2.1. INTRODUCTION

Extensive review on existing theoretical and empirical work related to service innovation was conducted to understand (a) the major factors of service innovation and (b) the measurements used for measuring service innovation. The collected literature were reviewed and classified under the following heads:

- Services and its characteristics
- Opportunities and characteristics of innovation
- Factors as barriers and facilitators for innovation
- Innovation in manufacturing and services
- Classification of innovation measurement
- Service innovation
- Measurement of service innovation
- Typologies vis-à-vis Dimensions
- Review on scale development
- Outcome of service innovation
- Service innovation and WOM
- Service innovation and corporate reputation
- Corporate reputation and WOM
- Formative and reflective measures in structural equation modeling (SEM)
- Studies on mediation effect.

2.2. SERVICES AND ITS CHARACTERISTICS

According to Cook et al (1999), there is no single definition for service that would be able to completely define full diversity service and its complex attributed. Thus in practice, there is wide range of definitions that explains services; and some definitions of the concept “Service” are presented below:
“It is an activity or series of activities of more or less intangible nature that normally, but not necessarily, take place in interactions between the customer and service employees and/or physical resources and/or systems of the service provider, which are provided as solutions for customer problems”.

(Grönroos 1990)

“Service is any act or performance that one party can offer to another that is essentially intangible and does not result in the ownership of anything”.

(Kotler 1994)

“Service is to organize a solution to a problem (a treatment, an operation) which does not principally involve supplying a good. It is to place a bundle of capabilities and competences (human, technological, organizational) at the disposal of a client to organize a solution, which may be given to varying degrees of precision”.

(Gadrey et al 1995)

“Service is the delivery of help, utility or care, and experience, information or other intellectual content - and the majority of the value is intangible rather than residing in any physical product”.

(DISR 1999)

Service is a performance of offering from one party to another. At a specific time and place, services are the economic activity that bring or provide value to the customers based on their need by the service providers. There are distinct characteristics of services that differentiate them from a tangible product and these characteristics are briefly mentioned below:

**Intangibility:** This is the fundamental difference between a product and a service cited by many authors (Rathmell 1974; Bateson 1977; Berry 1980 and Lovelock 1983). Since service is a performance and not an object it cannot be seen, felt, tasted or touched where as goods can be performed with these operations. According to Bateson (1979), intangibility is a critical distinction between goods and service from which other differences emerge.
Inseparability: Services are generally created, supplied and consumed simultaneously. According to Regan (1963), services are first sold, then produced and consumed at the same time whereas goods are first produced then sold and finally consumed. In service purchases, consumers are forced to be present during the production of service and delivery of service (like traveling service, hospitality service etc). Hence there is no separation between the production and consumption.

Heterogeneity: The quality of services cannot be standardized. These services provided may differ from one customer to another customer based on their perception level, even though they provide same services at same price. According to Langeard et al (1981), many employees may be in contact with many individual customers, the problem arises on the consistency in behavior and the performance of service employee differs from one individual to another.

Perishability: Service has a high degree of perishability compared to product where inventorization is possible; product which is not sold on one day may be sold for next day, whereas in case of service it is impossible. This case is for a short term only since perishability is also applicable for product over a period of time like physical decay (Wyckham et al 1975). According to an example given by Bessom and Jackson (1975), Thomas (1978) it is not possible to reclaim the hotel rooms that are not occupied, airline seats not purchased. The services are the performance of certain action that cannot be stored and retrieved later like goods.

Ownership: For product or goods once the production is completed and the process of selling is over then there is a transfer of ownership from seller to buyer. But in the case of services, this does not happen. The users have only an access to services, and they cannot own the service. According to Judd (1964) and Rathmell (1974), in service context customers who do not wish to own the physical goods or afford to purchase, but exclusively use it temporally can obtain the temporary right.

These are the major characteristics of services that differentiate them from goods and products. The various literatures suggest that each of these unique characteristics of services would lead to specific problems for service marketers and creates a necessity to initiate a specific strategy to deal with it. It is very difficult to approach service similar to product because of these characters. Measurement of service provided is also
different from that of products, which evolved a new measurement technique for services.

2.3. INNOVATION

Innovation is one way similar to invention that is, introducing something new by the organization to its customers; however innovation is the introduction of new concepts to improve the existing aspects like product or process or strategies or internal or external environmental components of the organization. According to Roberts (1988), invention is a discovery or new existence usually at bench or lab, whereas innovation is the first use in manufacturing or in market. There are several research studies which define innovation and some of the definitions are presented below:

“The introduction of new goods, new methods of production, the opening of new markets, the conquest of new sources of supply and the carrying out of a new organization of any industry”. (Schumpeter 1934)

Zaltman et al (1973) defined innovation as “any idea, practice, or material artifact perceived to be new by the relevant unit of adoption. The adopting unit can vary from a single individual to a business firm, a city, or a state legislature”.

According to Kanter (1983), Innovation is “a process of bringing any new, problem solving idea into use. Ideas for reorganizing, cutting costs, putting in new budgeting systems, improving communication, or assembling products in teams are also innovations”.

“Change that creates a new dimension of performance” (Drucker 1984)

Greif and Keller (1990) stated that, innovations can be “any useful, new and different ideas, processes, products and procedures”.

“Innovation is a process that takes an idea, and successfully markets it to such an extent that its concept becomes an accepted player in the marketplace”. (Bray 1995)
Thus innovation means any development or application of new idea for the development of the firm in order to sustain in the competitive environment and satisfy the needs of the customers which are changing frequently. The new idea could be the introduction of new product, process of delivery of the products, new service, market, change in operational or administrative structures and systems. Further, innovation may be new to the individual adopter or the organization or to the entire industry; it may also be entirely new to the world.

It is to be noted that innovation can be the product or service that is newly introduced by firm to its existing customer or new customers or providing the existing product or service to the new customer further it can also be said that providing the existing service/product in the market but new to the firms’ customer. Fagerberg and Godinho (2005) indicated that all aspects of innovation are not completely explained by any of the innovation related literatures since innovation is cross-disciplinary in nature. Further, the author classified into four traditional literatures related to innovation and they are: (a) the economics, (b) the strategic management, (c) the organizational change and (d) the innovation management literatures. The concept of innovation is wide and very difficult to capture various aspects of innovation completely; the major aspects such are opportunities for innovation, characteristics of innovation, innovation leading to organization change, factors affecting innovation either positively or negatively, innovation in manufacturing and service industry, classification and approaches on measurement of innovation, service innovation, measurement issues in service innovation, researcher’s perspective in measuring innovation are discussed with systematic review of existing literature.

2.3.1. OPPORTUNITIES AND CHARACTERISTICS OF INNOVATION

Drucker (1984) indicated the opportunities of innovation activities within the firm. He classified the innovation opportunities as innovation within the firm (internal opportunities) and social or intellectual environmental opportunities (external opportunities). Internal opportunities are: (a) Incongruites (b) Process needs (c) Unexpected occurrence (d) Industry and market changes similarly, the external opportunities are: (a) Demographic changes, (b) Changes in perception and (c) New Knowledge.
Researchers like Kanter (1990) and Rogers (1995) in their study categorized innovation into four distinctive characteristics and they are: (a) the innovation process is uncertain that is the occurrence of opportunity and the source are unpredictable; (b) the innovation process is knowledge intensive, where it generates new knowledge and creative thinking and learning among the employees; (c) the innovation process is controversial this means that for every innovative action there is an alternative counter from the competitors; and (d) the process of innovation crosses boundaries, that is the idea of innovation are interdisciplinary or inter-functional. These characteristics are same irrespective of product, process, technological or administrative innovation adopted by the Firm. According to O'Reilly and Tushman (2013), innovation within the firm leads to organization change process (both internally and externally). Through this organization change process, a firm could evolve from being closed to open innovation (Chiaroni et al 2010).

2.3.2. CLOSED AND OPEN INNOVATION

Chesbrough (2003) stated that there is a change of innovative thoughts from closed innovation to open innovation. For successful closed innovation, firm must have control on all possible aspects of internal process of innovation, where as open innovation is where there is a significant integration between both internal and external components. According to Bell (1973) and Savino (2009), open innovation is where the employees gain knowledge on technology and the organization can absorb or adopt new technologies. Whereas in closed cycles of innovation the maintenance of internal control is really difficult (Vanhaverbeke and Cloodt 2006). According to Almirall and Masanell (2010) and Gianiodis et al (2010), who signified several factors that helped for the evolution for open innovation and they are: (i) The growth of the venture capital market (ii) The increasing availability and mobility of skilled workers (iii) The increasing capability of external suppliers and (iv) External options for ideas sitting on the shelf. Thus it was noted that there is a change in paradigm from closed innovation to open innovation over a period of time in service firms this resulted the researchers to concentrate on open innovation in service industries which include all possible components that have an effect on innovation activities in the firm.
2.3.3. REVIEW ON FACTORS AFFECTING INNOVATION

Literatures related to innovation specified a group of factors that act either as barriers or facilitators of innovation and classified these factors in different ways. Martikainen (2008) classified factors of innovation as economic factors (such as economic risks, expenses of innovation, and being short of financial support), internal factors (like market information, personnel, arrangement of the organization, and lack of technical information) and other factors (which include lack of knowledge on customers’ attention, suppliers and competitors). Similarly, Larsen and Lewis (2007) classified factors as marketing factors, management and personal characteristics factors, financial factors and other factors. On the other hand, Segarra-Blasco and Arauzo-Carod (2008) studied the factors as market factors, cost factors and knowledge factor. Further many authors specified different factors like international market characteristics, suppliers and customer opinions, competitors, domestic market characteristics, strong project leaders, access to financial, personnel resources, skills, taxation of new products, process and services, government tax (Foley and Gren 1995; Knight 1996; Tidd et al 1997 and Pihkala et al 2002). In this study, these factors are classified into internal and external factors, where internal factors refer to those factors that act either as barrier or facilitator which could be controlled by the firm and external factors are those which are outside the preview of the firm (Sridhar and Ganesan 2015).

The Tables 2.1 and 2.2 (given in Appendix II) classify the literatures related to the factors of service innovation. A list of studies, which articulates the internal factors (Table 2.1) that act either as barriers/facilitators for innovation activities adopted by firms, was reviewed. Among the internal factors, five major factors discussed by earlier literature were taken into consideration. The major internal factors are: (i) Financial factor, (ii) Internal structure, (iii) Human resource, (iv) Risk taking and (v) Age and Size of the firm. On the financial factor, many researchers (Birley and Niktari 1995; Uzun 2001; McAdam et al 2004; Galia and Legros 2004; Larsen and Lewis 2007; Canepa and Stoneman 2008) have viewed the lack of financial resource act as a barrier to innovation activities of the firm. On factor named internal structure of the firm, researchers (Sapolsky 1967; Damanpour and Gopalakrishnan 1998; Hadjimanolis 1999) viewed proper internal structure of the firm facilitates innovation.
Considering the third internal factor namely human recourse management, authors discussed that proper management of talented and skilled employee resource would help the firm to frequently innovate (Von Krogh et al 2000 and Pihkala et al 2002). Employee higher education (Piatier 1984), strong project leaders skills, experience and good judgment (Foley and Gren 1995), qualification of the staff members (Mohnen and Rosa 1999; Napier et al 2004 and Ren 2009), knowledge management (Darroch 2005). Further, reciprocal benefits, knowledge self-efficacy and enjoyment in helping others (Lin 2007) and attract creative talent (Sund 2008) acts as facilitators for innovation. Further certain other researchers stated that lack of knowledge among employees acts as a barrier to innovation (Martikainen 2008 and Segarra-Blasco and Arauzo-Carod 2008).

On risk taking ability of the firm on innovation, authors have identified that willing to take risk facilitates innovation activity (Uzun 2001). Staff’s qualification and externality benefits reduce risk during innovation (Knight et al 2003). Privacy, trust, security, and risk concerns are the major factors to be considered during innovation (Lichtenstein and Williamson 2006). Perceived risk may act as a barrier (Stendhal and Roos 2008). Economic risks are evolved during innovative activities Martikainen 2008).

Finally authors (Kleinknecht 1989; Yin and Zuscovitch 1998; Churchill 2000; Huergo and Jaumandreu 2004) stressed on the age and size of the firm as factor as a barrier/facilitator of innovation where, new and small firms innovate frequently to sustain in the market over a long term. Certain literatures (Hansen 1992; Davidsson and Delmar 2003; Rogers 2004) have found that age and size of the firm certainly affects innovation activities. Further other parameters were extent of scale economics and capital intensity (Audretsch 1991). On the other hand, Cohen and Klepper (1996) stated that R&D productivity declines with firm size. In contrast, Rogers (2004) described that larger firms are highly innovative compared to smaller firms.

External factors (Table 2.2) of service innovation are: (a) Customer Orientation, (b) Competitor Orientation, (c) Technology and (d) Government Regulations. Considering the customer orientation factor, many researchers (Foley and Gren 1995; Salomo et al 2003; Lin et al 2010; Boxer and Rekettye 2011) have stressed that understanding the customers’ needs on innovation is the major factor to be considered.
during innovation. Other parameters were customer knowledge (Sawhney et al 2005), integrating customer with employee (Seegy et al 2008) and lack of knowledge on customers’ attention (Martikainen 2008). For competitor orientation factor, most of the researchers (Foley and Gren 1995; Knight 1996; Atuahene-Gima 1996; Crepon and Duguet 1997) have noted that, for any firm to survive in competitive market the firm not only innovate but also focus on the measures taken by their competitor frequently.

Focusing on the review on technology factor, authors (Moore and Benbasat 1991; Ahuja and Katila 2001; Verhagen and Dolen 2009) stressed on the importance of cutting edge technologies. Some literature (Galia and Legros 2004; Martikainen 2008; Segarra-Blasco and Arauzo-Carod 2008) cautioned that lack of information on technology is a major barrier for innovation. Hadjimanolis (1999) described that the difficulties in obtaining technical information act as a barrier for innovation. Finally, factor like government regulation were analyzed by certain literatures like Allen et al (1978) in their study stated that initiating mechanism, sustaining mechanism and restructuring mechanism are the three parameters under regulation factor. Similarly government providing information about innovations, financial support during development and procedural facilitation of development are positively related to industry’s adoption decision for new innovation (Moon and Bretschneider 1997). Government’s norms and standards (Piatier 1984), government tax on innovation (Foley and Gren 1995; Bessant and Pavitt 1997), government market regulation policies, labor and consumer protection policies, government’s environment (Hadjimanolis 1999), taxation of product and process by government (Pihkala et al 2002), government-sponsored R&D and pollution-control demonstration programs (Taylor et al 2005) are some of the factors noted as barriers/facilitators for innovation activity of the firm.

From the review analysis on factors affecting/facilitating service innovation, service firms need to concentrate on these major factors before initiating an innovation activity. When these factors are focused then they facilitate innovation. Further, from the review it was observed that only limited factors are discussed and there are other factors in both internal and external environment that the product or service firm needs to be concentrated during innovation process. Further, these factors majorly
focused on manufacturing firms and there is a need to identify whether they are similar to service firms or is there any other factor that could affect service firms uniquely.

2.3.4. FACTORS AFFECTING INNOVATION – MANUFACTURING INDUSTRY VIS-À-VIS SERVICE INDUSTRY

The earlier discussion in this study identified factors that are classified as internal and external factors in existing literatures. It is to be noted that the factors that are identified as barriers/facilitators for innovation are mostly based on manufacturing firms compared to service firms (see 4.2. text analysis in chapter 4), since service industry is differentiated from manufacturing industry based on its characteristics and the process of innovation in service is different from that of products and goods, there need to be an exclusive study on analyzing the factors that affect or facilitate service innovation. Earlier studies considered only nine major internal and external factors that act as a barrier or facilitator for innovation, whereas, there are many other factors that may affect innovation in service industry. Thus, there emerges a need to identify the major factors and other factors that facilitate or block innovation activity in service industries.

2.3.5. FACTORS AFFECTING INNOVATION ACTIVITY – FIRMS’ PERSPECTIVE VIS-À-VIS CUSTOMERS’ PERSPECTIVE

Existing studies considered factors as barriers/facilitators for innovation activity either in manufacturing industry/services industry from internal point of view that is they viewed the factors based on the firms’ perspective (see 4.2. text analysis in chapter 4). There is dearth of studies that considered the factors acting as barriers/facilitators for the customers in adopting service innovations. Firms frequent innovate services and create attention among the customers and it is not necessary that the customer purchase all the service innovation even though there is a demand, there can be certain factors that block the customer in purchasing a particular service from a firm and there can be a particular reason for a customer in choosing a service innovations. Thus by identifying the major factor that affects customer in choosing a service innovation helps the firm to concentrate on that barrier and evacuate it and enhance the chances of purchasing. Even for customer perspective there can be internal
and external factors, thus the future researchers need to identify the major internal and external factors from customer perspective and strengthen the existing literatures on antecedents of service innovation.

2.3.6. INNOVATION IN MANUFACTURING AND SERVICES

Initially, many studies in the area of innovation perceived that innovation in service research is as same as the product innovation research, thus they adopted or continued to view or measure service innovation as done in manufacturing industry, basically G-D logic. Due to the dominance of services in any economy, a call for thought and in-depth knowledge is need on service related concepts exclusively.

The thorough review on innovation research studies emphasizes the three major differences between service innovation and product innovation. They are: (a) during service innovation, it is not only the service produced but also the pre-requisites for services, that is both the production and delivery process go together when customer demand for a service, which is not practiced in production of tangible items where the R&D and production go differently (Edvardsson and Olsson 1996; Tatikonda and Zeithaml 2001), (b) service innovation is majorly related to innovation in process of delivery, the firm must integrate service innovation with existing business activities, that is in service industries both the front office and back office must integrate together to overcome the difference in objectives and time horizon whereas in production industries the front office is framed to satisfy the customer needs and back office is designed to maximize the production and output (Menor et al 2002) and (c) the third and the major difference is on the investment and expenditure, where the earlier studies on innovation (Barras 1986; Brouwer and Kleinknecht 1999; Preissl 2000; Djellal and Gallouj 2001) found that expenditure in production firm is higher than that of service industries.

The manufacturing firm spends mainly on R&D, technology and production compared to development of new services. Atuahene-Gima (1996) added that innovation in service industry is much faster than that of innovation in production firms and argued that the benefit of the product realized by the customer is clearly lower than that of the services. In development aspect of innovation, DeBrentani and Cooper (1992) described that technology plays a lesser role in service innovation
compared to that of product innovation. Similarly the differences can be experienced in the barriers of innovation, where human recourse factor as barrier is majorly seen in services compared to product (Sirilli and Evangelista 1998).

Further researchers like Atuahene-Gima (1996), Sirilli and Evangelista (1998), Janz et al (2001) compared the studies related to product industries with respect to service industries and found that certain characteristic of service differentiated them from product and thus the measurement scale used for measuring product in manufacturing industry must be modified and developed to measure services in service industry where the result clearly defended the argument of the authors (Parasuraman et al 1985; Lovelock and Gummesson 2004; Vargo and Lusch 2004) that the characteristics of product and services is different and thus exclusive study is needed for service industries. On considering the authors’ argument, it is difficult to measure innovation in service by adopting product innovation measurement scales and thus, there is a need for separate and specific study that exclusively measures service innovation. This argument was proposed by authors who stressed “Demarcation Approach”, which states that there is a need for separate approach to be followed for service and service related process. The authors (Gallouj and Weinstein 1997; Fitzsimmons and Fitzsimmons 2000; Djellal and Gallouj 2001) even criticized the researchers who approached services with assimilation approach which propose that innovation in product and the developments followed can be easily adopted in service industries and this differentiation of approaches was explained by Coombs and Miles (2000).

In this study, a brief review is provided on the findings related to measurement of innovation based on approaches towards innovation. There were three schools of thoughts classified by Coombs and Miles (2000) which primarily focused on author’s approach and measurement of innovation. The research findings of Griffin (1997), Sirilli and Evangelista (1998), Hughes and Wood (2000) emphasized that there are many similarities between product innovation and service innovation and thus whether it is new product or service they contribute heavily to the concept of innovation and this type of approach was termed as “Assimilation approach”.

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Gallouj and Weinstein (1997), Fitzsimmons and Fitzsimmons (2000), Menor et al (2002) criticized the studies related to “Assimilation approach” and stated that there are differences between innovation in product and services firms and these differences are majorly based on the characteristics of services like intangibility, heterogeneity, perishability and simultaneity which makes services unique. This school’s contribution was termed as “Demarcation approach”.

Coombs and Miles (2000), Gallouj and Windrum (2009) stated that both product and services are not completely different during innovation process and thus there is no need for completely separate approach and there is a need for integrating both product oriented and service oriented approaches. This school of thought was termed as “Synthesis approach”. According to Carlborg et al (2013), who reviewed the evolution of service innovation literatures found that at the formation stage service innovation was focused on product and production process later in the maturity phase literatures were focused on involvement of customers and in the final stage that is during multidimensional phase researchers reviewed more on multidisciplinary research where service innovation is viewed as a multidimensional construct which includes product related aspects, where the findings of Carlborg et al (2013) is in line with the approaches proposed by Coombs and Miles (2000).

2.3.7. CLASSIFICATION OF INNOVATION MEASUREMENT

The two broad classification of innovation measurement are degree of novelty and forms of innovation. Under degree of novelty, innovation is further classified into: (a) disruptive innovation or sustaining innovation and (b) radical innovation or incremental innovation. According to Christensen et al (2000), a disruptive innovation is an innovation that creates a new market and new value network that is, the innovation that improves the service or product which already does not exist in the market and designed for the first time. Whereas sustaining innovation does not create a new innovative market, rather they improve the value of the existing one. Similarly, researchers classified measurement based on degree of novelty as radical and incremental innovation (Ettlie et al 1984; Tushman et al 1985; Dewar and Dutton 1986; Orlikowski 1991). The radical innovation are nonlinear paradigmatic changes which departs from existing knowledge or practice, on the other hand incremental is a linear cumulative changes which implies a minor improvement or adjustment in
existing knowledge or technology. It is to be noted that there is a similarity between disruptive and radical innovation as well as similarly between sustaining and incremental innovation. On the other hand, the forms of innovation are classified as measurement based on typologies and based on dimensions. The pictorial representation on the classification of innovation and the means of measurement approaches with assimilation, demarcation and synthesis is given in Fig 2.1.
Fig 2.1: The review on methods and approaches for measuring innovation
The articles related to innovation were systematically analyzed and the way of measurement of innovation was classified under degree of novelty and subject of innovation (Carlborg et al. 2013). Based on these classifications of innovation, researchers measured the degree of novelty of innovation under manufacturing and service industries (Schumpeter 1934; Chan et al. 1998; Paap and Katz 2004; Enders et al. 2006; Hwang and Christensen 2008). Similarly other researchers classified the innovation and measured as radical or incremental innovation (Ettlie et al. 1984; Dewar and Dutton 1986; Chandy and Tellis 1998; Ordanini and Parasuraman 2011; Jimenez-Zarco et al. 2011; Cheng and Krumwiede 2012).

The forms of innovation, where the innovation was measured based on typologies or dimension. The measurement based on typologies was classified based on three different approaches specified by Coombs and Miles (2000). The classification detailed the confusion among the researchers in measuring service innovation where researchers used different approaches in measuring service innovation. Thus this study reviewed various literatures that measured service innovation and in order to review them it is necessary to understand the concept “Service Innovation”.

2.4. SERVICE INNOVATION

Studies related to service innovation were first discussed by Barras (1986). The author first discussed the characteristics of service and a theoretical model was proposed based on the idea of reverse product cycle in order to answer Schumpeter’s approach of innovation related to product. Gallouj and Weinstein (1997) who analyzed literature related to innovation stated that the concept of innovation were either based on technological innovation in manufacturing industries or the process of production of a product which makes difficult to measure service innovation since the characteristics of services were mostly not considered. Even though the importance of separate study needed for service innovation is specified by researchers, the way of understanding, defining, approaches and measurement frequently varied from one researcher to another. The various definitions of service innovation are;
“A contribution not previously available to a firm’s customer, ensuring the addition of a service offering or change in the service idea that allows the service offering to be made available”.

(Menor et al 2002)

“It is encompassing ideas, practices or objects which are new to the organization and to the relevant environment that is to say to the reference groups of that innovator”.

(Van der Aa and Elfring 2002)

“A process which contains new concepts and the production, development and implementation of behaviors. It is also a method, a change of respond to external environment or the first action of influence environment of the organizational transformation”.

(Lu and Tseng 2010)

Even though there are many definitions, still researchers perceive service innovation from different contexts such as: (a) based on the industry; they choose and (b) based on the innovative concepts developed by the firm. But what actually is service innovation? Is it a natural concept evolved or combination of various constructs that help the firm to survive in a competitive market? Whether it is internal to the firm or subject to external customers? How it is actually measured? Can it be generalize to all service industries or subject to individual industry? To answer these questions, it is necessary to conceptualize service innovation. With thorough review of earlier studies, service innovation is defined in this study as:

“All new concept introduced/adopted by a firm as a concept itself, in process, within organization, strategic decisions, for creating awareness to retain its customers or attract new customers thereby getting competitive advantage continuously”.

There is still a myth among the researchers regarding the concept of service innovation with new service development. Though they seem to be similar there are differences between these two concepts. This research study first clarifies the difference between the two concepts.
2.4.1. NEW SERVICE DEVELOPMENT AND SERVICE INNOVATION – A MYTH

Authors who studied the concept of service development did not capture or distinguish it from service innovation concept and similarly authors who focused on service innovation were not able to distinguish clearly the difference between service innovation and service development. Mostly both the concept was addressed similar (Johne and Storey 1998; Alam 2002) and this led to the confusion that is there any similarity or difference between service innovation and new service development.

According to Bettencourt (2010), most of the management teams failed to distinguish between service innovation and service development. He further stated that service innovation is the process of developing a new concept in service that ultimately satisfies the customer need. Whereas, service development occurs when a service concept is developed, that is it involves all the activities in bringing that new concept to the market. Research on the service development has drawn from research on product development as well as new service development in other business, in particular drawing on the model offered by Varkey et al (2008). They offer a process for building service innovation by adapting from product development processes. Bowers (1987) develops a model from Booz et al (1982) to develop new services in eight steps: (i) develop a long-term business strategy, (ii) define a new type of service, (iii) idea generation is part of the selection process of a new idea, (iv) concept development and evaluation to receive a new service idea, (v) business analysis to study potential of the new service and to forecast the profit, (vi) service development and testing, (vii) market testing and (viii) commercialization.

From the explanation given by researchers, it is evident that new service development is the process of bringing service concept to the market and not actually development of service concept. Further, a clarification urged between innovation and innovativeness where innovation discusses about the diffusion of one or few innovation activities whereas innovativeness is the time of adoption of innovation and since it deals with a single innovation the result obtained cannot be generalizable (Subramanian and Nilakanta 1996). Since in this study deals with developing measurement scale for innovation
activities in three different service industries, the concept is considered as “Service Innovation” and not as “Service Innovativeness”.

2.5. MEASUREMENT ISSUES

2.5.1. MEASUREMENT OF SERVICE INNOVATION

It is evident from the classification of innovation studies related to measurement of innovation (Fig 2.1) that differences in perceiving service innovation led to differences in measurement of service innovation. Researchers measured service innovation by various approaches, perspectives and scales, subject to the industry that they investigated. Researchers measured service innovation by constructs similar to the measurement of product innovation which was criticized by authors that this approach did not consider the characteristics of services, thus researchers developed exclusive approach to measure service innovation termed as “demarcation approach” which was also criticized by group of service marketing researchers and other authors stating that some characteristics of services is similar to product thus measurement of product characteristics must also be included during the measurement of services. Thus, researchers combined both product innovation typologies/dimensions and service innovation typologies/dimensions to measure service innovation.

The other major measurement issue was the measurement of service innovation was mostly related to internal perspective (firm perspective) where there are only limited studies related to external perspectives (customer) where the studies neglected customers’ perception on service innovation by firm. Further, authors differed by using measurement scale where, some authors used indicants and others used dichotomous scale. This difference in approaches, methods and scales created confusion on how service innovation can be measured across industries.

2.5.2. MEASUREMENT USING TYPOLOGIES

Service Innovation was majorly measured by researchers using various typologies such as: (i) product innovation, (ii) process innovation, (iii) marketing innovation, (iv) input innovation and (v) organizational innovation (Gadrey et al 1995; Lin et al 2008; Aas and
Pedersen 2011; Alpay et al 2012; Tejada and Moreno 2013). However, the major problem observed is that the authors did not include all the typologies together in measuring service innovation where some typologies like marketing innovation, input typology and organization innovation were not considered. On the other hand, some authors included certain other typologies like technology innovation, strategic typology and administrative innovation to the existing service innovation typologies. Whether inclusion or exclusion of typologies in measuring service innovation, the measurement items in these typologies were mostly related to product innovation. Authors like Barras (1986), Voss (1992), DeBrentani and Cooper (1992), Flynn and Goldsmith (1993), Edvardsson and Olsson (1996), Edvardsson (1997), Sirilli and Evangelista (1998) constructed typologies with items that were mostly non-technological to measure service innovation, which was later argued for not including technology innovation. This paved the way for researchers to integrate both product innovation typologies and service innovation typologies (Gallouj and Weinstein 1997; Cooke and Wills 1999; Coombs and Miles 2000). The reviews on literatures related to measurement are given in Table 2.4 (see Appendix II). From the review, it can be understood that there is no constant set of typology that is followed and used to measure service innovation exclusively across service industries.

2.5.3. MEASUREMENT USING DIMENSIONS

The measurement of service innovation by dimensions was studied by Miller and Friesen (1982) and the dimensions included were: (a) New product or service innovation, (b) Methods of production or rendering of services, (c) Risk taken by key executives seeking unusual and novel solutions. Similarly a four-dimensional model of service innovation was proposed by Hertog (2000) and the dimensions were: (a) The service concept, (b) The client interface, (c) The service delivery system and (d) Technology options. Later Avlonitis et al (2001) proposed certain dimensions such as: (a) Delivery process newness, (b) Service modifications, (c) Service newness to the market and (d) Service newness to the company. Recently some researchers have adopted the work of Sidhu et al (2007) in which the complexity of service is indicated and these complexities has been represented by the three dimensions such as: (a) Supply-side, (b) Customer-side, and (c)
Geographical/Institutional. Nam and Lee (2010) stated certain dimensions such as: (i) customer oriented innovation, (ii) service dominant innovation, (iii) conventional innovation and (iv) collaboration based innovation. Recently a three dimension measurement was followed by Cheng and Krumwiede (2012) and they are: (1) Types of innovation, (2) Radicalness of innovation, and (3) Frequency of innovation. From the review on measurement of service innovation by dimensions, it can be noted that researchers did not have a constant term for measurement dimensions, even though they intended to measure the same concept the name of the dimension frequently changing from one author to another. Among the studies the dimensions proposed by Hertog (2000) was widely accepted by many authors (Miles 2008 and Lin 2012). From the review, it can also be understood that it was only terming the dimension changed from one author to another where the dimensions were mostly similar to each other.

2.5.4. TYPOLOGIES VIS-À-VIS DIMENSIONS

It is necessary to emphasize why the researchers have used typologies vis-à-vis dimensions to measure the service innovation. Is there any similarity or different between these two terminology? In order to show the similarities between dimensions and typologies based measurement, certain studies are compared and analyzed (Table 2.3). The major typologies used by many researchers are: (1) Product innovation, (2) Process innovation, (3) Organization innovation, (4) Market innovation, and (5) Strategic innovation. On comparing the typologies and its measures with dimensions and its measures specified by Miller and Friesen (1982), the first dimension (new product or service innovation) is same as product innovation typology; similarly, the second dimension (methods of production or rendering of services) is same as process innovation typology and the third dimension (risk taken by key executives seeking unusual and novel solutions) is similar to organization innovation. Even though dimension and typology are different, ultimately they measure similar concepts.

On considering the study of Gadrey et al (1995), the measurement dimension were named as: (a) Innovation in service product (b) Architectural innovation and (c) Innovation in processes and organization for existing services, which is similar to the typologies such
as: (i) Product innovation, (ii) Organizational innovation and (iii) process innovation. Further moving on to dimension of Hertog (2000) where the first dimension - the service concept is similar to new product/service innovation typology. Second - the client interface and third dimension - the service delivery system resembles process innovation within the firm. The final dimension - technology options is similar to that of organizational innovation. Avlonitis et al (2001) framed the dimensions such as: (a) Delivery process newness, (b) Service modifications (c) Service newness to the market and (d) Service newness to the company where these four dimensions are similar to the typologies such as (i) process, (ii) product, (iii) marketing and (iv) organization innovation. Further the dimensions proposed by Sidhu et al (2007) such as: (a) Supplier side, (2) Customer side and (3) Geographical/Institutional is similar to typologies such as: (i) product and organizational typology (ii) process innovation typology and (iii) marketing innovation typology. According to Nam and Lee (2010), who measured using dimensions such as:(a) Customer oriented innovation,(b) Service dominant innovation, (c) Conventional innovation and (d) Collaboration based innovation is similar to typologies such as: (i) Process, (ii) Product,(iii) Strategic and (iv) Organizational innovation. Similarly, the dimensions specified by Lin (2012), which was adopted from the studies of Bilderbeek et al (1998) and Hertog (2000), shows the similarities with major typologies. The comparison on similarities between dimension and typology in the existing studies are given in Table 2.3.

It is evident from the existing studies (Table 2.3) that there is no difference among constructs that measure service innovation, but the actual difference is in naming the measurement construct either as typology or as dimension. It is to be noted that researchers measure service innovation as product innovation, process innovation, organizational innovation, market innovation and strategic innovation in common, but the real difference lies with naming the constructs.
<table>
<thead>
<tr>
<th>Author and Year</th>
<th>Dimensions of Innovation</th>
<th>Observation on Dimension and relating them to typologies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Miller and Friesen (1982)</td>
<td>1. New Product or Service innovation</td>
<td>This is similar to Product Innovation specified in typologies of Service innovation</td>
</tr>
<tr>
<td></td>
<td>2. Method of production or rendering of services</td>
<td>Related the Process Innovation</td>
</tr>
<tr>
<td></td>
<td>3. Risk taken by key executives seeking unusual and novel solutions</td>
<td>Related to Organization innovation typology</td>
</tr>
<tr>
<td></td>
<td>2. Architectural innovations</td>
<td>Organization innovation typology</td>
</tr>
<tr>
<td></td>
<td>3. Innovation in processes and organization for existing services</td>
<td>Process innovation typologies</td>
</tr>
<tr>
<td>Hertog (2000)</td>
<td>1. The service concept</td>
<td>Innovation in Product or Services. that is related to Product innovation typology</td>
</tr>
<tr>
<td></td>
<td>2. The client interface</td>
<td>Related to process innovation typology</td>
</tr>
<tr>
<td></td>
<td>3. The service delivery system</td>
<td>This dimension is related to Organization Innovation</td>
</tr>
<tr>
<td></td>
<td>4. Technology option</td>
<td>Related to Technology innovation which is mostly preferred by manufacturing firms who consider it as a process during product innovation typology</td>
</tr>
<tr>
<td>Avlonitis et al (2001)</td>
<td>1. Delivery process newness</td>
<td>Mostly related to Process of delivery or Process innovation typology</td>
</tr>
<tr>
<td></td>
<td>2. Service modifications</td>
<td>Modification is done on existing product thereby new Product emerges which is related to Product innovation typology</td>
</tr>
<tr>
<td></td>
<td>3. Service newness to the market</td>
<td>Mostly considered as Market Innovation typology</td>
</tr>
<tr>
<td></td>
<td>4. Service newness to the company</td>
<td>Where this dimension is related to changes in organization to deliver new services which related organizational innovation</td>
</tr>
<tr>
<td>Sidhu et al (2007)</td>
<td>1. supply-side,</td>
<td>Related to Manufacturing /Service firms where the innovation actually emerges may be considered as Product or Organization innovation</td>
</tr>
<tr>
<td></td>
<td>2. customer-side, and</td>
<td>How the new service is delivered to the customer or how the customer perceives the</td>
</tr>
</tbody>
</table>
innovation which is related to Process innovation
Mostly related to the market innovation typology
Nam and Lee (2010) 1. Customer oriented innovation
Related to the delivery of the customer need mostly perceived as process innovation typology
2. Service dominant innovation
Innovation of new service which is related to Product innovation
3. Conventional Innovation
Related to strategies followed by firms in innovating new services or product. That is it mostly related to strategic innovation typology
4. Collaboration based Innovation
Related to internal to the firm, how internal structure help in innovating which is mostly related to organizational innovation
1. The service concept
Product innovation typology
2. The client interface
process innovation typology
3. The service delivery system
Organization Innovation
4. Technology option
Technology innovation

Based on the similarities explained, it could be concluded that there is no difference between typologies and dimensions that measure service innovation. Either be the measurement construct termed as typology or dimension that measure service innovation ultimately it is to be finalized that how these constructs need to be measured (1) either internally or externally, (2) scaled items or dichotomous questions, (3) include all typologies/dimension or exclude certain typology/dimension which is not needed for service related innovation and (4) is there a need to integrate product innovation typology/dimension or a unique typology/dimension need to be framed for services.

2.5.5. PROBLEM IN MEASUREMENT SCALE

From the Table 2.4 (Appendix II) related to the literature studies on various measurement scales used to measure service innovation, it can be clearly observed that there is no constant scale that was used to measure service innovation irrespective of different context. The measurement scale used changed periodically and adopted as per convenience of the researcher to avoid confusion among the respondents in marking their level of agreement, researcher mentioned the constructs as typologies or dimensions based on the context they intended to measure, further researchers adopted the existing
scale that is used to measure product innovation (giving less importance for the characteristics of services) by removing or adding dimension/typology whereas other authors developed an exclusive scale to measure service innovation. The indicants (scaled items) used for measuring typology/dimension also varied while some researchers used uni-dimensional indicant; others used multi-dimensional indicants to measure each typology/dimensions. Finally, even the measurement rating varied among researchers where they used dichotomous rating or interval rating like Likert scale. It is to be noted that there is no unique typology/dimension, indicants and scale rating to measure service innovation exclusively irrespective of industries.

It can also be noted that different scales (Table 2.4, Appendix II) were adopted by different authors in measuring service innovation that authors like Soete and Miozzo (1989) developed certain dimensions like: (a) Knowledge intensive, (b) Network based, (c) Scale intensive and (d) Supplier dominated to measure service innovation but did not test it empirically. Authors like Gadrey et al (1995), Aas and Pedersen (2011), Castro et al (2011), Alpay et al (2012), Tejada and Moreno (2013) measured service innovation based on typologies specified on measuring product innovation. Further researchers like Lin et al (2008) and Hertog et al (2011) measured service innovation based on only certain typologies such as product and process innovation. On the other hand, researchers also measured service innovation based on dimensions like (i) Service concept, (ii) Client interface, (iii) Service delivery system and (iv) Technology options (Hertog 2000; Miles 2008). Researchers like Ordanini and Parasuraman (2011), Cheng and Krumwiede (2012) measured service innovation with the help of multi-dimensional scaled items using Likert scale. Whereas researchers like Santamaria et al (2012), Vergori (2013) measured service innovation as a uni-dimensional dichotomous scale. This confusion on approach, difference in constructs used for measurement, variation in items used for measuring the construct and dissimilarity in using rating scale used to measure the items created a gap to be answered on how actually service innovation to be measured.
2.5.5.1. NEED FOR A MULTIDIMENSIONAL SCALE

According to Ostrom et al (2010), service innovation requires new concepts, new approaches, and new techniques that recognize the interdependencies between the customer and the service organization. Castro et al (2010) stated that manufacturing companies have a greater tendency to carry out technological innovations, while service companies are more inclined to implement organizational and commercial innovations. Further, Aas and Pedersen (2011) concluded that all innovation types reported in CIS, that is, product innovation, process innovation, organizational innovation, and marketing innovation, may be regarded as service innovations. Similarly in OECD definition, the essential four types measuring service innovation are product innovation, process innovation, marketing innovation and organisational innovation. Similarly, Lin (2012) stressed that the available indicators to measure service innovation concentrated too heavily on technical innovation and ignored non-technical innovation. Gotsch and Hipp (2012) in their study stated that innovation in services is more multidimensional than innovation in the manufacturing industries because of the multiple forms in which an innovation in services might occur, there are some difficulties in measuring it. There are literatures like Sillanpaa and Junnonen (2012) that highlighted that service innovations are multidimensional, and that is why the entire organization and its ways of action have to be taken into account when services are being developed.

According to DeVaus (1986), the major value of a scale is the ability to measure the concept based on multiple dimensions and indicators which helps to evaluate the complexity of the concept rather than single item or dichotomous values that is because a single item observation might mislead in observing the entire concept from different dimensions. Further, multi-dimensional scaled items helps in measuring the concept accurately thereby the similarities and differences can be evaluated (Green et al 1988). Based on the issues explained above the propositions have been developed in this study to direct future researchers in service innovation to clear the unanswered gaps by developing a multi-dimensional multiple rating measurement scale for service innovation.
2.5.6. SERVICE INNOVATION AND FIRM BASED OUTCOME VARIABLE

There are many studies that have taken service innovation to determine firms’ performance (internal point of view). That is, they considered service innovation to determine firms’ growth, firms’ share, firms’ profit, internal quality, employee performance (Avlonitis et al 2001; Van der Vegt and Janssen 2003; Blazevic and Lievens 2004). There are only limited studies that considered service innovation to determine customer performance (external perspective) like customer satisfaction, repurchase behavior, cross buying behaviors and loyalty (Price and Brodie 2001; Matthing et al 2004). Further, both internal and external perspective together was studied by only a limited number of authors including Gonzalez Mieres et al (2012) and Cheng and Krumwiede (2012) (See Table 2.5, Appendix II).

The indicants of typologies or dimensions were mostly related to internal perspective and which was difficult to capture external environment perspective and thus made the researchers difficult to adopt and modify the scaled items. This was tested by the researcher on adopting the scale of Wang and Ahmed (2004) to study the impact of service innovation on corporate reputation and cross buying intention and it was noted that the respondents were unable to answer certain items related to organization, strategic and market innovation which was mostly related to internal perspective of the firm, where the values obtained for reliability (0.53) and AVE (0.35) were very low values indicating that the indicants does not capture what it intended to measure in Indian context.

Further, another study was conducted by considering only product and process innovation on customer satisfaction and loyalty but still resulted in a low reliability (0.60) and AVE (0.34) values which led to a conclusion that there is a need for unique set of typologies or dimensions with specific items to measure service innovation from external perspective.

(Note: “The two studies mentioned above are different works (Sridhar and Ganesan 2015; Ganesan and Sridhar 2016) of the researcher and not related to this thesis work. Only the reliability and validity result of the previous work is taken to support the research problem”).
Thus, by developing a scale to measure the external perspective of service innovation, future researchers may fill the gap in analyzing or measuring the intensity of service innovation externally. This would further help the firm in understanding the actual need of customers thereby developing successful service innovations.

A total of twenty seven studies were considered between the years 1992 and 2012, where the number of studies which considered service innovation internally is related to the number of studies that was on external view on service innovation. It was noted that about seventeen studies (Voss 1992; Deshpande et al 1993; Brignall and Ballantine 1996; Chen et al 1998; Avlonitis et al 2001; Monica Hu et al 2009; Aas and Pedersen 2011; Sichtmann et al 2011) were on service innovation from internal perspective (employees or managers) compared to five studies (Barczak et al 1997; Wang et al 2001; Matthing et al 2004; Victorino et al 2005; Su 2011) that considered service innovation from external perspective (customer perspective). It can be inferred from the review that about 64 per cent of the authors used service innovation scales to determine firm performance (Alam 2002; Van der Vegt and Janssen 2003; Blazevic and Lievens 2004; Lööf and Heshmati 2006; Damanpour et al 2009; Hertog et al 2011; Santamaria et al 2012; Cheng and Krumwiede 2012; Lin 2012). On further reviewing the studies, it was found that most of the studies used service innovation scale to determine financial outcomes like profit and growth over a period of time (Voss 1992; Deshpande et al 1993; Brignall and Ballantine 1996; Avlonitis et al 2001; Blazevic and Lievens 2004). The major gap to be considered is that as per the concept of service innovation, the measurement by financial performance alone does not project a firm to be successful in innovation. Since the performance of service innovation also depends on external customers who actually demand for innovation in services. Thus both internal and external perspectives are needs to be studied. Even though certain researchers used service innovation scale to measure customer performance, the problem is that they measured customer satisfaction, loyalty and cross selling (external to the firm) by questioning the employees of the firm which actually cannot capture the exact mindset of the customer. Thus from the overall analyses on perspective of measurement suggest that the future studies in service innovation must not only consider measuring innovation of the firm from employees’ perspective but also from the customers’ perspective, who actually enjoys the service innovation. In order to
measure service from customer perspectives it is to be noted that a multi-dimensional multiple rating scale is needed to be developed for measuring service innovation from customer perspective.

2.6. REVIEW ON SCALE DEVELOPMENT

For scale development process authors like Jackson (1990) and DeVellis (2012) stated that theories are the major source in guiding a researcher on developing scales. Dagger et al (2007) stated that to develop a new theory or a new construct researcher need to concentrated on existing literatures and conduct focus group discussions and in-depth interviews with the target population who can clearly give an idea about the construct from various dimensions. A construct can be measured either unidimensional or multidimensional. Cronbach and Meehl (1955) defined a construct as “some postulated attribute of people, assumed to be reflected in the test performance”. According to DeVellis (2012), a construct cannot be touched and many of its phenomena are not visible and thus multiple item scales and observations are used to measure them. Further, the author stated that most of the researchers aim to measure the underlying latent construct instead of simply measuring a set of items.

Green et al (1988) noted that multidimensional scaled items measures the concept accurately that helps in understanding the similarities and differences. Similarly, Comrey (1988) stated that “multiple-choice item formats are more reliable, give more stable results and produce better results”. DeVaus (1986) criticized dichotomous scale and stated that the ability of a scale is based on having multiple dimensions and indicators, which helps in evaluating the complexity of a construct whereas a single item or dichotomous scale might mislead in observing the entire concept. This motivated this study to develop service industry specific multidimensional with multiple indicator and Likert rating type scale that can measure service innovation. It was noted from most of the existing scale development articles that (Parasuraman et al 1988; Green et al 1993; Liden and Maslyn 1998; Eastman et al 1999 and Petrick 2002) they have used Likert 5/7 point rating scale. With the Indian context, in this study for measuring the typologies of service innovation 5-point Likert rating scale was used.
This study followed the existing scale development procedure proposed in various marketing literatures (Loevinger 1957; Churchill 1979; Gerbing and Anderson 1988; Comrey 1988; Anastasi 1988; Bagozzi et al 1991; Clark and Watson 1995; Smith and McCarthy 1995; Netemeyer et al 1995 and DeVellis 2012). The standard scale development procedure involves:

(i) Qualitative approach
Step 1: Item generation (through (a) literature review, (b) focus group discussions and (c) in-depth interviews)
Step 2: Item purification (through experts’ opinion survey)

(ii) Quantitative approach
Step 3: Item validation
Through Exploratory Principal Component Analysis (hereafter PCA), Study 1
Step 4: Unidimensionality through CFA, Study 2
Step 5: Nomological validity (path analysis using structural equation modeling)

2.6.1. QUALITATIVE STUDY -STEP 1: ITEM GENERATION

The major item generation techniques in existing literatures are qualitative in nature like literature review (Hinkin 1995), Focus group discussions (Lorig et al 1989; Eysenbach and Köhler 2002; Cook et al 2002 and Parasuraman et al 2005), In-depth interviews (Lievens et al 1999; Sharma and Patterson 2000; Malhotra et al 2004; DeJong and Hertog 2007 and Bobalca 2015) and experts’ opinion survey (Sharma et al 1990; Hudak et al 1996; Hardesty and Bearden 2004). The literature review helps in identifying the typologies (constructs) that can measure service innovation. Focus group discussion with customers helps in getting codes (keywords that customers said as service innovation during their visit/purchase), in-depth interview in each industry helps in verifying and validating those codes and finally experts’ opinion helps in dimension reduction and relevancy checking of the generated codes.
2.6.1.1. REVIEW ON IDENTIFYING THE TYPOLOGIES

Authors like McMullan (2005), Devlin et al (2013), Walsh et al (2014) and Velikova et al (2015) developed items for well established dimensions of a construct. Further Devlin et al (2013) noted for construct fairness none of the literature differentiated the sub-dimensions and thus he generated new items for measuring sub-dimension for fairness. By following the suggestions given by the authors, in this study review of service innovation literatures helped in identifying the five major typologies of service innovation such as product, process, organization, strategic and marketing innovation (the literatures mostly followed the synthesis approach). As per Lovelock et al (2004), both product and process can also be classified as major product/process innovation, product/process line extension and supplementary product/process innovation where these typologies are applicable for both internal perspective/external perspective of the service firm.

2.6.1.2. FOCUS GROUP DISCUSSIONS (EXTERNAL PERSPECTIVE CUSTOMERS)

Existing literatures (Lorig et al 1989; Morgan 1996; Zeithaml et al 2002; Peterson et al 2003; Dagger et al 2007) related to scale development majorly relied on focus group discussion for item generation process. According to Wong (2008), focus group discussion is a methodology in research adopted to generate data by gathering small unit of related participants and allowing them discuss on the specific topic over a period of time. There are six major steps involved in the process of focus group discussions according to Wong (2008):

(a) Formulating the questions
(b) Developing protocols
(c) Soliciting participants
(d) Venue arrangements
(e) Facilitating focus groups
(f) Transcription
The review on existing literature related to focus group discussion process is given as Table 2.6.

It is observed (Table 2.6) that majority of the scale development process in various research areas of management considered focus group discussion process as a major source for code generation. In general, two focus group discussions are conducted by many authors (Babin et al 1994; King et al 2000 and Chan 2001) in generating initial pool of codes.

### Table 2.6: Review on Focus group

<table>
<thead>
<tr>
<th>Author(s)</th>
<th>Type of qualitative technique</th>
<th>Number of focus groups</th>
<th>concept</th>
<th>industry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lorig et al (1989)</td>
<td>Focus group</td>
<td>4 groups of patients.</td>
<td>perceived self-efficacy</td>
<td>Health care</td>
</tr>
<tr>
<td>Babin et al (1994)</td>
<td>Focus group</td>
<td>Two focus group was conducted</td>
<td>Consumer perception</td>
<td>Shopping</td>
</tr>
<tr>
<td>King et al (2000)</td>
<td>Focus group</td>
<td>Two focus groups</td>
<td>Productivity system</td>
<td>Agriculture</td>
</tr>
<tr>
<td>Chan (2001)</td>
<td>Focus group</td>
<td>Two focus group with eight participants each</td>
<td>Purchase behavior</td>
<td>green purchase behavior</td>
</tr>
<tr>
<td>Eysenbach and Köhler (2002)</td>
<td>Focus group and in-depth interview</td>
<td>A total of 21 users of the internet participated in 3 focus group sessions.</td>
<td>Information search</td>
<td>Health care</td>
</tr>
<tr>
<td>Zeithaml et al (2002)</td>
<td>Focus group</td>
<td>6 focus group</td>
<td>Service Quality</td>
<td>Retailing</td>
</tr>
<tr>
<td>Cook et al (2002)</td>
<td>Focus group</td>
<td>Eight men and 18 women participated in the groups making a total of 26 participants</td>
<td>Purchase intention</td>
<td>Genetically modified food</td>
</tr>
<tr>
<td>Peterson, et al (2003)</td>
<td>Focus group</td>
<td>Six focus groups (N = 46 participants)</td>
<td>Information search</td>
<td>Health care</td>
</tr>
<tr>
<td>Bernhardt and Felter (2004)</td>
<td>Focus group</td>
<td>Four focus groups</td>
<td>Information search</td>
<td>Health care</td>
</tr>
<tr>
<td>Parasuraman et al (2005)</td>
<td>Focus group</td>
<td>Two focus group was conducted</td>
<td>Service Quality</td>
<td>Electronic services</td>
</tr>
<tr>
<td>Lees et al (2005)</td>
<td>Focus group</td>
<td>Six focus groups were conducted</td>
<td>Exercise Behavior</td>
<td>General study</td>
</tr>
<tr>
<td>Rochlen et al (2009)</td>
<td>Focus group</td>
<td>data from the 6 men’s focus groups</td>
<td>Depression</td>
<td>Health care</td>
</tr>
</tbody>
</table>
2.6.1.3. IN-DEPTH INTERVIEW (INTERNAL PERSPECTIVE – FIRM)

According to Duncan and Morgan (1994), even though focus group discussions generate more data, it is essential to conduct in-depth interview for understanding the topic on chosen. In this study, in-depth interview is also conducted to explore the unexplored codes elicited through focus group discussions. That is, there might be some forms of innovation that might not be covered by the customers or they might have not experienced certain type of innovative activities introduced by the service firms. Thus by conducting in-depth interview helps the researcher to go in-depth of the concept and explore additional information. Ritchie et al (2013) stated that it is necessary to go in-depth in collecting information with a sample rather than going in breadth in terms of sample size. Further, Boyce and Neale (2006) described that the when the interviewee repeats the same information then the interview can be ended since no more information can be attained. In this study one top level management person and two middle levels management persons were approached to conduct the interview since they can provide valuable information on various innovative activities performed by the respective service industry. The new codes that evolved in depth interview can be considered to be added in the list of codes generated (Shaw et al 2005; Chesbrough and Crowther 2006 and DeJong and Hertog 2007).

2.6.1.4. COMBINING FOCUS GROUP AND IN-DEPTH INTERVIEW

According to Kitzinger (1995), majority of studies combined the items generated through focus group and in-depth interview technique. Earlier there were many studies (Duncan and Morgan 1994; Morgan 1996; Michell 1999; Eysenbach and Köhler 2002) that have combined the items generated through both focus group discussion and in-depth interview. According to Crabtree et al (1993) combining both focus group and in-depth interview is uncomplicated because both are qualitative techniques where focus group deals with breadth of information and in-depth deals with depth in information. According to Clarck and Watson (1995), most of the measurement scale development researchers started with developing large item pool that is then reduced to smaller set. Similarly, Loevinger (1957) and Reise et al (2000) noted that the new item pool developed need to be over inclusive. That is, for any researcher in their process of scale
development it would be easier to remove an item rather than adding it at some future points. If the items show poor contribution in measuring a typology or a construct during reliability and validity test it gets removed from the pool of items (Dagger et al 2007).

2.6.1.5. QUALITATIVE - STEP 2: ITEM PURIFICATION THROUGH EXPERTS’ OPINION SURVEY

The second step taken in the scale development process is item (codes in this case) purification through qualitative study. According to Richins and Dawson (1992), removing the irrelevant items is necessary to arrive at manageable set of items for the constructs. According to Hardesty and Bearden (2004) the use of experts’ opinion in scale development improves the face validity of the measures. A detailed review on experts’ opinion adopted in existing literatures is given in Table 2.7.

<table>
<thead>
<tr>
<th>Author(s)</th>
<th>No of experts</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lundstrum and Lamont (1976)</td>
<td>10</td>
<td>Items were deleted if the experts felt that it does not fit in a specific construct</td>
</tr>
<tr>
<td>Sharma et al (1990)</td>
<td>18</td>
<td>Items were placed in a specific dimension based on majority of experts’ opinion</td>
</tr>
<tr>
<td>Ohanian (1990)</td>
<td>52</td>
<td>Items which 75 per cent of acceptance with a particular construct were retained for further analysis</td>
</tr>
<tr>
<td>Babin et al (1994)</td>
<td>3 experts</td>
<td>Each expert were given the description and were asked to place the items to the respective construct</td>
</tr>
<tr>
<td>Stone et al (1995)</td>
<td>Group</td>
<td>The experts were requested to indicate the respective dimension in which each item represents and the item were deleted if three or more has given wrong classification</td>
</tr>
<tr>
<td>Hudak et al (1996)</td>
<td>15</td>
<td>Items were added since the working group and experts felt that these dimensions were not well represented in existing scales. After experts’ review authors directly performed scale purification since they already have specific dimensions and components under each dimensions. Reduction from 821 to 177. And finally 78 questions were formatted.</td>
</tr>
<tr>
<td>Hardesty and Bearden (2004)</td>
<td>Concepual Paper</td>
<td>Done a review on experts’ opinion survey articles and concluded that most of the literatures have given mixed option on judgmental procedures and approaches. According to authors the review clarified that most of the experts were given with individual items and were asked to fit in respective dimensions</td>
</tr>
</tbody>
</table>
It would be appropriate to remove those codes that are irrelevant to the context through experts’ suggestion than taking all items to validation test for two major reasons (1) dimension reduction is not possible in validation stage and (2) respondents feel the data collection instrument to be too large to answer thereby leading to response/ non-response error.

The literature review on experts’ opinion survey clearly reveals that the process is adopted majorly for moving the items to specific dimension, when the constructs are clearly defined and the items are generated through exploratory approach it would be more appropriate to go for experts’ opinion thereby face validity and content validity could be determined (Hardestya and Beardenb 2004). Further many authors (Liden and Maslyn 1998; Petrick 2002) suggested conducting experts’ opinion survey to check the relevancy of the items measuring the dimension. Addition or removal of items can be done based on experts’ suggestions (Lundstrum and Lamont 1976; Hudak et al 1996). From the above literature review table, the number of experts for each study varied from 52 (maximum) experts to 3 (minimum) experts.

2.6.1.6. QUALITATIVE TO QUANTITATIVE

According to Auer-Srnka and Koeszegi (2007), qualitative data is converted into meaningful quantitative data to perform certain analysis in order to derive theoretical and generalizable results. Authors like Creswell (1994), Mayring (2001), Creswell et al (2003), Davies (2003) and Auer-Srnka and Koeszegi (2007) classified the conversions of qualitative to quantitative method into two namely, (a) Two-studies design (both qualitative and quantitative data is analyzed sequentially) and (b) Integrated design (quantitative data is analyzed by transforming qualitative data that is words are converted into numbers). In this study, integrated design approach is followed by collecting various codes from the customers through focus group discussions and in-depth interviews and items are developed from the codes and finally the obtained items are given to the customers to mark their level of agreement thereby empirical tests are performed using the obtained quantitative data.
2.6.2. QUANTITATIVE – STEP 3: ITEM VALIDATION – STUDY -1 PCA (RELIABILITY AND VALIDITY)

According to authors (Green et al 1977; Briggs and Cheek 1986; Cortina 1993; Clark and Watson 1995), internal consistency is overall degree to which items correlation with each other within a construct whereas unidimensionality indicate whether the scaled items establish a single construct. Spector (1992) stated that after developing initial item pool the researcher needed to test the internal consistency with larger item pool and then confirm the dimensionality of the scale through validity tests. Thus, in this study both internal consistency and unidimensionality tests are performed where the internal consistency is examined through reliability analysis and unidimensionality is accessed through CFA.

2.6.2.1. RELIABILITY TEST

According to Cronbach (1951), the first step in scale validation is performing reliability analysis by calculating coefficient alpha and then item-total correlation. Similarly, Gerbing and Anderson (1988) believed that reliability analysis needed to be examined even the unidimensionality test is examined because the authors believed that unidimensionality is not sufficient to ensure the scale. That is, there can be measurement error even in a perfect unidimensional scale. Clark and Watson (1995) stated that the single most widely used in scale development is examining internal consistency. Further Jarvis et al (2003) stated that internal consistency needed to be performed only for reflective constructs and not needed for formative constructs. By testing internal consistency, those items that do not correlate with sum of the remaining items needed to be removed (Cadogan et al 1999). That is the highly correlated items in a construct shows high coefficient alpha (Noar 2003). Even though Nunnally (1978) and Nunnally and Bernstein (1994) recommended minimum threshold value as 0.80 for basic research and 0.90 for applied research, authors like Bagozzi and Yi (1988), Holden et al (1991), Janssens and Gerris (1991), Clark and Watson (1995) stated that any value above 0.60 for basic and 0.70 for applied is good and adequate.
On the other hand, Cortina (1993) noted that when a scale containing more than 40 or more items eventually result in high internal consistency hence checking reliability of the scale is not appropriate and thus inter item correlation is much more useful test compared to coefficient alpha and stated that the inter-item correlation must range between 0.15-0.50 values. Hair et al (2006) stressed that the inter-item correlations must be above the value of 0.30 and those item whose inter item correlation value is lesser than the specified threshold value can be dropped Wang et al (2007). In this study, both reliability and inter-item correlation is tested and the results are given for all the three industries.

2.6.2.2. VALIDITY TESTS

There are five major tests to be done to confirm scale validity and they are (a) Content validity, (b) Construct validity, (c) Convergent validity, (d) Discriminant validity, and (e) Nomological validity. The detailed review on validity is discussed below.

2.6.2.2.1 CONTENT VALIDITY

Cortina (1993) stated that the major goal in scale development is to maximize item validation. In item validation, the primary concern is content validity, which may be viewed as the minimum psychometric requirement for measurement adequacy and is the first step in construct validation of a new measure (Schriesheim et al 1993). Content validity depends on how well the items generated cover the field of the construct being measured (Nunnally and Bernstein 1994). Content Validity involves “the systematic examination of the test content to determine whether it covers a representative sample of the behavior domain to be measured” (Anastasi and Urbina 1997). Kerlinger (1986) argued that content validity is representative of the content. Burns and Grove (1993) stated that content validity “is obtained from three sources: literature, representatives of the relevant populations, and experts”. Thus in this study the typologies to measure service innovation were taken from prior literature and the developed items were validated by expert of that specific industry through two levels of surveys and empirical analysis was performed to test both fitness of measurement model and predictive nature of the structural model.
2.6.2.2. CONSTRUCT VALIDITY

Construct validity refers to the quantity to which operationalizations of a construct do actually conclude what the theory says they do. Construct validity facts engage the empirical and theoretical support for the explanation of the construct. Experiments designed to reveal aspects of the causal role of the construct also contribute to construct validity evidence. In this study the constructs were borrowed through review of literature and the items were developed through two different qualitative studies these sources contributed for the groundwork for a construct item pool. Empirical analysis like reliability testing, PCA and CFA helped in eliminating the items that does not measure the construct (Hunter et al 1982). For each typology of service innovation, the items were reduced to a larger extent and finally derived valid items to measure a construct. The additional evidence of the construct validity can also be determined using good fit of the model using CFA analysis (Tull and Hawkins 1993; Joreskog and Sörbom 1999).

2.6.2.2.3. CONVERGENT VALIDITY

Convergent validity refers to the degree to which a measure is associated with other measures that it is theoretically predicted to associate with (Campbell and Fiske 1959). Fornell and Larcker (1981) advocated that the Average Variance Extracted (hereinafter AVE) values exceeding the 0.5 cut-off is acceptable. The low value of AVE was attributed to the perceptual and awarding rate for the scaled items. Dropping the item with the largest error term from the highest reliability subset of items usually reduces AVE. However, Ping (2009) explained that if AVE of the resulting measure is within a few points of acceptable of 0.50, might not be a serious to publish a model test and stated that not all reviewers believe AVE as the measure of convergent validity, some have preference on reliability.

Similarly, Bettencourt (2004) and Rosebush (2011) stated that reducing the number of items with poor loadings for the improvement of AVE need not be necessary; instead composite reliability levels can be considered for the purpose of convergent validity. Further according to Janssens et al (2006) even though there are lower scores for AVE because of reduction in number of items, the composite construct reliability scores
signify the acceptance of convergent validity. Fornell and Larcker (1981) defined as “Composite reliability is analogous to coefficient alpha (Cronbach), and reflects the internal consistency of the indicators measuring each CFA factor” and the values must be greater than 0.70. Thus, if a latent variable is reliable, that may be sufficient expression of convergent validity as suggested by some authors like Peterson (2000), Bettencourt (2004), Janssens et al (2006), and Ping (2009). Further convergent validity can also been proved if all the items strongly load on the construct Sin et al (2005). According to Liden and Maslyn (1998), to establish convergent validity the most common method is to check for factor loading in PCA.

The three major results of PCA namely Kaiser Meyer Olkin-Bartlett test (hereinafter KMO), anti-image correlation and factor loadings that are needed to be considered for establishing the validity of the items considered where items with low values can be removed from the analysis since the item does not contrubte in explaining the constructs. KMO test helps in determining the acceptance of sample adequacy where the value ranges between 0 to 1 with acceptance threshold value of 0.6 (Lloyd-Williams et al 2007). The anti-image correlation is the negatives of partial correlation where the diagonal values are used as Measures of Sampling Adequacy (hereafter MSA). The general thumb-rule is diagonals of anti-image correlation values ≥ 0.50 (Kaiser and Cerny 1979). According to Hair et al (1998), Li et al (2002) and Noar (2003), the factor loading above 0.5 values can be retained. Whereas authors like Clarck and Watson (1995), Wang et al (2007), Walsh and Beatty (2007), Turker (2009) in their study noted that the factor loading value of 0.40 of each item within a construct is well accepted to retain the item and items with two factor solution with the second factor loading value greater than 0.30 needed to be removed (Chin et al 1997; Sin et al 2005; Parasuraman et al 2005). In this study all the three tests (AVE, composite reliability and factor loadings) are performed to establish convergent validity.

2.6.2.2.4. DISCRIMINANT VALIDITY

On successfully evaluating discriminant validity, it can be proved that the construct/concept under test is not highly correlated with other construct/concept (Fornell and Larcker 1981). That is, the items taken to measure a construct intended to measure
only that construct and it is discriminant from unwanted/different measurements. Similarly, Lewis (2003) stated that it is necessary to prove that the scale taken for measure differs from other measures of dissimilar constructs. The discriminant validity of an instrument can be proved when the cross loadings of each items show higher loading with its respective construct compared to other construct. In this study discriminant validity is calculated for each industry individually. The constructs like service innovation typologies measures need to show different from the measures of other constructs such as WOM (result variable) and corporate reputation (mediator).

Since, the nomological validity is the process of examining the behaviour of the developed scale with other constructs, the review on the validity is discussed finally after service innovation scale development.

2.6.3. QUANTITATIVE – STEP 4: STUDY 2- UNIDIMENTIONALITY/CFA

The next item validation test adopted was examining the unidimensionality of the construct through CFA analysis (measurement model testing). Gerbing and Anderson (1988) stressed that CFA helps in verifying unidimensionality of a scale and the use of CFA to evaluate measure are recently adopted by many scale development literatures. Earlier scale development literatures, did not consider CFA as an essential step, but the use of CFA technique can ensure and enhance the confidence in psychometric and structural properties of newly developed scales (Comrey 1988; Noar 2003 and DeVellis 2012). In this study Structural Equation Model (hereafter SEM) was adopted to perform CFA analysis. Authors like Green et al (1977), Briggs and Cheek (1986) and Cortina (1993) stated that unidimensionality indicates whether all the scale items measures a single construct or a factor. According to Cortina (1993) the major goal of the researcher in scale development is to maximize the validity rather than reliability. Authors like Liden and Maslyn (1998), Eastman et al (1999), Petrick (2002), Noar (2003), Lewis (2003) noted in their study on unidimentionality test that the loading with a minimum value 0.6 and above can be retained.
Gerbing and Anderson (1988) explained that CFA is ideal for final verification in scale. According to Comrey (1988) and DeVellis (2012), PCA is an appropriate technique for initial stages and CFA are essential in final stages of scale development. Many literatures have emphasized that the CFA can be used for evaluating goodness of fit to confirm the unidimensionality of the scale, in addition to checking of the loadings. Hair et al (2011) stated that there are series of measures that depicts how well a proposed model is fit that is, whether there is a strong association between the researcher’s theory and the observed covariance matrix. CFA is performed to test the fitness of the model Netemeyer et al (1996). Thus this study performed CFA using LISREL software tool to determine unidimensionality of the scale. The proposed fit indices and the threshold limits specified in existing literatures are presented in Fig 2.2 and Table 2.8.

**Source:** (Sin 2004 and Hair et al 2011)

**Fig 2.2:** The model represents the classification of fit indices
2.6.3.1. REVIEW ON MODEL FITNESS

In SEM, evaluation of model fit is not based on a single statistical significance test rather there is a need to take multiple criteria into account and then evaluate the model fit Schermelleh-Engel et al (2003). According to Hair et al (2011), multiple fit indexes are needed to access goodness of fit and it must include:

- The chi-square value and the associated df
- Satisfy the threshold value of at least one from (a) absolute fit index (b) incremental fit index and (c) parsimony fit index and (d) badness of fit index (RMSEA, SRMR)

2.6.3.1.1 ABSOLUTE FIT INDEX

According to McDonald and Ho (2002) and Hooper et al (2008), absolute fit indices explain how well the priori model fits with the sample data. That is, absolute fit indices are the fundamental indications to check the sample data with the theory proposed. The fit indices under absolute fit are chi-square test, Root Mean Square Error of Approximation (hereinafter RMSEA), Goodness-of-Fit index (hereafter GFI), Root Mean Square (hereafter RMR) and Standardized Root Mean Residual (hereafter SRMR) (Jöreskog and Sörbom 1999). Carmines and Mclver (1983) described that if the value of Chi-square is two or three times more than df (degrees of freedom) then the model is accepted, but the fitness is better if the chi-square value is closer to df (Thacker et al 1989 and Hinkin 1995).

According to Hu and Bentler (1998) “chi-square assesses the magnitude of discrepancy between the sample and fitted covariances matrices”. Hooper et al (2008) noted that chi-square is traditionally used to evaluate overall model fitness. But there are some major drawbacks of using chi-square as a fit index to confirm model fitness. The major drawback is the sample size, since chi-square is sensitive to sample size; a model with larger sample size usually gets rejected (Bentler and Bonnett, 1980; Jöreskog and Sörbom, 1999). On the other hand when the sample size is smaller the chi-square will not be able to differentiate between a good model and a bad model (Kenny and McCoach 2003). Due to this sensitivity towards sample size, other absolute fit indices brought out
by authors like Browne and Cudeck (1992), Jöreskog and Sorbom (1999) and Kaplan (2000) were considered.

The RMSEA was developed by Steiger and Lind (1980). RMSEA estimates how well the model fits with respect to the population. That is the null hypothesis with respect to “exact fit” is replace with “close fit” (Browne and Cudeck 1992). This fit index is considered by many authors (Steiger 1990; Browne and Cudeck 1992; Schermelleh-Engel et al., 2003) in determining model fitness with respect to absolute fit indices where the threshold varied from $\leq 0.05$ to $\leq 0.08$.

The GFI estimates the null model with the actual model. It takes the value of all parameters as “Zero” and compares with the actual model Tanaka and Huba (1984). Studies like Anderson and Gerbing (1984) and Hu and Bentler (1998) pointed out that GFI is not independent with respect to sample size and both indices decrease with increase in model complexity and thus considering these fit indices alone is not advisory. The GFI ranges from 0 to 1 and higher the value indicates higher model fit. The general threshold limit is GFI $> 0.90$ (Marsh and Grayson 1995; Schumacker and Lomax 1996).

The RMR and SRMR are the square roots of the difference between residuals of hypothesized covariance matrix and sample covariance matrix (Kline 2005). The RMR is calculated based on the range of each scaled indicators and if there is different ranges of scale then SRMR better explains the model fit. SRMR ranges from 0 to 1 where lower the value better the model fit (Diamantopoulos et al 2000; Schermelleh-Engel et al 2003; Jarvis et al 2003) and the acceptable threshold limit considered by earlier researchers was SRMR $\leq 0.08$.

2.6.3.1.2. INCREMENTAL FIT INDEX

Incremental/comparative/relative fit indices compares the chi-square value to the base model. The base model’s fit index usually indicates a bad model fit and the target model is compared to it and checks if there is any improvement (Jöreskog and Sörbom, 1999). The null hypothesis is that all variables included in this model are uncorrelated (McDonald and Ho 2002). The most commonly used incremental fit indices are Normed
Fit Indices (hereafter NFI), Comparative Fit Indices (hereafter CFI) and Non-Normed Fit Indices (hereafter NNFI)/Tucker-Lewis Fit Indices (hereafter TLI).

The NFI is proposed by Bentler and Bonnett (1980) and usually considered as primary fit indices in incremental fit index where the chi-square value for the model is compared to the chi-square value of the null/independent model. The value ranges from 0 to 1 where the higher values indicate better model fit. Although the best model is theoretically suggested to get the value 1 if the sample size is small then NFI may not touch the upper limit. The usual thumb rule for NFI is between 0.90 and 0.95 (Marsh and Grayson 1995; Schumacker and Lomax 1996).

The CFI is reverse of NFI which considers sample size of the study (Bentler 1990) thereby it performs well even when the study has lesser sample size. As in NFI, this statistic (CFI) assumes the variable scores are uncorrelated and compares the sample covariance matrix with the null model (Kline 2005). Similar to NFI the value ranges from 0.0 to 1.0 where the higher value depicts good model fit, the threshold value ranges from 0.90 to 0.95 (Hu and Bentler 1998; Fan et al 1999).

The NNFI is the extension of NFI where the index prefers the simpler models. Here in NNFI the degrees of freedom of the model are compared with the degrees of freedom of the null/independent model (Hu and Bentler 1995). The major advantage is that the model is less affected by the sample size (Bollen 1989). The cut-off values range from 0.0 to 1.0 and since the index is non-normed the values may have a higher range and even may go above 1 thereby it is difficult to interpret (Tabachnick and Fidell 2007). The general rule of thumb is NNFI with minimum value of 0.80 to maximum NNFI ≥ 0.95 Mulaik et al (1989).

2.6.3.1.3. PARSIMONY FIT INDEX

Having a complex and saturated model the entire estimation process depends on the sample data on the other hand the less complex models produces better results (Crowley and Fan 1997). To overcome this problem Mulaik et al (1989) advocated the parsimony fit indices. There are different parsimony fit indices considered like Parsimony Normed
Fit Indices (hereafter PNFI), Adjusted Goodness of Fit Index (hereafter PGFI) and Normed Chi- Square (equivalent to Akaike Information Criterion -AIC).

**Table 2.8: Fit Indices table with threshold values**

<table>
<thead>
<tr>
<th>Fit indices</th>
<th>Threshold values</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Absolute fit measures</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chi square $(\chi^2)$</td>
<td>Low $\chi^2$ relative to degrees of freedom</td>
<td>Bentler and Bonnett (1980); Doll et al (1994); Cheung and Rensvold (2002); Hooper et al (2008)</td>
</tr>
<tr>
<td>RMSEA</td>
<td>≤ .05 good fit Between .05 and .08 adequate fit Between .08 and .10 mediocre fit &gt;.10 not fit</td>
<td>Steiger (1990); Browne and Cudeck (1992); Hu and Bentler (1998); Kaplan (2000); Schermelleh-Engel et al (2003)</td>
</tr>
<tr>
<td>RMR</td>
<td>Values ≤ 0.08</td>
<td>Hu and Bentler (1995); Schermelleh-Engel et al (2003); Jarvis et al (2003)</td>
</tr>
<tr>
<td>SRMR</td>
<td>&lt;.05 for a good fit SRMR less than 0.08 moderate &lt;.10 acceptable</td>
<td></td>
</tr>
<tr>
<td><strong>Incremental fit measures</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CFI</td>
<td>≥ 0.97 absolute fit ≥ 0.95 good fit</td>
<td>Bentler (1990); Bollen (1990); Hu and Bentler (1995); Netemeyer et al (1996); Schermelleh-Engel et al (2003)</td>
</tr>
<tr>
<td>NFI</td>
<td>&gt;0.95 good fit ≥0.90 Acceptable</td>
<td>Marsh and Grayson (1995); Schumacker and Lomax (1996); Schermelleh-Engel et al (2003)</td>
</tr>
<tr>
<td>NNFI/TLI</td>
<td>≥ 0.97 absolute fit ≥ 0.95 good fit</td>
<td>Tucker and Lewis (1973); Bentler and Bonnett (1980); Bearden et al (1982); Netemeyer et al (1996); Jöreskog and Sörbom (1999)</td>
</tr>
<tr>
<td><strong>Parsimonious fit measures</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PGFI and PNFI</td>
<td>High values better model fit</td>
<td>Mulaik et al (1989); Arbuckle and Wothke (1999); Schermelleh-Engel et al (2003); Hooper et al (2008)</td>
</tr>
<tr>
<td>AGFI</td>
<td>AGFI ≥ 0.85</td>
<td>Anderson and Gerbing (1984); Hu and Bentler (1995); Tabachnick and Fidell (2007)</td>
</tr>
</tbody>
</table>
Both PNFI and PGFI are modifications of GFI and NFI where both GFI and NFI are multiplied with respective parsimony ratio of degrees of freedom (Tanaka 1993). The process of penalizing to obtain model complexity thereby reduces PNFI and PGFI to have values lesser than other goodness of fit indices (Hooper et al 2008). There is no threshold limit given for parsimony fit index where the author Mulaik et al (1989) noted that if the obtained parsimony value is in the range of 0.50 with other model fit indices above the threshold limit then the model is considered as fit.

The Adjusted Goodness of Fit (hereafter AGFI) is similar to goodness of fit, where the GFI is adjusted based on the degrees of freedom since more complex model reduces the fit. Thus parsimonious models are preferred compared to complicated model (Tabachnick and Fidell 2007). Further AGFI increases as sample size increases that both GFI and AGFI alone must not be considered for model fitness (Sharma et al 2005). The value ranges from 0.0 to 1.0 and the general threshold value for AGFI is ≥0.85 (Hooper et al 2008)

In order to overcome the effect of sample size affecting chi-square, Wheaton et al (1977) developed the relative/normed chi-square ($\chi^2$/df). Testing normed chi-square for parsimonious fitness is alternative for AIC (Schermelleh-Engel et al 2003). The acceptance ratio for normed chi-square is ≤ 5 (Wheaton et al 1977). The Table 2.8 above summarizes the fit indices and its respective threshold values.

2.6.4. QUANTITATIVE - STEP 5: NOMOLOGICAL VALIDITY

Nomological validity shows the ability of a scale to behave as expected with respect to some other constructs to which it is related (Churchill 1991). As per the definition of Peter (1981), nomological validity of a construct is proved, if it could empirically validate the association between the focal construct and the other construct, which is said to be associated with in theory. Thus, in this study based on the existing theories which stated that innovation in product/service has an impact on firms’ performance positively.

The early mover’s advantage theory is adopted by organization to gain superior performance (Lieberman and Montgomery 1988; Cohen and Levinthal 1990 and Jansen et al 2006).
The performance gap theory explains about the difference between what the firm is actually producing and what it can potentially deliver (Zaltman et al 1973; Wischnewsky and Damanpour 2006). Based on the two theories, the non-financial performance named, WOM is taken as a dependant variable. Further to examine the predictive nature of service innovation on similar other construct corporate reputation is considered in this study. That is in this study the nomological validity is examined by validating the effect of service innovation on WOM through corporate reputation (considered as a mediator). The nomological validity is tested using Partial Least Square-Structural Equation Modeling (hereinafter PLS-SEM).

2.6.5. STRUCTURAL EQUATION MODELING (SEM)

SEM can be classified as covariance based SEM (hereafter CB-SEM) and variance based SEM (PLS-SEM). CB-SEM focuses on reproducing the theoretical covariance matrix and produces goodness of fit that is difference between observed and expected covariance matrix. Thus this study adopted CB-SEM to test the unidimensionality using a software tool by name LISREL 8.2. There are certain other advantages on choosing CB-SEM is that the results on complex and interactive effects are well assessed. Further in CB-SEM error terms are calculated for each indicator thereby obtaining the loading that helps to eliminate indicators with larger error terms, which ultimately improve the quality of the latent construct (Hair et al 2014).

Further, PLS-SEM helps to maximize the variance explained by independent variables on one or more dependant variable. This approach helps to attain nomological validity. To obtain the nomological validity Visual PLS 3 software tool is used to perform PLS-SEM. PLS-SEM is a different approach that transfers from CB-SEM approach based on covariance into variance based (Ghozali 2006). There are various reasons of choosing PLS-SEM techniques and they are, PLS-SEM can be used to manage the latent construct that are modeled both as formative indicator and reflective indicator or the mixture of both (Chin 1998). The data need not be multivariate normal distribution that means indicator with category scale, nominal, interval and ratio can be applied to the similar model. PLS-SEM can be used for both theory confirmation and prediction. PLS-SEM is a commanding model analysis since it is not based on mass assumption, such as normal
data distribution and free-multicollinearity (Ghozali 2006). Earlier literatures (Fornell and Bookstein 1982; Goodhue et al 2012) stressed that LISREL Software tool (Co-variance based method) needed to be used for testing the residual structure and Smart PLS (variance based method) specifies the estimates of unobservable. Thus this study used Co-variance method to determine the model fitness and CFA for scale development. To test the nomological validity, there is a need to estimate the variance of service innovation scale on outcome variable and thus variance based method was used in this study and the two methods are explicitly performed. Since there are two types of measurement theory specified in SEM such as (a) Reflective measurement model and (b) Formative measurement model, primarily there need an understanding on the difference between reflective and formative mode.

2.6.6. REFLECTIVE VS. FORMATIVE MEASUREMENT THEORY

Rossiter (2002) stated that on conceptualizing the focal construct two major strategies needed to be adopted and they are reflective indicators and formative indicators. That is, when a construct gives rise to its indicators then it is termed as reflective indicators on the other hand when the items are responsible for the formation of the construct then it is termed as formative indicators (Fornell and Bookstein 1982).

According to Bollen and Lennox (1991) and Jarvis et al (2003) reflective indicators account for observed variance/covariance and they are based on classical test theory (Lord and Novick 1968). In reflective measurement model, the direction of causality is from construct to indicators where change in the construct causes changes in the indicators (Fornell and Bookstein 1982; Bollen and Lennox 1991). According to Bollen (1984), there is a strong positive intercorrelation between the measures in a reflective measurement model. On the other hand, when the indicators characterize a distinct cause and that are not interchangeable since each indicator capture a specific aspect of a construct then it is termed as formative measures where excluding a measure causes changes in the nature of a construct (Bollen and Lennox 1991).
There are different sets of tests needed to be assessed based on the measurement theory, depending on whether the indicators are reflective or formative. Reflective indicators need to be assessed for reliability, convergent, and discriminant validity. The formative indicators are assessed for indicator weights, their significance, their loadings, and the degree of multicollinearity (Chin 1998 and Hair et al 2014).

In this study, two types of models were tested (a) measurement model and (b) structural model. For measurement model, two layers of constructs are considered. The first layer contains the typologies/ Lower Order Constructs (hereafter LOC) and second layer the service innovation itself, which is a Higher Order Construct (hereafter HOC). According to Hair et al (2011) higher order model helps in reducing the structural model and avoid multicollinearity and specifically for formative constructs the higher order model helps in eliminating the collinearity issues. In this study the direction of causality for higher order model is formative because it is perceived that the seven typology represent service innovation and the items measuring the typologies are generated by inquisition customers by defining each typology and it is reflective. Overall, the measurement model in this study is reflective formative measurement model.

2.6.6.1 ASSESSING FORMATIVE MODEL FOR COLLINEARITY

If the model has reflectively measured LOC and formatively measured HOC, then there is a need to follow “Two-Stage approach” proposed by Ringle et al (2012) and Hair et al (2014). Based on the proposed two stages, the first step needed to be followed is to evaluate the overall model as usual on testing reliability and validity and in the second step since the path from lower order construct to higher order construct is formative there is a need to check for collinearity.

Collinearity can be checked in two different ways and they are: (a) Variance Inflation Factor (hereafter VIF) values < 5 (b) Bivariate correlation > 50. According to Hair et al (2014) the latent variable scores need to be taken from the overall model and VIF values are calculated using regression analysis using SPSS software tool, where any variable can be considered as dependant variable and others as independent variable to check collinearity between them.
If the VIF values are lesser than 5 then it means that there is no collinearity issues (Hair et al 2014). In this study, collinearity is examined for measurement model that is between typologies of service innovation and secondly for structural model between service innovations, corporate reputation and WOM by keeping the threshold limit of VIF< 5.0.

2.7. OUTCOME OF SERVICE INNOVATION ACTIVITY

2.7.1. INNOVATION AND FIRMS’ PERFORMANCE

Innovation researchers have stressed that even though innovation is risky and success is not guaranteed it positively affects firms’ performance based on two theoretical arguments such as (a) Early Mover Advantage theory (Lieberman and Montgomery 1988; Roberts and Amit 2003) and (b) The Performance Gap theory (Zaltman et al 1973; Wischnevsky and Damanpour 2006). The performance of a firm can be either (a) process performance such as effectiveness of innovation and speed of innovation or (b) result performance such as financial or non-financial performance. Existing literatures have noted that there is a positive relationship exists between service innovation and service performance (Avlonitis et al 2001; Crawford and DiBenedetto 2007 and Song et al 2009). Service innovation helps in facilitation and generation of service performance either financial rewards, non-financial rewards or market positions (Wind and Mahajan 1997; Benner and Tushman 2003). Performances like providing additional benefits to existing customers, creation of new markets, improving values of existing service, or radical creation of a new service can be attained by involving in service innovation activities.

The Fig 2.3 and Table 2.9 (see Appendix II) explains how service/product innovation is measured based on firms’ performance as an outcome variable in existing literature. Initially the firms’ performance is classified as (1) process performance and (2) result performance. The process performance is measured based on (a) criterion cost (b) effectiveness of innovation and (c) speed of innovation activity in the firm. Whereas the result performance are measured based on (a) financial and (b) non-financial performance. Considering the financial result performance which is further classified as (1) business performance: measured based on (a) firms’ turnover (b) market share (c) productivity (d) exports (e) profit for the firm and (f) return on investment, equity and assets, (2) organization performance which is measured based on (a) sales per employee
(b) net profit per employee (c) gross margin and (d) growth in employment and (3)
innovation performance which is measured based on (a) time and cost of innovation (b)
frequency of innovation and (c) new/upgraded features in product/services. Focusing on
non-financial result performance, which can be classified as (1) internal non-financial
result performance such as employee satisfaction and involvement, strategic or
competitive advantage of the firm and (2) external non-financial performance like
customer satisfaction, customer loyalty, service quality and behavioral intention of the
customer. The following flow chart represents the various outcomes of service innovation
activities explained in earlier literatures.

Fig 2.3: Service Innovation Outcome variable
2.7.2. SERVICE INNOVATION AND FINANCIAL RESULT PERFORMANCE

Prior studies related to service innovation indicated that there is a strong relationship exists between service innovation and financial performance (Avlonitis et al 2001; Crawford and DiBenedetto 2007; Song et al 2009). It is to be noted that service innovation also benefits the firm in attaining non-financial performance like customer satisfaction, quality of service and competitive advantage but the most important advantage of having service innovations is that it helps the firms to attain financial performance like profitability, growth and market performance (Wind and Mahajan 1997; Benner and Tushman 2003). Further, service innovation contributes performance by providing benefits to existing customers, and also attaining new customers thereby providing financial values to the firm.

Financial performance is categorized under (a) Business performance like turnover, employment, market share, productivity exports, profit, return on investment, return on assets, and return on equity (Deshpande et al 1993; Han and Srivastava 1998; Cooke and Wills 1999; Love et al 2010), (b) Organization performances like sales per employee, net profit per employee, gross margin, return on investment and growth in empowerment (Slater and Narver 1994; Lau and May 1998; Baker and Sinkula 1999; Loof and Heshmati 2002; Park and Jacobs 2011) and (c) Innovation performances such as time and cost of innovation, frequency of innovation, new features, upgraded features (Brignall et al 1992; Voss 1992; Hull 2004; Monica Hu et al 2009).

2.7.3. SERVICE INNOVATION VS. NON-FINANCIAL PERFORMANCE

2.7.3.1. INTERNAL NON-FINANCIAL PERFORMANCE

McAdam and Armstrong (2001) have reported that innovation and quality are two key management terms that have been adopted private industry organizations and achieved a greater success. The authors stated that innovative products/services with good quality measures adopted by the firm lead to superior performance outcome. There is an intrinsic link between innovation and quality over a wide range of business improvement activities. Jain and Gupta (2004) also stated that a firm that provides innovation with high-quality services to their employees is likely to achieve superior performance.
The service profit chain frameworks by Heskett et al (1997) have predicted firms’ performance by improving both internal and external service quality. This framework was adopted by other researchers in order to predict performance of the firm by improving internal and external service quality (Loveman 1998; Lau 2000; Pritchard and Silvestro 2005; Fazlzadeh 2012). Similarly, the return on quality model also suggested that improvement in internal and external service quality would improve performance of the firm (Rust et al 1995; Heskett et al 1997; Anderson and Mittal 2000). One of the key elements to improve service quality would be to bring frequent innovation within the firm.

2.7.3.2. EXTERNAL NON-FINANCIAL PERFORMANCE

Since innovation means introducing product/service something unique and different to customers compared to their competitors, it should result in a positive customer experience. Thus the basic essence of innovation is to attract customers and satisfy them to become loyal. Levesque and Dougall (1996) defined Satisfaction as an “overall customer attitude towards a service provider”. Similarly, Zineldin (2000) and Oliver (1999) stated satisfaction as a reaction of a customer based on the difference between what they anticipate about the service/product and what they receive in fulfilling their goal desire or need. According to the authors, customer satisfaction is a very crucial component to firms’ success and survival. Thus the ultimate goal for any firm is to attain customer satisfaction (Avlonitis et al 2001; Gonzalez Mieres et al 2012). Regarding customer satisfaction and customer loyalty, prior studies indicate that positive customer satisfaction leads to better relationship with customer thereby customer become loyal to the firm or the brand (Christopher et al 1991; McKenna 1991; Grönroos 1994; Heskett et al 1994).

Earlier literatures like Yoon et al (1993), Liu and Wu (2007), Jeng (2008), Keh and Xie (2009), DeRuyter et al (2001) empirically measured behavioral intention of customer through customer retention, cross buying behavior, purchase/repurchase intention and WOM (Parasuraman et al 1988; Reichheld and Sasser 1989; Boulding et al 1993). Behavior intention is how customer reacts to the service innovation where the customer might have an intention to purchase or repurchase the service thereby leading to
recommendation of the service to his neighbor, relatives or friends (WOM) that helps the firm in gaining non-financial performance.

2.7.3.3. SERVICE INNOVATION AND WOM

The concept of innovation diffusion started with Ryan and Gross (1943) later discussed by several authors like Kuhn (1962), Fliegel and Kivlin (1966) and Rogers (1976). According to Rogers (2007), “Diffusion is the process by which an innovation is communicated through certain channels over time among the members of a social system”. Czepiel (1974) further related the diffusion concept of Rogers (1962) with WOM that, when and individual (X) who knows about the innovation, and an individual (Y) who does not yet know about the innovation the social relationship between (X) and (Y) has a greater opportunity where (X) will tell (Y) about the innovation. This way of communicating information about innovation from one customer passing WOM to another person is known as a “ripple effect” (Gremler and Brown 1999). Thus, WOM can be defined as ‘oral, person-to person communication between a receiver and a communicator’ (Arndt 1968). According to Wangenheim and Bayon (2007) key consumer behavior variables are customer satisfaction, loyalty and WOM. According to File and Prince (1992) positive WOM plays a crucial role in the marketplace and has heavy value in the customer buyer behavior process resulting in purchase/re-purchase/cross-purchase behavior.

A widely accepted notion in consumer behavior is that WOM communication plays an important role in shaping consumers’ attitudes and behaviors (Brown and Reingen 1987). Martilla (1971) found that WOM is a long-term performance and is more important in the final stages of the purchase process as it reassured consumers and reduced post-purchase uncertainty.

According to Villanueva et al (2007), a customer acquired through WOM is comparatively higher than those acquired through other marketing channels. While customers acquired through marketing media probably brings 1.77 new customers, WOM brings 3.64 customers throughout their lifetime. Similarly, Katz and Lazarsfeld (1995)
noted that WOM is seven times more effective than print advertising, four times more effective than personal selling, and twice the effect of audio/video mode of advertising.

Earlier innovation studies related the WOM with product innovation (Arndt 1968; Czepiel 1974; File and Prince 1992) and tested even in certain service industries like financial (Villanueva et al 2007) and healthcare industry (Chaniotakis and Lymperopoulos 2009). According to certain authors (Berry 1980; Tatikonda and Zeithaml 1981; Zeithaml et al 1985), WOM is particularly important when services are complex and high risk involved in it. Since WOM is seen as a highly credible information source because the communicator is totally independent from the organization and does not gain anything by giving positive information, but still advocate the service/product (Silverman 2001).

2.7.3.4. SERVICE INNOVATION AND CORPORATE REPUTATION

Authors like Fombrun et al (2000) and Blazevic and Lievens (2004) stressed that innovative activity (either product or service) adopted by the firm leads to reputation of that firm in the market. More specifically, Luoma-aho (2007) revealed that when a customer or a stakeholder hears about innovation, initial impression about the service and the firm is formed. This initial impression along with available information about the service forms a basic trust on innovation that leads to basic expectations. With additional information and experience, trust on the firm is formed which over a period of time is converted to reputation. Thus, *innovation within the firm creates trust and identity, which thereby develops reputation of a firm.*

The importance of corporate reputation is greater for service and service related firms, which continuously innovate new service product and/or processes in order to get the desired result on financial and non-financial performances (Coombs and Miles 2000; Bromley 2001; Walsh et al 2009). Corporate reputation is defined as “a collective representation….It gauges a firm’s relative standing both internally with employees and externally with its stakeholders” (Fornburn and van Riel 1997). The basic components of corporate reputation are corporate identity and corporate image, where corporate identity is the perception of employees and managers about the firm and corporate image is the perception of customers about the firm (Fornburn and van Riel 1997).
The corporate reputation is driven by many variables that include satisfaction, loyalty, trust, innovation, etc., of which innovation is considered as one of the major driver of corporate reputation (Caruana 1997; Fombrun et al 2000; Hillenbrand and Money 2007; Helm and Klode 2011). Existing literatures varied in explaining the relationship between service innovation and corporate reputation. Authors (Lippman and McCardle 1987; Hillenbrand and Money 2007; Helm and Klode 2011) have stated that innovation within the firm drives its reputation in the industry. According to Luoma-aho (2007) “Reputation is actually portrayed in the innovation’s ability to meet stakeholder’s expectation”. Fombrun et al (2000) identified innovation as a first order factor of reputation. Similarly, Blazevic and Lievens (2008) stated that innovation within the firm leads to corporate reputation.

In contrast, authors like Roberts et al (2002), Courtright and Smudde (2009), Henard and Dacin (2010) explains that reputed firm in the market in order to sustain the competitive environment frequently attempt to innovate new product/services. There are literatures discusses the relationship between service innovation and corporate reputation indirectly while discussing on other firm related variables (Fryxell and Wang 1994; Caruana 1997; Cravens et al 2003; Fornburn 2007). Authors like Datta et al (2011) noted that reputation related literatures generally ignored the concepts of innovation and commercialization. Thus there is difference among existing studies explaining the relationship between service innovation and corporate reputation and which drives the other.

Even though studies clearly did not define the direct relationship between service innovation and corporate reputation, and predict which one drives the other, most of them emphasized indirectly about the relationship between these two constructs and considered service innovation as an independent variable (Fryxell and Wang 1994; Caruana 1997; Cravens et al 2003; Fornburn 2007), where the authors noted that one of the way in which a firm can get reputed and gain competitive advantage in the market is when they understand the customer needs and frequently produces new services and satisfy them.
2.7.3.5. CORPORATE REPUTATION AND WOM

Earlier literatures stated that corporate reputation leads to financial performance (Roberts and Dowling 2002; Rose and Thomsen 2004), non-financial performance like satisfaction and loyalty (Andreassen 1994; Nguyen and Leblanc 2001; Cretu and Brodie 2007), purchase intention (Yoon et al 1993; Carrigan and Attalla 2001), customer retention (Nguyen and Leblanc 2001; Walsh et al 2009) and behavioral intention (Liu and Wu 2007; Jeng 2008). Related to behavioral intention, studies like Park et al (2006), Keh and Xie (2009) indicated that corporate reputation has an impact on behavior intention variables such as purchase intention, repurchase intention, WOM and cross buying intention. Further, Sridhar and Ganesan (2016) noted that corporate reputation predicts WOM through customer satisfaction. Authors like Hong and Yang (2009), Park and Lee (2009) stressed that customers tend to speak positive about reputed companies to their friends and relatives. According to Walsh et al (2009), customers who perceive the company to have a reputation will engage in positive WOM compared to those who do not perceive the company to have good reputation thereby noting that for those customers who think the firm is reputed would act as its “advocate”.

2.7.3.6. TESTING A VARIABLE AS A MEDIATOR

According to Barron and Kenny (1986) and Wahid and Ahamed (2011), a variable may be considered as a mediator when it accounts for the relation between a predictor variable and the criterion variable. Further, mediator helps in explaining the significant relationship between the independent and dependent variables and how or why this effect takes place. The relation between predictor and the criterion variable becomes insignificant when the mediator is identified and removed. Primarily, for mediation analysis through path model, there is a need to meet the following criteria namely: (a) The predictor has significant influence on the mediator, (b) The mediator (corporate reputation) has significant influence on the criterion variable and (c) The predictor has significant influence on the criterion variable in the absence of the mediators’ influence. When the mediator is introduced in the model the value of direct effect becomes insignificant and increases in total variation explained.
Helm et al (2010) noted the contradictory statements proposed in the literatures regarding the test for moderation and mediation and hence recommended a two-sided test for significance of mediation effect.

Hair et al (2011) stated that most of the researchers are interested in understanding the total effect of the model, which is the sum or direct and in-direct effect. In this study the direct effect is the coefficient value obtained on evaluating the direct path from SI to WOM. Similarly, the indirect effect is the product of the estimated values of two constructs through the mediator. Further, the total effect value is calculated as effect size that is the addition of direct and indirect effect. To establish the mediation effect, the indirect effect of $a \times b$ ($\beta$ values) has to be significant. In order to examine the indirect effect Sobel (1982) $z$ statistic (Aroian test equation) is applied with 0.05 significance level.

2.7.3.7. CORPORATE REPUTATION AS A MEDIATOR

It is evident from the earlier studies that WOM is a non-financial result performance which is an outcome variable for service innovation or corporate reputation. The major issue is that researchers varied in placing service innovation and corporate reputation either as a predictor or as a mediator. Meanwhile, earlier literatures independently tested the effect of service innovation and corporate reputation on WOM, whereas this study fills the gap by combining both service innovation and corporate reputation together in predicting WOM. Earlier corporate reputation was measured as a mediating variable between corporate social responsibility and brand performance (Lai et al 2010), perceived value and aspects of quality (Caruana and Ewing 2010) and customer satisfaction and loyalty (Helm et al 2010), service innovation and customer satisfaction (Ganesan and Sridhar 2016). On the other hand, service innovation is generally considered as an independent variable but there are studies like Matear et al (2002) and Agarwal et al (2003) where service innovation was considered as a mediating variable since this study attempts to examine the role of corporate reputation as a mediating variable since this study attempts to examine the role of corporate reputation as a mediating variable since this study attempts to examine the role of corporate reputation as a mediating variable since this study attempts to examine the role of corporate reputation as a mediating variable since this study attempts to examine the role of corporate reputation as a mediating variable since this study attempts to examine the role of corporate reputation as a mediating variable since this study attempts to examine the role of corporate reputation as a mediating variable since this study attempts to examine the role of corporate reputation as a mediating variable since this study 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2.8. SUMMARY

In this study, an attempt is made to understand the concepts of services, innovations and service innovation. Initially, characteristics of services were discusses and how it differentiates services from products. Followed by review on various approaches, classification of innovation and factors that facilitates/blocks innovation activity were discussed which helps both the researchers and managers of the firm to understand what are the ways innovation measurement is classified and what are the major factors needed to be concentrated to overcome the barriers that block innovation activity. Later the concept of “Service Innovation” was discussed where the problem of defining the concept was addressed with a unique definition for service innovation. Finally, from the review of literature the measurement problem for service innovation was identified, from the systematic review it could be concluded that there are several gaps needed to be addressed by future researchers such as (a) to develop a scale with common approach for measurement exclusively for service industry (b) to develop the constructs either typology/dimension that can measure service innovation considering the characteristics of service exclusively (c) the developed scale must measure service innovation both internal and external perspective of the firm. (d) The clarity on using one-dimensional or multi-dimensional indicants and finally, (e) a clarity is needed on rating of scale used for measuring the construct. These research gaps motivated this study on developing a unique scale to measure service innovation externally across in three different service industry and performing a comparative analysis to note if there is there any difference between service industries with respect to innovation typology. Further, the developed scales help the managers of service related firms to measure the innovation performance, understand the customer needs and achieve superior non-financial performance thereby attaining competitive advantages. The nomological validity of the scale is tested using a model where the effect of service innovation is tested on WOM. Further, the study further attempts to examine whether the relationship between service innovation and WOM is explained by corporate reputation (placing the construct corporate reputation as a mediator between service innovation and WOM).