a number of information have to be estimated. For example, if a financial institution buys 150 stocks, it has to estimate 11,475, i.e. N (N + 3)/2. Therefore, in order to overcome the Markowitz Model, in 1964, W.E. Sharpe developed a new and simpler model to analyse the portfolio. According to this model. security's return is correlated to a single index which is usually a market index. All securities that are traded

on the exchange will be a part of the market index. Sharpe's Single Index Model (SIM) demands only (3n+2) bits of information. For example, if your buy 50 stocks, the total number of information estimates to (3*50+2), i.e. 150 information whereas it is (n (n+3)/2) bits of information in Markowitz model, i.e. 1325 information's. In Sharpe's Index Model, Stock prices are related to the market index and this relationship could be used to estimate the return of stock. The present paper seeks to construct an optimal portfolio using Sharpe's Single Index model and comparison between Sharpe's Single Index Model (SIM) & Markowitz Model and taking into consideration stocks of Nifty 50. The study is relevant in present times because the not many authors have constructed optimal portfolio showing comparison between Sharpe's Single Index Model (SIM) & Markowitz Model during the period considered for study.

OBJECTIVES OF THE STUDY

1. To Understand the Portfolio theory – Sharpe Index Model & Markowitz Model.
2. To construct an optimal portfolio using stocks listed in NIFTY 50.
3. To see the Comparison between Sharpe's Single Index Model (SIM) & Markowitz Model.
4. To know which Securities are performing well and which are performing low in the market.
5. To calculate respective proportion for each selected stock to be invested in the portfolio for the time period 14 Sept 2016 to 15 Sept 2017.

LIMITATIONS OF THE STUDY

The following are the limitations of the study:

- The study is purely based on secondary data.
- This study is based on Weekly data.
- The results of the study may not be universally applicable.
- Due to time limit only one-year data have been taken.

NEED FOR THE STUDY

Every investor undergoes confusion while selecting securities for his portfolio. He also faces dilemma while deciding about the proportion of investment to be made in each security. To help investors get out of such chaotic situations the Sharpe's Single Index model may be used to construct an optimal portfolio. This helps the investor to find a portfolio that best suits his needs. The present study is undertaken to prove that by applying this model an individual can construct a portfolio with maximum return for a given level of risk.

LITERATURE REVIEW

Tanuj Nandan and Nivedita Srivastava (2017) constructed a portfolio using stocks of NIFTY 50. In the study, it was found to be an easy and simple method to calculate optimal portfolio. In this method, fewer number of variables are used as compared to Markowitz Model. **Dr. S. Poornima and Aruna P. Ramesh (2015)** construct a portfolio using Sharpe Index Model using stock of BSE. In THE study, it was found that only 20 company's stock are chosen to construct a portfolio and yearly price are taken into consideration instead of daily or weekly. **B.N. Dutta (Smriti Mahavidyalaya) and Burdwan (2011)** construct an optimal portfolio empirically taking BSE SENSEX as market performance index and considering

daily indices along with the daily prices of sampled securities for the period of April 2001 to March 2011. **Nalini (2014)** in her study considered 15 stocks of various sectors from S&P index, taking BSE Sensex as market index. It was found that risk can be reduced by diversifying the portfolio. Only four stocks were selected in the optimal portfolio. **Vardarajan,** in his study of 20 stocks from Steel, Banking and Media and Entertainment sector concluded that SIM acts as a tool for portfolio selection and helps investors in taking informed decisions. The stock market is volatile and investors need to regularly monitor and update their portfolio. **M Sathyapriya** construct portfolio using Sharpe Index Model with reference to Infrastructure sector and Pharmaceutical Sector. In this study twenty different stocks listed in NSE picked from Infrastructure & Pharmaceutical industries. **Chintan A. Shah (Assistant Professor, Bhagwan Mahavir College of Business Administration, Surat) 2015,** construct portfolio using Sharpe Index Model with reference Using Sharpe Index Model & Camp for BSE Top 15 Securities. **Andrade, Pratibha Jenifer (2012)** aimed at developing an optimal portfolio of equity of IT sector through Sharpe's Single Index Model. In this study, a sample of six top performing IT companies traded in BSE has been chosen. The data is related to the daily returns of the securities and the market index has been collected through secondary sources. Data has been collected for a period of three years i.e. 2009 to 2011. It was found that the optimal portfolio has been constructed with five companies. **Debasish, Satya Swaroop and Khan, Jakki Samir (2012)** selected a sample fourteen stocks from the various manufacturing sectors like automobiles, cement, paints, textiles oil& refineries and these are traded in the NSE. The daily data for all the stocks for the period Jan 2003 to November 2012 has been considered. Percentage of investment in each of selected stock is decided based on respective beta value, stock movement variance unsystematic risk, return on stock risk free return. Among the fourteen selected companies an optimal portfolio using Sharpe's Single Index Model constituted only three stocks. The proportion of investment to be made was also calculated using Single Index Model.

Thus, the literature survey made for the present study showed that there is enough scope for studying the utility of Sharpe's Single Index Model under the Indian conditions especially considering the securities of companies traded through the BSE which is one of the oldest stock exchange in the world and which is considered as one of the major attractions to any investor, either individual or institutional.

RESEARCH METHODOLOGY

Descriptive and Qualitative research is done and Secondary Data is used for the study. Data has been collected from website like www.nseindia.com, https://in.finance.yahoo.com, http://money.rediff.com and https://in.investing.com. For the current study, Nifty 50 Index is taken into consideration as Market Index. Weekly NSE INDICES and prices of all the 50 stocks of Nifty 50 are taken for the period September 14, 2016 to September 15, 2017 for computing weekly return of each security. The weekly price is calculating by using the formula: $R_i = (R_2–R_1)/R_1$ where R_2 = closing price of week 2, R_1 = closing price of week 1 and R_i = return of stock. The Weekly mean return of all individual stock was calculated using Excel. The Week return is then converted

into annual Return by using Excel formula, i.e. = [(1 + weekly mean) ^52] – 1. For risk-free rate of return 91-day T-bills: 6.1081%* is taken from the RBI website and for Market risk variance of Nifty 50 is been calculated. Beta, Unsystematic Risk, Systematic Risk and Cut-off point is also calculated by using Excel. Securities with their 'Excess Return to Beta' is also been calculated. A number of financial and technical tools has been used for analysing data.

Category	*Present Methodology*
Research Design	› Descriptive › Quantitative
Sources of Data	Secondary, from NSE, RBI, etc. websites, and databases
Sample Population	NIFTY 50 Stock

Sample Companies

Selected Securities are Categorize as per the industry

Sl. No.	*Name of the Industry*	*Company*
1.	Financial Services	HDFC Bank, YES Bank, India Bulls, Induslnd Ltd., ICICI Bank, Kotak Mahindra Bank
2.	Automobile	Maruti Suzuki Eicher Motors
3.	Metals	Hindalco Industries Tata Steel Vedanta Ltd.
4.	Energy	BPCL GAIL (India) Power Grid Reliance Industries IOC
5.	Telecom	Bharti Airtel
6.	Consumer Goods	Hindustan Unilever
7.	Construction	Larsen & Toubro
8.	Shipping	Adani Ports and Special Economic Zone Ltd.
9.	Information Technology	Wipro

Construction of Optimal Portfolio using Sharpe's Index Model

Fischer and Jordan (1995) state that stocks to be included in optimal portfolio are determined on the basis of their 'Excess return to beta ratio.' As per the rule of ranking, security having highest 'excess return to beta ratio 'will be placed in the first position, followed by the security with second highest beta ratio, and so on and so forth. Thereafter a cut-off point will be calculated and all the stock whose 'excess return to beta ratio is above the cut-off point is included in the portfolio. The Steps in Constructing Optimal Portfolio are as follows:

- The Weekly return of the Stocks are calculated by using the formula:

$$R_i = (R_2 - R_1)/R_1$$

where R_2 = closing price of week 2,
R_1 = closing price of week 1,
R_i = return of stock

The Week return is then converted into annual Return by using Excel formula, i.e. = [(1 + weekly mean) ^52] – 1

The variance of all the stocks are calculated by using the formula in Excel = Varp (Number1, Number2).

Where Number 1 and Number 2 are the range of the return of Stock 1 to Stock 50.

- Beta – It is a measure of a security's or portfolio's volatility, compared with rates of return on the market as a whole. Beta is a slope and can take any real value ($\beta \in R$). Beta is nothing but Regression.
- Risk or variance of a security comprises of two components: (a) systematic risk, and (b) unsystematic risk. Variance due to index is the systematic risk and the residual variance is unsystematic risk.

(a) Systematic Risk = βi2 * Market Risk = (βi2σ2m)

(b) Unsystematic Risk = Total Variance – Systematic Risk = σ^2ei

(# Note-Market Risk (σ2m) is the Variance of NIFTY 50)

- The 'excess return to beta ratio' is calculated for each stock included in the study.
- The stocks are ranked in descending order as per the beta ratio (Ri – Rf/β).
- A cut off rate (Ci) is calculated for all the securities using the formula

$$Ci = \frac{\sigma^2m \, \Sigma(Ri-Rf) \, \beta/\sigma^ei}{1+ \sigma^2m \, \Sigma \, \beta i^2/\sigma^ei}$$

- The proportion of each stock to be invested in portfolio is calculated using the formula Wi = Zi / ΣZi

Where Zi = βi^2 / σ^2ei (Ri – Rf / β – C)

DATA ANALYSIS AND INTERPRETATION

Various statistical and financial tools and techniques have been used for optimal portfolio construction using SIM. The data relating to weekly stock prices along with weekly market indices for the period September 15, 2017 to September 14, 2017 have been collected from the website of NSE (www.nseindia.com) and also from (www.yahoofinance.com). Various statistical data such as mean stock return (Ri), mean index return (Rm), variance of individual stock (σ^2i) and market return, beta, systematic risk and unsystematic risk of all the 50 securities have been collected. Data inputs which have been collected are arranged in Table 1. It is found from Table 1 that stocks like Tata motors, Axis bank, Tata motors ltd dry, Cipla Ltd, Coal India Ltd, Techm, Sun Pharma, Dr Reddy, Lupin Ltd. have negative returns. The negative returns may be due to macroeconomic events taking place in the economy such as **Gold prices, Volatility in fuel prices, Performance of the international markets, Government Stabilities Impact, GST Impact**. From the Table 1 It can be seen that majority of securities like Indian Oil Corporation Ltd, GAIL Ltd, HDFC Bank, Tata Motors Ltd DRY, Cipla Ltd, Coal India Ltd, Techm, Sun Pharma, Dr Reddy, Lupin Ltd and many more have beta less than 1. The movement of such securities is slow than market movement, hence called defensive securities. The investors who are risk averse prefer to invest in such securities.

Fischer and Jordan (1995) state that stocks to be included in optimal portfolio are determined on the basis of their 'excess return to beta ratio'. The securities on the basis of 'excess return to beta ratio' are ranked from Highest to Lowest and securities with 'highest excess to beta ratio' is occupies the first position followed by the second position and so forth. As per as the Table 2, it seems that Eicher Moters Ltd occupies the first position followed by LUPIN Ltd in the second position. Finally, the Cut-off Point for each of the securities are also calculated.

As per as Sharpe's Index Model Securities with negative return are ignored in selection portfolio. So, the securities that are selected are shown in Table 3.

Out of total 50 stocks considered for the study, 37 securities have positive return and from that only 6 stocks are eligible for inclusion in optimal portfolio. Once the composition of stocks included in optimal portfolio is determined, the final step is to find proportion of each of these selected stocks in portfolio. The proportion of amount to be invested in each stock gives a fair idea to

Table 1: Data Inputs

Sl. No.	*Security Name*	*Mean Return (Ri)*	*Variance (σ2)*	*Beta*	*Risk Free Rate of return R(f)*	*Market Risk (σ2m)*	*Unsystematic Risk (Total Variance-Systematic Risk)*	*Excess Return (Ri – Rf)*	*βi2*	*Systematic Risk (βi2σ2m)*	*Excess Return to Beta Ratio (Ri – Rf)/β*
1	Eicher Moters Ltd.	0.46475	0.0019726	0.00641	0.061081	0.00020258	0.0019726	0.403674	0.00004110	0.0000000	62.96674801
2	LUPIN Ltd.	-0.32889	0.0014296	-0.00867	0.061081	0.00020258	0.0014295	-0.389968	0.00007518	0.0000000	44.97476965
3	Tata Steel Ltd.	0.97913	0.0017280	0.06412	0.061081	0.00020258	0.0017272	0.918047	0.00411114	0.0000008	14.31803813
4	India Bulls	0.65710	0.0022354	0.08715	0.061081	0.00020258	0.0022338	0.596014	0.00759576	0.0000015	6.838658055
5	GAIL Ltd.	0.44136	0.0011330	0.08659	0.061081	0.00020258	0.0011315	0.380281	0.00749843	0.0000015	4.391562024
6	Vedanta Ltd.	1.16333	0.0027411	0.29102	0.061081	0.00020258	0.0027239	1.102251	0.08469486	0.0000172	3.787495818
7	Dr Reddy	-0.26334	0.0016993	-0.09020	0.061081	0.00020258	0.0016977	-0.324425	0.00813582	0.0000016	3.596774567
8	M&M Ltd.	-0.05154	0.0007722	-0.03333	0.061081	0.00020258	0.0007720	-0.112625	0.00111079	0.0000002	3.379255494
9	Adani Ports and Special Economic Zone	0.49941	0.0017227	0.21033	0.061081	0.00020258	0.0017138	0.438330	0.04423883	0.0000090	2.084008013
10	Wipro Ltd.	0.25777	0.0007310	0.09629	0.061081	0.00020258	0.0007292	0.196689	0.00927119	0.0000019	2.042739036
11	Induslnd Ltd.	0.50548	0.0007155	0.23677	0.061081	0.00020258	0.0007042	0.444403	0.05606063	0.0000114	1.87693108
12	HDFC Bank	0.43336	0.0003884	0.21363	0.061081	0.00020258	0.0003791	0.372280	0.04563858	0.0000092	1.74262546
13	Hindalco Industries Ltd.	0.82588	0.0020601	0.44072	0.061081	0.00020258	0.0020207	0.764803	0.19423358	0.0000393	1.735350707
14	Maruti Suzuki India Ltd.	0.47926	0.0008172	0.24366	0.061081	0.00020258	0.0008052	0.418180	0.05936885	0.0000120	1.716264042
15	Indian Oil Corporation Ltd.	0.51098	0.0014044	0.27152	0.061081	0.00020258	0.0013895	0.449895	0.07372483	0.0000149	1.656928934
16	CIPLA Ltd.	-0.01935	0.0010506	-0.05552	0.061081	0.00020258	0.0010500	-0.080428	0.00308209	0.0000006	1.448727221
17	Power Grid Corp. Ltd.	0.22663	0.0003989	0.13044	0.061081	0.00020258	0.0003955	0.165546	0.01701394	0.0000034	1.269161669

Sl. No.	*Security Name*	*Mean Return (Ri)*	*Variance (σ2)*	*Beta*	*Risk Free Rate of return R(f)*	*Market Risk (σ2m)*	*Unsystematic Risk (Total Variance-Systematic Risk)*	*Excess Return (Ri – Rf)*	*βi2*	*Systematic Risk (βi2σ2m)*	*Excess Return to Beta Ratio (Ri – Rf)/β*
18	HUL Ltd.	0.39344	0.0005964	0.45098	0.061081	0.00020258	0.0005552	0.332362	0.20338451	0.0000412	0.736974546
19	Bharti Airtel Ltd.	0.27320	0.0009897	0.30486	0.061081	0.00020258	0.0009709	0.212115	0.09294245	0.0000188	0.695767067
20	Larsen & Tourbro Ltd.	0.26200	0.0005089	0.29164	0.061081	0.00020258	0.0004916	0.200915	0.08505529	0.0000172	0.68890972
21	Kotak Mahindra Ltd.	0.28356	0.0005768	0.33880	0.061081	0.00020258	0.0005535	0.222475	0.11478593	0.0000233	0.656654626
22	Tata Power	0.15779	0.0011615	0.18985	0.061081	0.00020258	0.0011542	0.096713	0.03604125	0.0000073	0.509430591
23	Ultracemco	0.09708	0.0010726	0.07141	0.061081	0.00020258	0.0010715	0.036001	0.00509969	0.0000010	0.504128225
24	NTPC Ltd.	0.12518	0.0007404	0.15452	0.061081	0.00020258	0.0007356	0.064097	0.02387504	0.0000048	0.414828592
25	TCS Ltd.	0.08103	0.0009729	0.06984	0.061081	0.00020258	0.0009719	0.019945	0.00487711	0.0000010	0.285600233
26	BPCL	0.35849	0.0017472	1.35180	0.061081	0.00020258	0.0013770	0.297406	1.82736713	0.0003702	0.220007513
27	Ambuja Cements Ltd	0.12116	0.0011050	0.35521	0.061081	0.00020258	0.0010795	0.060078	0.12617720	0.0000256	0.169132374
28	ICICI Bank	0.23620	0.0011344	1.35078	0.061081	0.00020258	0.0007647	0.175124	1.82459383	0.0003696	0.129646763
29	Asian Paints Ltd.	0.08997	0.0023673	0.73411	0.061081	0.00020258	0.0022581	0.028891	0.53892099	0.0001092	0.039355282
30	ITC	0.08029	0.0013284	1.1379709	0.061081	0.00020258	0.0010661	0.019208	1.29497767	0.0002623	0.016879009
31	ZEE ENT Enterprises Ltd.	0.05524	0.0010936	0.31225	0.061081	0.00020258	0.0010738	-0.005842	0.09749777	0.0000198	-0.018709213
32	Bank of Baroda	-0.07456	0.0022600	1.05849	0.061081	0.00020258	0.0020330	-0.135644	1.12039367	0.0002270	-0.128149429
33	Bajaj Auto Ltd.	0.03093	0.0006101	0.19684	0.061081	0.00020258	0.0006022	-0.030151	0.03874441	0.0000078	-0.153178332
34	State Bank of India	0.10982	0.0012338	-0.27772	0.061081	0.00020258	0.0012182	0.048739	0.07712969	0.0000156	-0.175494093

Sl. No.	*Security Name*	*Mean Return (Ri)*	*Variance (σ2)*	*Beta*	*Risk Free Rate of return R(f)*	*Market Risk (σ2m)*	*Unsystematic Risk (Total Variance-Systematic Risk)*	*Excess Return (Ri – Rf)*	*βi2*	*Systematic Risk (βi2σ2m)*	*Excess Return to Beta Ratio (Ri – Rf)/β*
35	Tata Motors	-0.25918	0.0015848	1.73376	0.061081	0.00020258	0.0009758	-0.320263	3.00591723	0.0006089	-0.184722063
36	Auribindo Pharma Ltd.	0.00374	0.0021322	0.30707	0.061081	0.00020258	0.0021131	-0.057345	0.09429319	0.0000191	-0.186746168
37	Axis Bank	-0.14583	0.0011333	1.09257	0.061081	0.00020258	0.0008915	-0.206912	1.19371068	0.0002418	-0.189380702
38	Bharti Infratel Ltd.	0.09771	0.0015752	-0.10279	0.061081	0.00020258	0.0015731	0.036633	0.01056535	0.0000021	-0.356397246
39	Oil and Natural Gas Corporation Ltd.	-0.01686	0.0007115	0.21176	0.061081	0.00020258	0.0007024	-0.077940	0.04484339	0.0000091	-0.368055091
40	INFY	-0.15213	0.0006476	0.4997247	0.061081	0.00020258	0.0005970	-0.213209	0.24972475	0.0000506	-0.426653659
41	Sun Pharma	-0.32308	0.0019267	0.895129	0.061081	0.00020258	0.0017643	-0.384165	0.80125628	0.0001623	-0.429172879
42	Bosch Ltd.	-0.03731	0.0009547	0.22532	0.061081	0.00020258	0.0009444	-0.098390	0.05077085	0.0000103	-0.436658754
43	HCLTECH	0.12578	-0.1317553	-0.13176	0.061081	0.00020258	-0.1317588	0.064699	0.01735947	0.0000035	-0.491053462
44	TECHM	-0.02146	0.0012528	0.11810	0.061081	0.00020258	0.0012500	-0.082546	0.01394664	0.0000028	-0.698970404
45	Hero Motcorp Ltd	0.11497	0.0010511	-0.07285	0.061081	0.00020258	0.0010500	0.053892	0.00530706	0.0000011	-0.739765763
46	ACC Ltd.	0.01305	0.0007822	0.05614	0.061081	0.00020258	0.0007816	-0.048028	0.00315140	0.0000006	-0.855542037
47	Tata Motors Ltd DVR	-0.31417	0.0018688	0.34287	0.061081	0.00020258	0.0018450	-0.375248	0.11756043	0.0000238	-1.094430756
48	Coal India Ltd.	-0.19032	0.0009425	0.17078	0.061081	0.00020258	0.0009366	-0.251398	0.02916625	0.0000059	-1.472043803
49	Reliance Industries Ltd.	0.61905	0.0009919	-0.28675	0.061081	0.00020258	0.0009752	0.557973	0.08222576	0.0000167	-1.945848842
50	YES Bank	0.63396	0.0015446	-0.20970	0.061081	0.00020258	0.0015357	0.572880	0.04397412	0.0000089	-2.73190066

Table 2

Sl. No.	*Securities*	*BETA(βi)*	*(Ri-Rf)/βi*	*Var(σ2)*	*(Ri-Rf) *B*	*(Ri-Rf)*B/ (σ2)*	*C.(Ri-Rf) * βi*	*βi^2 / (σ2)*	*C. βi^2/ (σ2)*	*Mrkt.Var (σ2m)*	*C*
1	Eicher Moters Ltd.	0.006410904	62.96674801	0.001972624	0.002587914	1.311914369	1.311914369	0.020835035	0.020835035	0.000202583	0.026565924
2	LUPIN Ltd.	-0.008670814	44.97476965	0.00142956	0.003381339	2.365300529	3.677214898	0.052591721	0.073426755	0.000202583	0.074383428
3	Tata Steel Ltd.	0.064118211	14.31803813	0.001727996	0.05886353	34.06462594	37.74184084	2.379140607	2.452567363	0.000202583	0.728394863
4	India Bulls	0.087153676	6.838658055	0.00223536	0.051944827	23.23778872	60.97962956	3.398004189	5.850571552	0.000202583	1.104441571
5	GAIL Ltd.	0.086593465	4.391562024	0.001132991	0.032929812	29.06448406	90.04411362	6.618256535	12.46882809	0.000202583	1.456285876
6	Vedanta Ltd.	0.291023818	3.787495818	0.002741058	0.320781439	117.0283297	207.0724434	30.89860303	43.36743111	0.000202583	2.233069779
7	Dr Reddy	-0.090198768	3.596774567	0.0016993	0.029262702	17.22044318	224.2928865	4.787746038	48.15517715	0.000202583	2.300022472
8	M&M Ltd.	-0.033328479	3.379255494	0.000772176	0.003753635	4.861109905	229.1539964	1.438515056	49.59369221	0.000202583	2.315711159
9	Adani Ports and Special Economic Zone	0.210330293	2.084008013	0.001722727	0.09219408	53.51635515	282.6703516	25.67953426	75.27322646	0.000202583	2.267971813
10	Wipro Ltd.	0.096287008	2.042739036	0.000731042	0.018938617	25.90633832	308.5766899	12.68215757	87.95538403	0.000202583	2.247170172
11	Induslnd Ltd.	0.236771269	1.87693108	0.000715519	0.105221946	147.0567281	455.6334181	78.34956205	166.3049461	0.000202583	2.112666477
12	HDFC Bank	0.213631879	1.74262546	0.000388386	0.079530951	204.7731012	660.4065192	117.5083837	283.8133298	0.000202583	1.98215605
13	Hindalco Industries Ltd.	0.440719394	1.735350707	0.002060089	0.337063387	163.6159244	824.0224436	94.28406817	378.0973979	0.000202583	1.927718638
14	Maruti Suzuki India Ltd.	0.243657234	1.716264042	0.000817231	0.101892619	124.6802504	948.702694	72.64631044	450.7437084	0.000202583	1.897002371
15	Indian Oil Corporation Ltd.	0.271523169	1.656928934	0.001404415	0.122156806	86.98057283	1035.683267	52.49505337	503.2387617	0.000202583	1.874196293
16	CIPLA Ltd.	-0.055516604	1.448727221	0.001050602	0.004465113	4.250053087	1039.93332	2.933646186	506.1724079	0.000202583	1.871949493
17	Power Grid Corp. Ltd.	0.130437496	1.269161669	0.000398945	0.021593441	54.12636149	1094.059681	42.64733391	548.8197418	0.000202583	1.828973806

Sl. No.	*Securities*	*BETA(βi)*	*(Ri-Rf)/βi*	*Var(σ2)*	*(Ri-Rf) *B*	*(Ri-Rf)*B/ (σ2)*	*C.(Ri-Rf) * βi*	*βi^2 / (σ2)*	*C. βi^2/ (σ2)*	*Mrkt.Var (σ2m)*	*C*
18	HUL Ltd.	0.450981716	0.736974546	0.00059636	0.149889206	251.3400602	1345.399742	341.0430678	889.8628097	0.000202583	1.432456839
19	Bharti Airtel Ltd.	0.304864637	0.695767067	0.000989682	0.064666294	65.34050165	1410.740243	93.91146088	983.7742705	0.000202583	1.365492219
20	Larsen & Tourbro Ltd.	0.291642394	0.68890972	0.000508878	0.058595413	115.1462808	1525.886524	167.1427728	1150.917043	0.000202583	1.271275939
21	Kotak Mahindra Ltd.	0.338800717	0.656654626	0.000576772	0.075374709	130.6836484	1656.570173	199.0142814	1349.931325	0.000202583	1.183861548
22	Tata Power	0.189845327	0.509430591	0.001161494	0.018360514	15.8076648	1672.377837	31.03006588	1380.961391	0.000202583	1.169230151
23	Ultracemco	0.07141209	0.504128225	0.001072576	0.002570896	2.396935689	1674.774773	4.754615136	1385.716006	0.000202583	1.167026575
24	NTPC Ltd.	0.154515505	0.414828592	0.000740429	0.00990405	13.37610224	1688.150875	32.24488983	1417.960896	0.000202583	1.15049679
25	TCS Ltd.	0.069836338	0.285600233	0.000972907	0.001392905	1.431694083	1689.582569	5.012930372	1422.973826	0.000202583	1.147552037
26	BPCL	1.35180144	0.220007513	0.00174718	0.402034497	230.1047557	1919.687325	1045.894993	2468.868819	0.000202583	0.762315717
27	Ambuja Cements Ltd.	0.355214298	0.169132374	0.001105023	0.021340649	19.3123963	1938.999721	114.1850955	2583.053914	0.000202583	0.736585481
28	ICICI Bank	1.35077527	0.129646763	0.001134381	0.236552683	208.5301936	2147.529915	1608.448905	4191.502819	0.000202583	0.506389556
29	Asian Paints Ltd.	0.734112381	0.039355282	0.00236725	0.021209387	8.95950292	2156.489418	227.6569384	4419.159757	0.000202583	0.482595651
30	ITC	1.137970855	0.016879009	0.001328416	0.02185794	16.45414241	2172.94356	974.8287079	5393.988465	0.000202583	0.399192256
31	Zee Ent Enterprises Ltd.	0.312246335	-0.018709213	0.00109355	-0.001824107	-1.668059478	2171.275501	89.15711466	5483.14558	0.000202583	0.392457718
32	Bank of Baroda	1.058486502	-0.128149429	0.002259971	-0.14357781	-63.53081694	2107.744684	495.7557548	5978.901335	0.000202583	0.349643734
33	Bajaj Auto Ltd.	0.196836008	-0.153178332	0.000610054	-0.005934805	-9.72832629	2098.016358	63.50980685	6042.411141	0.000202583	0.344401561
34	State Bank of India	-0.277722332	-0.175494093	0.001233799	-0.013535806	-10.97083606	2087.045522	62.51399033	6104.925132	0.000202583	0.339120568
35	Tata Motors	1.733758123	-0.184722063	0.001584785	-0.555259231	-350.3688798	1736.676642	1896.735425	8001.660557	0.000202583	0.215708814

Sl. No.	*Securities*	*BETA(βi)*	*(Ri-Rf)/βi*	*Var(σ2)*	*(Ri-Rf) *B*	*(Ri-Rf)*B/ (σ2)*	*C.(Ri-Rf) * βi*	*βi^2 / (σ2)*	*C. βi^2/ (σ2)*	*Mrkt.Var (σ2m)*	*C*
36	Auribindo Pharma Ltd.	0.307071961	-0.186746168	0.002132233	-0.017608892	-8.258428563	1728.418213	44.22274701	8045.883304	0.000202583	0.213510281
37	Axis Bank	1.092570674	-0.189380702	0.001133336	-0.226065766	-199.4693302	1528.948883	1053.271682	9099.154985	0.000202583	0.167125317
38	Bharti Infratel Ltd.	-0.102787887	-0.356397246	0.001575229	-0.003765462	-2.390421627	1526.558461	6.707183216	9105.862169	0.000202583	0.16674178
39	Oil And Natural Gas Corporation Ltd.	0.211762585	-0.368055091	0.000711521	-0.016504839	-23.19654933	1503.361912	63.02466643	9168.886835	0.000202583	0.163085403
40	INFY	0.499724677	-0.426653658	0.000647609	-0.10654598	-164.5221712	1338.839741	385.6105953	9554.49743	0.000202583	0.139406421
41	Sunpharma	0.895129195	-0.429172879	0.001926663	-0.343877462	-178.4834527	1160.356288	415.8777536	9970.375184	0.000202583	0.115807052
42	Bosch Ltd.	0.225323885	-0.436658754	0.000954713	-0.022169538	-23.22115352	1137.135135	53.17917776	10023.55436	0.000202583	0.112890352
43	HCL Tech	-0.131755333	-0.491053462	0.00060869	-0.008524427	-14.00455564	1123.130579	28.51941127	10052.07377	0.000202583	0.111185236
44	TECHM	0.118095877	-0.698970404	0.001252815	-0.009748286	-7.781103617	1115.349475	11.13223617	10063.20601	0.000202583	0.110293391
45	Hero Motcorp Ltd	-0.072849554	-0.739765763	0.001051063	-0.003925979	-3.73524534	1111.61423	5.049227105	10068.25524	0.000202583	0.109869167
46	ACC Ltd.	0.056137356	-0.855542037	0.000782203	-0.002696157	-3.446878614	1108.167351	4.028882817	10072.28412	0.000202583	0.109484888
47	Tata Motors Ltd DVR	0.342870867	-1.094430756	0.001868824	-0.128661752	-68.84638	1039.320971	62.90610861	10135.19023	0.000202583	0.102048759
48	Coal India Ltd.	0.170781284	-1.472043803	0.000942497	-0.042933993	-45.55343404	993.7675373	30.94570551	10166.13593	0.000202583	0.097280377
49	Reliance Industries Ltd.	-0.286750351	-1.945848842	0.000991898	-0.159998908	-161.3057662	832.4617712	82.8973776	10249.03331	0.000202583	0.080834121
50	YES Bank	-0.209700063	-2.73190066	0.00154464	-0.120132917	-77.77406902	754.6877022	28.4688496	10277.50216	0.000202583	0.073080042

Table 3

Sl. No.	*Securities*	*Mean Return(Ri)*	*BETA(βi)*	*(Ri-Rf)/βi*	*Var($\sigma 2$)*	*(Ri-Rf) * B*	*(Ri-Rf) *B/ ($\sigma 2$)*	*C.(Ri-Rf) * βi/*	*βi^2 / ($\sigma 2$)*	*C. βi^2/ ($\sigma 2$)*	*Mrkt. Var($\sigma 2m$)*	*C*
1	Eicher Moters Ltd.	0.46475	0.006410904	62.96674801	0.001972624	0.002587914	1.311914369	1.311914369	0.020835035	0.020835035	0.000202583	0.026565924
2	Tata Steel Ltd.	0.97913	0.064118211	14.31803813	0.001727996	0.05886353	34.06462594	37.74184084	2.379140607	2.452567363	0.000202583	0.728394863
3	India Bulls	0.65710	0.087153676	6.838658055	0.00223536	0.051944827	23.23778872	60.97962956	3.398004189	5.850571552	0.000202583	1.104441571
4	GAIL Ltd.	0.44136	0.086593465	4.391562024	0.001132991	0.032929812	29.06448406	90.04411362	6.618256535	12.46882809	0.000202583	1.456285876
5	Vedanta Ltd.	1.16333	0.291023818	3.787495818	0.002741058	0.320781439	117.0283297	207.0724434	30.89860303	43.36743111	0.000202583	2.233069779
6	Adani Ports and Special Economic Zone	0.49941	0.210330293	2.084008013	0.001722727	0.09219408	53.51635515	282.6703516	25.67953426	75.27322646	0.000202583	2.267971813
7	Wipro Ltd.	0.25777	0.096287008	2.042739036	0.000731042	0.018938617	25.90633832	308.5766899	12.68215757	87.95538403	0.000202583	2.247170172
8	Induslnd Ltd.	0.50548	0.236771269	1.87693108	0.000715519	0.105221946	147.0567281	455.6334181	78.34956205	166.3049461	0.000202583	2.112666477
9	HDFC Bank	0.43336	0.213631879	1.74262546	0.000388386	0.079530951	204.7731012	660.4065192	117.5083837	283.8133298	0.000202583	1.98215605
10	Hindalco Industries Ltd.	0.82588	0.440719394	1.735350707	0.002060089	0.337063387	163.6159244	824.0224436	94.28406817	378.0973979	0.000202583	1.927718638
11	Maruti Suzuki India Ltd.	0.47926	0.243657234	1.716264042	0.000817231	0.101892619	124.6802504	948.702694	72.64631044	450.7437084	0.000202583	1.897002371
12	Indian Oil Corporation Ltd.	0.51098	0.271523169	1.656928934	0.001404415	0.122156806	86.98057283	1035.683267	52.49505337	503.2387617	0.000202583	1.874196293
13	Power Grid Corp. Ltd.	0.22663	0.130437496	1.269161669	0.000398945	0.021593441	54.12636149	1094.059681	42.64733391	548.8197418	0.000202583	1.828973806
14	HUL Ltd.	0.39344	0.450981716	0.736974546	0.00059636	0.149889206	251.3400602	1345.399742	341.0430678	889.8628097	0.000202583	1.432456839
15	Bharti Airtel Ltd	0.27320	0.304864637	0.695767067	0.000989682	0.064666294	65.34050165	1410.740243	93.91146088	983.7742705	0.000202583	1.365492219
16	Larsen & Tourbro Ltd.	0.26200	0.291642394	0.68890972	0.000508878	0.058595413	115.1462808	1525.886524	167.1427728	1150.917043	0.000202583	1.271275939
17	Kotak Mahindra Ltd.	0.28356	0.338800717	0.656654626	0.000576772	0.075374709	130.6836484	1656.570173	199.0142814	1349.931325	0.000202583	1.183861548

Sl. No.	*Securities*	*Mean Return(Ri)*	*BETA(βi)*	*(Ri-Rf)/βi*	*Var($\sigma 2$)*	*(Ri-Rf) * B*	*(Ri-Rf) *B/ ($\sigma 2$)*	*C.(Ri-Rf) * βi/*	*βi^2 / ($\sigma 2$)*	*C. βi^2/ ($\sigma 2$)*	*Mrkt. Var($\sigma 2m$)*	*C*
18	Tata Power	0.15779	0.189845327	0.509430591	0.001161494	0.018360514	15.8076648	1672.377837	31.03006588	1380.961391	0.000202583	1.169230151
19	Ultracemco	0.09708	0.07141209	0.504128225	0.001072576	0.002570896	2.396935689	1674.774773	4.754615136	1385.716006	0.000202583	1.167026575
20	NTPC Ltd.	0.12518	0.154515505	0.414828592	0.000740429	0.00990405	13.37610224	1688.150875	32.24488983	1417.960896	0.000202583	1.15049679
21	TCS Ltd.	0.08103	0.069836338	0.285600233	0.000972907	0.001392905	1.431694083	1689.582569	5.012930372	1422.973826	0.000202583	1.147552037
22	BPCL	0.35849	1.35180144	0.220007513	0.00174718	0.402034497	230.1047557	1919.687325	1045.894993	2468.868819	0.000202583	0.762315717
23	Ambuja Cements Ltd	0.12116	0.355214298	0.169132374	0.001105023	0.021340649	19.3123963	1938.999721	114.1850955	2583.053914	0.000202583	0.736585481
24	ICICI Bank	0.23620	1.35077527	0.129646763	0.001134381	0.236552683	208.5301936	2147.529915	1608.448905	4191.502819	0.000202583	0.506389556
25	Asian Paints Ltd.	0.08997	0.734112381	0.039355282	0.00236725	0.021209387	8.95950292	2156.489418	227.6569384	4419.159757	0.000202583	0.482595651
26	ITC	0.08029	1.137970855	0.016879009	0.001328416	0.02185794	16.45414241	2172.94356	974.8287079	5393.988465	0.000202583	0.399192256
27	Zee Ent Enterprises Ltd	0.05524	0.312246335	-0.018709213	0.00109355	-0.001824107	-1.668059478	2171.275501	89.15711466	5483.14558	0.000202583	0.392457718
28	Bank of Baroda	-0.07456	1.058486502	-0.128149429	0.002259971	-0.14357781	-63.53081694	2107.744684	495.7557548	5978.901335	0.000202583	0.349643734
29	Bajaj Auto Ltd.	0.03093	0.196836008	-0.153178332	0.000610054	-0.005934805	-9.72832629	2098.016358	63.50980685	6042.411141	0.000202583	0.344401561
30	State Bank of India	0.10982	-0.277722332	-0.175494093	0.001233799	-0.013535806	-10.97083606	2087.045522	62.51399033	6104.925132	0.000202583	0.339120568
31	Auribindo Pharma Ltd.	0.00374	0.307071961	-0.186746168	0.002132233	-0.017608892	-8.258428563	1728.418213	44.22274701	8045.883304	0.000202583	0.213510281
32	Bharti Infratel Ltd.	0.09771	-0.102787887	-0.356397246	0.001575229	-0.003765462	-2.390421627	1526.558461	6.707183216	9105.862169	0.000202583	0.16674178
33	HCL Tech	0.12578	-0.131755333	-0.491053462	0.00060869	-0.008524427	-14.00455564	1123.130579	28.51941127	10052.07377	0.000202583	0.111185236
34	Hero Motcorp Ltd.	0.11497	-0.072849554	-0.739765763	0.001051063	-0.003925979	-3.73524534	1111.61423	5.049227105	10068.25524	0.000202583	0.109869167
35	ACC Ltd.	0.01305	0.056137356	-0.855542037	0.000782203	-0.002696157	-3.446878614	1108.167351	4.028882817	10072.28412	0.000202583	0.109484888
36	Reliance Industries Ltd	0.61905	-0.286750351	-1.945848842	0.000991898	-0.159998908	-161.3057662	832.4617712	82.8973776	10249.03331	0.000202583	0.080834121
37	YES Bank	0.63396	-0.209700063	-2.73190066	0.00154464	-0.120132917	-77.77406902	754.6877022	28.4688496	10277.50216	0.000202583	0.073080042

Table 4

Sl. No.	*Companies*	*BETA*	*(Ri-Rf)/B*	*Var*	*C*	*B/Var*	*Zi*	*Xi*
1	Eicher Moters Ltd.	0.006410904	62.96674801	0.001972624	0.026565924	3.249936876	197.1120412	0.194444514
2	Tata Steel Ltd.	0.064118211	14.31803813	0.001727996	0.728394863	37.10553657	445.3527825	0.4393258
3	India Bulls	0.087153676	6.838658055	0.00223536	1.104441571	38.98865033	176.343595	0.173957128
4	GAIL Ltd.	0.086593465	4.391562024	0.001132991	1.456285876	76.42905321	158.6553162	0.156508226
5	Vedanta Ltd.	0.291023818	3.787495818	0.002741058	2.233069779	106.1720762	156.262433	0.154147725
6	Adani Ports and Special Economic Zone	0.210330293	2.084008013	0.001722727	2.267971813	122.0914684	-120.0074603	-0.118383393
						∑Zi =	1013.718708	1

the investor. It describes as to how the total investment needs to be allocated amongst the various selected stocks to get the maximum benefits of the optimum portfolio. Table 4 shows the proportion to be invested in various stocks which comprise of the optimal portfolio. The Cut-off point is 2.267971813 (as per Table 3).

Companies	*Portion of investment (Xi)*
Eicher Moters Ltd.	0.194445
Tata Steel Ltd.	0.439326
India Bulls	0.173957
GAIL Ltd.	0.156508
Vedanta Ltd.	0.154148
Adani Ports and Special Economic Zone	-0.11838

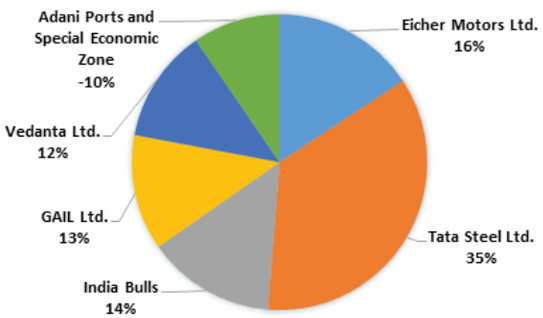


Figure 1: Portion of Investment (Xi)

NOTE: *In selecting the companies or securities for optimum portfolio, it is clearly state that companies or securities with negative return must be omitted (As proposed by Sharpe, stocks which have negative returns should be ignored for selection in optimal portfolio.). Therefore, from the Table 2 it is clearly visible that Lupin, Dr. Reddy and M&M Ltd have negative return so these securities or companies are not selected to construct the optimum portfolio.*

This proportion of stocks in the composition of optimal portfolio can be shown in the following Pie diagram (Figure 1).

Thus, six companies namely, Eicher Moter Ltd, Tata Steel Ltd, India Bulls, GAIL Ltd, Vedanta Ltd and Adani Ports and Special Economic Zone with their respective proportion have been invested to construct an optimal portfolio. Sharpe index model (SIM) resolves the problems involved in the selection of securities to construct a portfolio of an investor with a high return. The stock with negative Xi implies that these stocks are to be short sold. These Stock is Adani Ports and Special Economic Zone.

Construction of Risk and Return using Markowitz Theory

It's an intricate task of selecting good investments by considering the trade-off between risk and return along with the combination of various types of investments for the investors. A rational investor always seeks to minimize risks and maximize returns on his investment in an optimal portfolio. For this purpose, investors ought to maximize the level of return at a given level of risk and alternatively to minimize the level of risk at a given level of return. This is done through the construction of portfolio of assets which is subject to the investor's portfolio. Therefore Risk-return analysis of the Selected 8 securities are calculated by the Help of Markowitz Model. To analyse return and risk characteristic of the stocks, the annual mean return and standard deviation are calculated. The Annual return on each stock is calculated as follows:

$$R_i = (R_2\text{-}R_1)/R_1$$

where R_2 = closing price of week 2,
R_1 = closing price of week 1,
R_i = return of stock

The portfolio return can be calculated with the help of the following formula:

$$R_p = \sum X_I R_I$$

R_p – Return on Portfolio
X_I – portion of total portfolio invested in each security
R_I – Expected Return on portfolio

Therefore, Standard Deviation of
0.0687044206
= √0.0687044206 = 0.262114872

The total computation of Portfolio return and risk are

1. Portfolio Return(R_p)=82.41%
2. Portfolio Risk=26.21%

FINDINGS

- It is found that out of 50 stocks considered for study, only 6(Six) stocks are chosen for inclusion in optimal portfolio.
- Tata Motors has the highest beta value of 1.733 which means it is highly volatile.
- The Cut-off point is 2.267971813.
- The stock with negative Xi inheres that these stocks are to be short sold. These Stock is Adani Ports and Special Economic Zone.
- Lupin, Dr. Reddy and M&M Ltd have negative return so these securities or companies are not selected to construct the optimum portfolio.
- By using the Markowitz Formula, the

Table 5: Calculation of Risk and Return

Securities	*Xi*	*Return(Ri)*	*XiRi*	*D=Ri-∑(XiRi)*	*D^2*	*D^2*Xi*
Eicher Moters Ltd.	0.19444451	0.46475	0.090369021274510	-0.359356721323405	0.129137253160308	0.02511003
Tata Steel Ltd.	0.4393258	0.97913	0.430156184985150	0.155016462626256	0.024030103685158	0.010557045
India Bulls	0.17395713	0.65710	0.114306391504314	-0.167016334909290	0.027894456126532	0.004852439
GAIL Ltd.	0.15650823	0.44136	0.069076716637303	-0.382749949762699	0.146497524043349	0.022928068
Vedanta Ltd.	0.15414773	1.16333	0.179325057525449	0.33922097338843	0.115070868786595	0.017737913
Adani Ports and Special Economic Zone	-0.1183834	0.49941	-0.059121850298130	-0.324701521628594	0.105431078147924	-0.012481289
Total	1	∑XiRi	0.824111521628594		VARIANCE	0.068704206

total return and risk of these 6 stocks is 82.41% and 26.21% respectively.

CONCLUSION

The construction of optimal portfolio is tough and challenging. This paper attempts to construct an optimal portfolio taking 50 stocks of Nifty 50 Index. As evident from the above study, only 8 stocks fulfil the Construction of Optimal Portfolio Using Sharpe's Single Index Model and further these taking this 8-stock return and risk also been calculated by using the Markowitz Model. Use of cut off rate played a vital role in constructing the optimal portfolio. If the investor wants to earn a maximum return without considering the risk aspect then investment can be made on those securities which yield high returns. Even though the return is high, the risk involved in the stock return should be considered while taking investment decisions. The risk can be reduced if the portfolio is diversified. The point of diversity is to achieve a given level of expected return while bearing the least possible risk. There are macro and general economic factors which also affect the securities movement and their selection. These factors should also be considered while selecting securities for optimal study can be helpful in the field of investment finance. The investor should invest in a fund which has good net asset value and good performance history with respect to NAV. Net Asset Value (NAV) is a fund's market value per unit. It is calculated by dividing the total value of all the assets in a portfolio, minus all its liabilities. The outcome of the fund is derived by studying the periodical movements of fund's net asset value and by comparing the fund's performance over their respective benchmarks for the specified period. It was traced that the funds, which embarked lower risk, did not always validate lower returns or vice versa. This states that the risks and return need not always be in a beeline or point-blank relationship. The optimal portfolio analysis and risk, return trade-off are determined by the challenging attitudes of investors towards a variety of economic, monetary, political and psychological forces prevailing in the stock market. Thus, the portfolio construction table would help an investor in investment decisions. And the investor would select any company among the fifteen companies from the above portfolio table. I also hope this will help the investors as a guiding record in future and help them to make appropriate investment decisions. It is clear that the construction of optimal portfolio investment by using Sharpe's Single Index Model is more comfortable.

RECOMMENDATION

Further studies can be made on other indices like NIFTY NEXT 50, NIFTY 500 and also on the securities that risk and return not always be in a beeline or point-blank relationship and with the given details, the performances of the different funds can be evaluated by using, Treynor and Jensen performance evaluation techniques.

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